

4rd Student Conference
On
Recent Trends in Computer
Science & Applications

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OBJECTIVE OF THE CONFERENCE

The purpose of the conference is to provide opportunities for students from an assortment of places to meet and to discuss current research in the field of computer science and applications and computational mathematics.

Computer Science is the theoretical study of computation, its implementation and practical application. However, even a cursory glance at a Computer Science book will convince the reader that its application lies at the heart of the subject. The link between Computer Science and application is fundamental and pervasive, continually motivating new concepts and research.

SCOPE

The scope of this Conference is to provide a National Level Platform for students to share their research ideas and results.

The areas of interest include, but are not limited to:

Computer Science and Applications:

- Augmented Reality and Virtual Reality
- Data Mining and Warehousing
- Databases
- Cloud Computing
- Software Project Management
- Soft Computing
- Image Processing/ Pattern Recognition
- Software engineering & Software Testing
- Learning Technologies
- Computer Graphics and Computer Vision
- E-Commerce and E-Business
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- Algorithms & Programming Languages
- Web Technologies
- Operating systems

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CHAIRPERSON'S MESSAGE



Technology in our daily life is no longer a subject of voluntary application. If one desires to keep up with the fast pace of urbanized life, one simply can no longer deny the influence of technology in our way of living. Even as recently as the early part of the twenty-first century, we may not have expected the technology age to be so heavily dominant in our lives. And from the looks of it, it seems it can only become more intensive and extensive in the coming years. In domestic life, for example, computers have taken over household security and conveniences – remotely controlled security apparatus, or mobile phone controlled appliances are a case in point. The picture of computer technology's dominance in corporate life is even more pervasive – with every branch of manufacturing, engineering, medicine, construction or the service sector – be it banking, hospitality, education etc. caught in the all-pervading embrace of technology. Our dependence on Computers rises with more and more applications becoming remotely manageable.

I am happy that ICCS has organized the third conference for student on RTCSA which I believe is an important event that will go a long way in familiarizing the student and academic community with the developments in the area of Computer Science and applications.

I wish the Conference all success.

Dr. Tarita Shankar
*Chairperson & Chief Patron,
Indira Group of Institutes,
Pune, India.*

GROUP DIRECTOR'S MESSAGE



Dear Participants,

Congratulations to Dr. Janardan Pawar and his IT Team for organizing the Student Conference “Anveshan” on Recent Trends in Computer Science and Applications for the fourth year. Conferences such as this go a long way in getting the best from academia and industry to come together and share cutting-edge research and discuss the emerging trends that will impact the industry. The journal published thereafter will contribute to the creation of knowledge in the said faculty and will remain a source of learning for the students, academic and industrial community.

Prof. Chetan S. Wakalkar

*Group Director & Chief Patron,
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ANALYTICAL STUDY: CYBER LAW AND CYBER CRIME IN INDIA

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Abstract

Today's era is of exploration which may be in form of information, knowledge, area, power etc. but today the most impactful thing which rule the world is cyber world. As the usage of computers become more and more popular, there was expansion in growth of research and technology, which also give opportunity to all peoples to access any information, record, data storage, analyses etc. But as we know great power come with great responsibility and it applicable to cyber world also as number of users increase lead to increase in number of use and misuse technology in the cyber world or space. Misuse of internet technology lead to cybercrime (unlawful use of cyber tools to do criminal activity) and to handle such crimes there are cyber laws. In this paper we see analytical impact of Cybercrime and Cyber laws in India.

Keywords: Cybercrime, Cyber law, Cyber attack, Security, Antivirus.

Introduction

Cybercrime can be defined as any illegal activity that uses a computer or computer tool as its primary means of function for knowingly or intentionally perform such activity. Cybercrime may be against person, property, government, firms, company, group of individuals, society, country, business, religion etc.

Cybercrime usually includes:

Unauthorized Access	Data diddling	Virus/worms attack	Hacking
Denial of attacks	Logic bombs	Trojan attacks	Internet time theft
Web jacking	Theft of computer system	Email bombing	Physically damaging computer system.

And essential condition or key for this is either it happen by knowingly which may be for destroying other, conceal others, alter other or by mistake it done. The Information Technology Act, 2000, which is a primary or main law in India which handle or deal with cybercrimes and cyber laws.

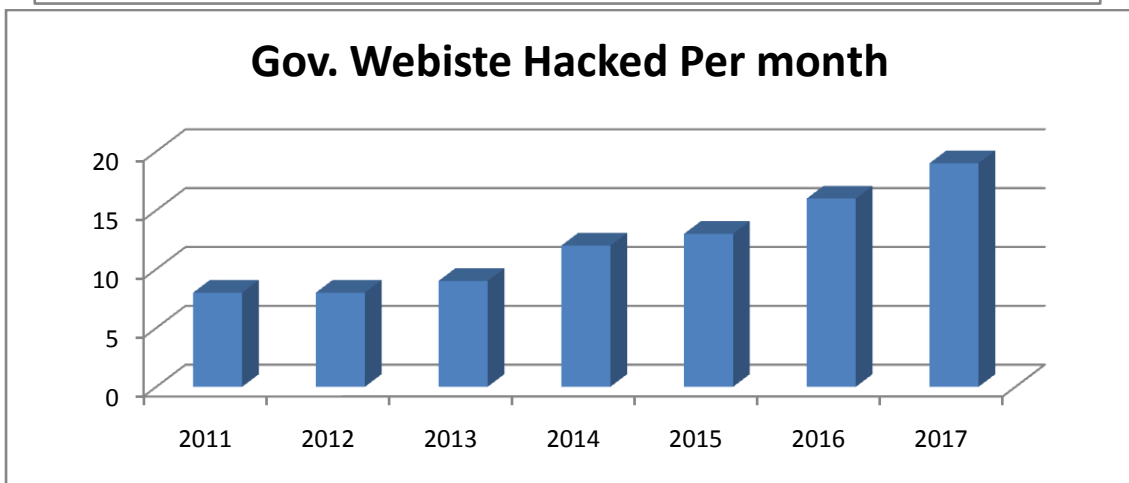
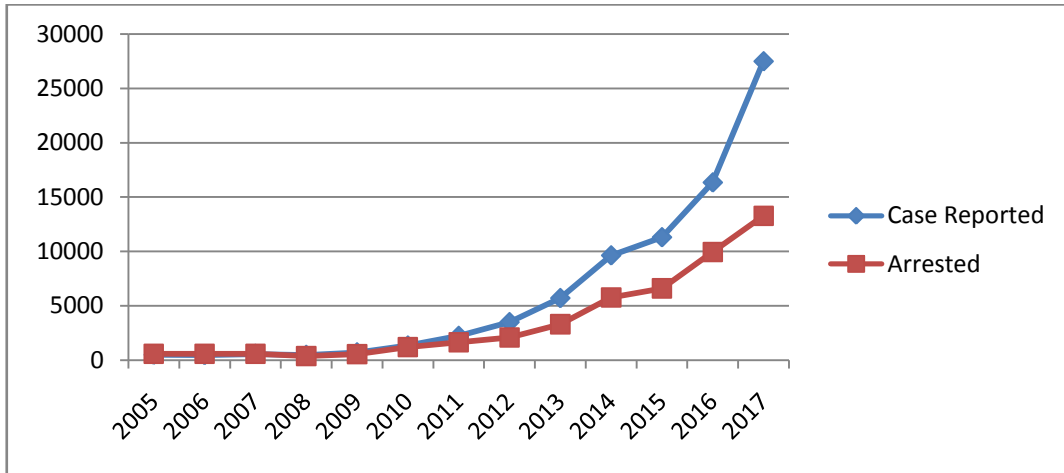
Offences and Penalties

Cyber offences are the unlawful acts which are carried in a very sophisticated manner in which either the computer is the tool or target or both

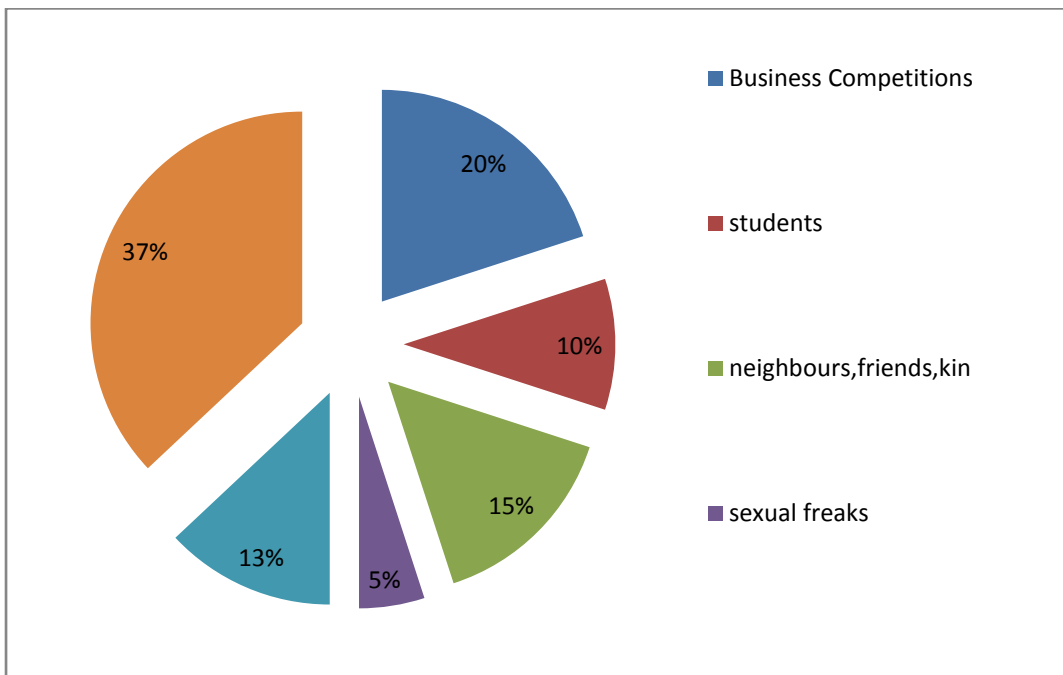
There are some offences and their penalties/explanation (for last 4 offences) which predefine in ITA 2000.

Offences	Penalties/Explanation
Tampering with the computer source documents	Penalties: Imprisonment up to 3 years and / or Fine: Two lakh rupees.
Hacking with computer system	Penalties: Punishment: Imprisoned up to three years and Fine: which may extend up to two lakh rupees, or with both.
Publishing of information which is obscene in electronic form	Penalties: Punishment: (1) On first conviction --- imprisonment which may extend up to five years. Fine: up to on first conviction which may extend to one lakh rupees.
Power of Controller to give directions	Penalties: Punishment: imprisonment up to a term not exceeding three years Fine: not exceeding two lakh rupees
Directions of Controller to a subscriber to extend facilities to decrypt information	Penalties: Punishment: imprisonment for a term which may extend to seven years. The offence is cognizable and non- bailable.
Protected system	Penalties: Punishment: the imprisonment which may extend to ten years and fine.
misrepresentation	Penalties: Punishment: imprisonment which may extend to two years Fine: may extend to one lakh rupees or with both.
breach of confidentiality and privacy	Penalties: Punishment: term which may extend to two years. Fine: one lakh rupees or with both
publishing Digital Signature Certificate false in certain particulars	Penalties: Punishment imprisonment of a term of which may extend to two years. Fine: fine may extend to 1 lakh rupees or with both.
Publication for fraudulent purpose	Penalties: Punishment: imprisonment for a term up to two years. Fine: up to one lakh or both
Act to apply for offence or contravention committed outside India	Explanations: This section has broader perspective including cybercrime, committed by cyber criminals, of any nationality, any territoriality
Confiscation	Explanations: The contravention of any provision of this Act, rules, orders, or regulations made under there under liable to be confiscated
Interfere with other punishments.	Explanations: No penalty imposed or confiscation made under this Act
Power to investigate offences.	Explanations: The police officer not below the rank of Deputy Superintendent of police shall investigate the offence.

Statistics of Cyber Crime in India



(This above graph data is based on approximation which taken from many resources and it include cases combine from **IPC** and **IT Act 2000**)



(Misuses user of Cyber world)

Preventive Measures to Handle Cyber Crime

First question now is that why most of cybercrimes are not solve or end in conviction, Although government is investing and handle by giving training to police and other officials, so this are following **reasons**:

- 1) Lack of awareness among population.
- 2) Lack of awareness of IT Act and power of judiciary in officials.
- 3) Frequent transfers of official trained individuals (from government) lead to cases not reaching their logical conclusion.
- 4) Non-conducting regular training programs for officials.
- 5) Lack of standard process for handle, seize and analysis of digital proof or evidence.
- 6) Judicial system of our country is very slow.

So don't wait for cybercrime, just avoid it and it start with from you. These are following preventive measures which can take to **prevent** cybercrimes.

- 1) Don't disclose any of your personal information in public websites or platform.
- 2) Avoid chatting or sending photos to strangers.
- 3) Avoid entering information of credit and debit cards to sites which are not secure.
- 4) Always use latest updated antivirus software
- 5) Take backup of your data(periodically) to avoid any data loss
- 6) Use firewalls which are beneficial with respect to stop unsecure websites.
- 7) Choose strong password and keep change it time to time.
- 8) Don't affect by attractive online offers because sometimes they are malicious.
- 9) If any cybercrime happen with you just tell or inform Cybercrime investigation cell or cyber cell unit of your area/state.
- 10) Use Ant viruses software's.

Conclusion

As we know every great invention always have two side one is good and one is bad, then its upon us which side we choose. The growth of crimes (cyber) in India as well as all over the world is on rise and to stop this we need thing and work from today itself. So to control it or to preempt it India needs a good intermediation and connection between laws and technology and it's with respect to awareness in peoples of India.

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INTELLIGENT VEHICLE PARKING SYSTEM USING ARDUINO

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Abstract

There is a need for an efficient and effective way in parking of vehicles. Most of cities in India operate without any IOT-based system. Though there are advances in technology in the parking sector, but maintaining these technologies requires high financial resources and skilled labour to operate.

Proposed research paper offers a simple yet effective way of solving this problem. The idea is to create an intelligent system by interfacing Infrared sensors and 7-Segment Displays with an Arduino board. Two Infrared Sensors will be installed on entry and exit of the parking lot. When a vehicle enters the parking lot, 'Entry' IR sensor senses the vehicle and decrements count on the 7-Segment Display. While, when a vehicle exits the parking lot, 'Exit' IR sensor senses the vehicle and increments count on the 7-Segment Display. At any given time, number on the display gives the number of free parking slots in the parking lot.

Furthermore, every parking slot will be installed with an IR sensor and a Green Light Bulb. The green light will only be switched off, when that IR sensor detects a vehicle, otherwise it remains on.

Proposed intelligent system saves valuable time of the driver as well as fuel. Facility owner doesn't need to employ many attendants to supervise the facility.

Keywords

Intelligent Systems, Arduino Uno, Infrared Sensors, Data Acquisition through Sensors

Introduction

With the growth of economy, vehicle has become a necessity in our daily life making the vehicle quantity increase dramatically. Vehicle brings convenience to people, yet parking causes serious problems because of poor management at the same time. For drivers and managers, traditional parking management hasn't met their needs in efficiency, security and performance. Parking problems are becoming ubiquitous and ever growing at an alarming rate in every major city. Lot of research and development is being done all over the world to implement better and smarter parking management mechanisms. Difficulty in finding vacant spaces, improper parking, and poor management are some of the parking lot problems. Hence, this causes frustration for every person involved in the process.

Objective:

The basic objective of this system is to:

- 1) To let the driver of a vehicle, know the number of empty parking slots in the parking lot, at the entry of the facility.
- 2) To guide the driver to an empty parking space in the facility.

Concept

Let's say a parking facility has 100 parking slots (most parking lots use rectangular boundaries to highlight a parking slot). Each of these rectangular slots is installed with an **Infrared Sensor** and a **Green light emitting devices**. This green light is switched off when the IR sensor for this space detects a vehicle. Otherwise, it stays on.

Furthermore, one IR sensor is installed at Entry and one at the Exit of the facility. Also, a 7-segment display has to be mounted at the Entry gate of the facility. All of the components are connected to an Arduino Board, which can be installed in the main operator of the facility.

Now, let's imagine a scenario. At the start of a day, there are 100 free parking slots, and hence 100 are displayed on the 7-segment display. When the vehicle enters the facility, the 'Entry' sensor detects the vehicle and decrements the count on the display to 99. Since there are no vehicles in the facility, the driver can park the vehicle anywhere.

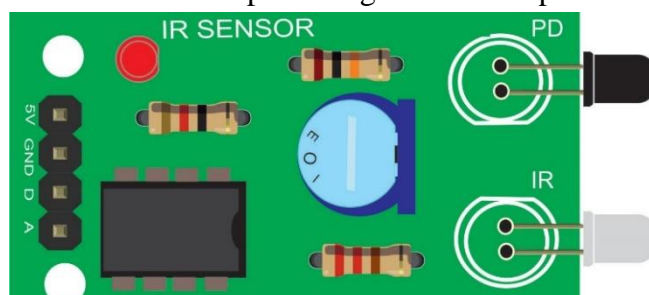
Now let's imagine there are 99 vehicles in the facility and just 1 free spot. When the driver enters the facility, the count on the display decrements to 0. Inside the parking lot, the driver can easily locate the only free parking spot as there is only one green light glowing. Now there are 0 free spots in the parking lot. When a vehicle leaves the facility, the 'Exit' sensor detects the vehicle and increments the count to 1.

Design

To design this system, you will need following electrical components:

1) Infrared Sensor:

An IR sensor is a multipurpose sensor which can be used for proximity as well as colour detection. The sensor provides a digital as well as analog output. An on-board LED is used to indicate the presence of an object. This digital output can be directly connected to an Arduino, Raspberry Pi or any other microcontroller to read the sensor output. An IR LED (transmitter) emits IR light, that light gets reflected by the object, the reflected light is received by an IR receiver (Photo Diode). Amount of reflection and reception varies with the distance. This difference causes to change in input voltage through IR input. This variation in input voltage is used for proximity detection.



2) Arduino Uno:

Arduino Uno is a microcontroller board based on the ATmega328P. It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz quartz crystal, a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a

computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.



3) Breadboard and Wires:

Wires are nothing but single, cylindrical, flexible strands of metal. They are usually used to bear loads of electric or telecommunication signals. While building electric circuits, breadboards are the most fundamental pieces.

4) 7-Segment Display:

A seven-segment display is a form of electronic display device for displaying decimal numerals that is an alternative to the more complex dot matrix displays. Seven-segment displays are widely used in digital clocks, electronic meters, basic calculators, and other electronic devices that display numerical information.

All these components need to be configured and properly connected to the Arduino board. You will need minimum of 2 Arduino boards, one for the counter and entry/exit sensors and the other for handling the numerous parking spots' IR sensor and light.

Following is the circuit diagram for first Arduino board:

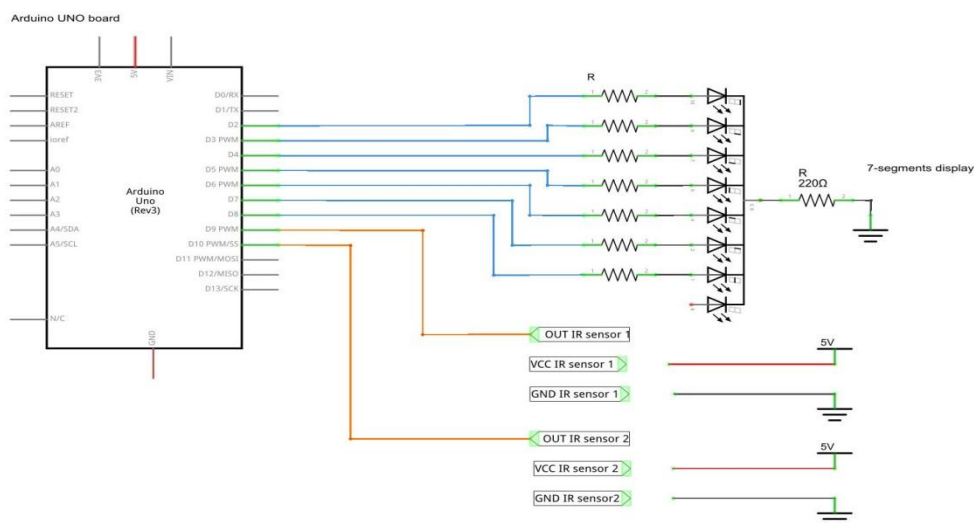


Fig 1: Circuit Diagram for Counter and Entry-Exit IR sensors

Following the circuit diagram for second Arduino board:

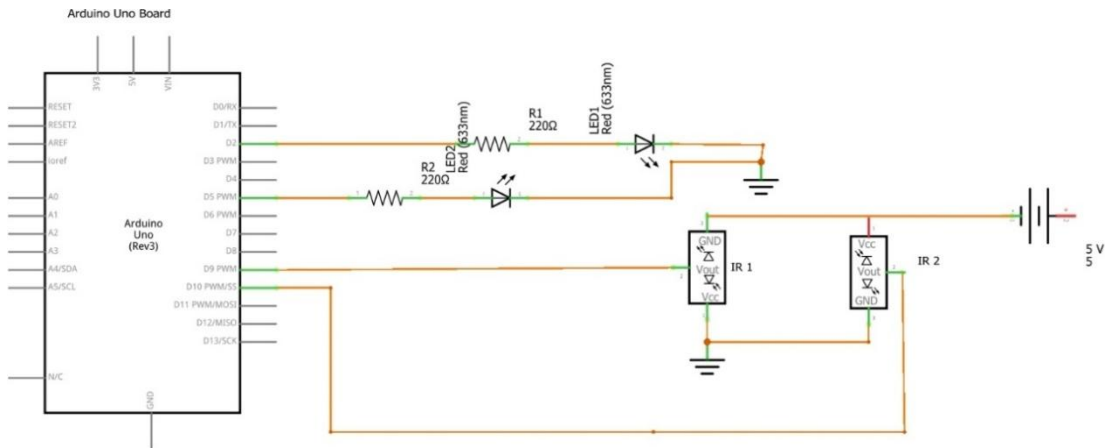


Fig 2: Circuit Diagram for all IR sensors and lights in parking spots

Execution Plan

1) Connections:

Hardwiring the devices on Breadboard which includes the sensor and the Arduino Board, according to circuit diagrams.

2) Software:

Programming the sensor and the Arduino to function the way desired and then assigning values to the outlets of the Arduino and the sensor i.e. V_{cc} , ground.

3) Arduino Connection:

Connecting the Arduino to PC through USB port for data streaming.

4) Execution:

Testing and executing the final system.

Conclusion

Proposed intelligent parking system is beneficial in the following ways:

- 1) Saves times of the vehicle driver, because he/she already know the number of free slots in the facility.
- 2) Reduces time and resources spent (like fuel) to search for a free spot.
- 3) Parking Facility owner doesn't have to employ much parking attendants to watch over, saving financial resources.

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VIRAL CONJUNCTIVITIS PROGRESSION DETECTION USING IMAGING METHOD IN MATLAB

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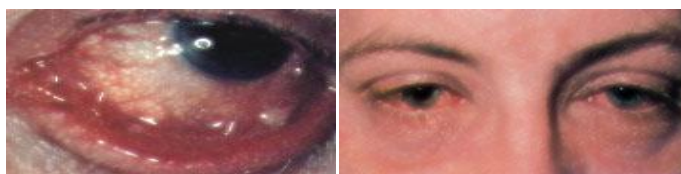
Abstract

Viral conjunctivitis is the most common cause of infectious conjunctivitis, infected eye then affects the other eye within 24-48 hours. Inflammation or infection of the conjunctiva is known as conjunctivitis and is characterized by dilatation of the conjunctival vessels, resulting in hyperemia and edema of the conjunctiva, typically with associated discharge. which can be so severe that it is difficult to open the eyes. This condition can result in permanent damage to vision, and anyone with this sensation should seek. So to observe disease growth in redness and infection we are using the automated image processing system. In this system algorithm optimized the detection of the vessels and applied a skeletonization transform to allow measurement of vessel diameter and number of branch points. [1]

Keywords: conjunctivitis, Viral, keratitis,

Introduction

The conjunctiva is a thin, translucent, relatively elastic tissue layer with both bulbar and palpebral portions. The bulbar portion of the conjunctiva lines the outer aspect of the globe, while the palpebral portion covers the inside of the eyelids. Underneath the conjunctiva lie the episclera, the sclera and the unweil tissue layers. Hyperemia is viral infection in Conjunctivitis.



Ocular redness in the nasal and temporal conjunctiva were assessed separately in both eyes

- 1) Hyperemia was graded at the following magnifications:
 - Live in the clinic, at 3x
 - In 10x images, by 3 separate graders per image
 - In 25x images, by 1 expert grader
- 2) Hyperemia at 10x and 3x was graded by using a scale with descriptive anchors and photographic anchors (shown below), similar to a validated scale

Hyperemia at 25x was graded on the same scale, but by using the following parameters:
Vessel surface area & Average vessel diameter

Reduction of white surface areas due to emergence of episcleral vasculature and dilation of conjunctival vessels Injection close to the limbus

Grade	Image Anchor	Description
0		None / Normal
0.5		
1		Mild
1.5		
2		Moderate
2.5		
3		Severe
3.5		
4		Extremely Severe

Methods: The Normalized Difference Vegetation

Subtract the value of the red band from the value of the NIR band and divide by their sum.

$$ndvi = (NIR - red) ./ (NIR + red);$$

Apply decorrelation stretch to multichannel decorrstretch applies a decorrelation stretch to a multichannel image and returns the result



- 1) Enhancing imagery with a contrast stretch
- 2) Enhancing imagery with a decorrelation stretch

Notice how the array-arithmetic operators in MATLAB make it possible to compute an entire NDVI image in one simple command. Recall that variables red and NIR have class single. This choice uses less storage than class double but unlike an integer class also allows the resulting ratio to assume a smooth gradation of values. Variable ndvi is a 2-D array of class single with a theoretical maximum range of [-1 1]. You can specify these theoretical limits when displaying ndvi as a grayscale image.

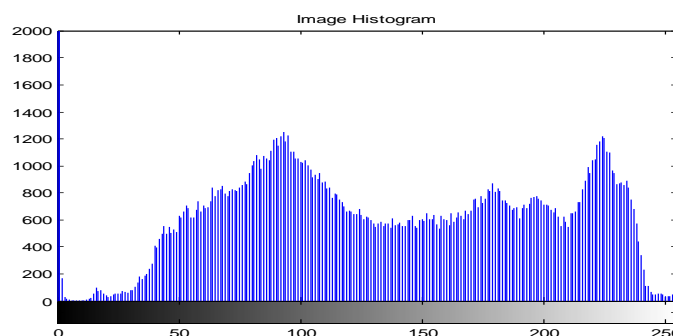
RGB VALUES OF IMAGE



THE PIXEL REGION TOOL PANEL



Results: Automatic Image Processing



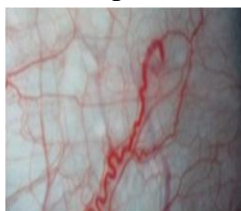
Results: displays Image Histogram

Vessel Detection and segmentation

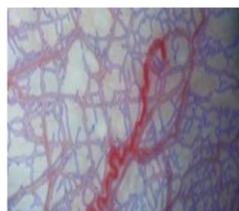
An automatic image processor that detects vessels and computes a set of 50 shape and densitometry measurements, including:

- 1) Vessel surface area,
- 2) Maximum vessel diameter
- 3) Average vessel diameter

An image reviewing interface that allows users to easily compare manual and automatic measurements. The automated image processing algorithm optimized the detection of the vessels and applied a skeletonization transform to allow measurement of vessel diameter and number of branch points.



Grade 3, 25x



Skeletonized Vessels

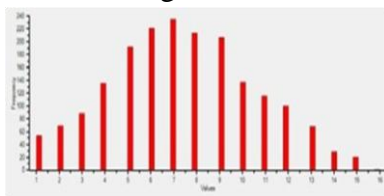
Automatic analysis detected “triple points” (intersections) to quantify vessel ramification (arborization):



Segment & resultant calculated parameters

Calculations were returned for each vessel segment:

Automatic measurements yielded a variety of factors that were not evident to clinical observers, including: vessel area, vessel diameter, total vessel length, vessel density (vessel area/total area), and other shape factors. Measurements could be plotted as histograms, as shown below for vessel segment.



Maximum Vessel Segment Radius, Pixels

Image transformation, vessel detection, and parameter calculation required only a few seconds per image.

Conclusions

Thus to calculate the redness of eye the number of red pixels are count. Thus suppose for the segmentation of image is best method in image processing using which the

number of pixels can be easily count. The first goal of this study was to find the intensity or the to count number red pixels of infected Of red/pink eye. These tools for the grading of Viral conjunctivitis are fast, reliable, accurate, not prone to human bias, and return information about RGB Intensity of Eye & vessels that was not available with other automated methods.

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THE NETWORK RANGE (SIGNALS) IN MOBILES

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Abstract

Nowadays, mobile phone is the most used device on this earth, almost by each and every person. The mobile phone has certain signal which is also known as service or reception. The cellular network transmits the signal strength to a mobile phone. The signal strength will vary depending on various factors like proximity to a tower, any obstructions such as buildings, trees, etc. A set of bars of ascending heights are used by most of the mobile devices to indicate the approximate strength of the received signal to the mobile phone user. Mostly, five bars are used.

Generally, a strong mobile signal can be obtained most likely & most probably in an urban area. Also these areas may have certain 'dead zones' where we cannot obtain any reception or service. These signals are designed in such a way that they can be resistant to multipath reception. This reception is mostly caused by large buildings like high-rise towers by blocking the path of the direct signal. In contrast, many rural as well as very sparsely inhabited areas have a very weak fringe reception or no signal at all.

This paper covers aspect of network technology or way used in mobiles by network operators.

Keywords: Reception, signal, Cellular network, Dead zones, Multipath reception, Reception towers.

Introduction

The amount network traffic can cause calls to be rejected or blocked due to certain disasters or mass calling effects, overloading the radio channels available in an area. Dead zones are areas where there is no availability of mobile phone reception or service because the range signal between mobile phone towers and handsets is reduced or blocked usually by physical distance or other reasons.

Mobile phone devices work better when the internal antenna of the Wifi router is aligned with the aerials of the router. 10,000 feet is the maximum distance where the phone can still make calls and send text messages. The mobile signals carry voice, text & digital data that are transmitted via radio waves from one device to another.

Most of the people believe that the five bars on the mobile phone represent the signal strength, they do indicate signal strength but it is up to the manufacturer of the mobile phone to come up with whatever algorithm they want. They do this so that the customers know the information, but the details depend on the manufacturer.



The structure of the mobile phone cellular network consists of

- The base station subsystem formed by the radio based stations of a network.
- The voice calls and text handled by the core circuit switched network.
- The mobile data handled by a packet switched network.
- The subscribers are connected to the wider telephony network by the public switched telephone network.

Different digital cellular technologies are as follows:

- UMTS (Telecommunications Systems)
- IDEN(Integrated Digital Enhanced Network)
- GSM (Global System For Mobile Communication)
- DECT (Digital Enhanced Cordless Telecommunications)
- EDGE (Enhanced Data Rates For GSM Evolution)
- GPRS (General Packet Radio Service)
- EvDO (Evolution-Data Optimized)

The transmission medium which is effectively used by the Radio Channels through the use of following multiplexes and access schemes:

- 1) Frequency Division Multiple Access (FDMA)
- 2) Time Division Multiple Access (TDMA)
- 3) Code Division Multiple Access (CDMA)
- 4) Space Division Multiple Access (SDMA)
- 5) Orthogonal Frequency-Division Multiple Access (OFDMA)

(These were also developed to distinguish signals from several different transmitters.)



When it comes to coverage, higher frequencies are a disadvantage; but when it comes to capacity, it is a decided advantage. Due to the non-stop advancement of cell phone technology, it does not seem to provide a cure for signal dead zones and bad reception. The mobile phone is a two-way wireless communication device which requires both the inbound signal (reception) and the outbound signal (transmission) to work.

A poor reception/signal or fewer bars points out a long distance or much signal interference between the mobile phone and the mobile phone tower. A mobile phone will have to vary its strength of the transmitted signal and also use only the minimum required signal to communicate with nearest mobile tower, in order to conserve the battery life.

When the mobile phone has less range or connectivity, it tries to connect to the tower by transmitting a stronger signal and as a result the battery drains out fast. So good range or connectivity not only saves battery but also reduces dropped calls.

The signal strength feature in the mobile phones gives an exact idea by putting across the signal strength information in numbers. The numbers are said to vary from the range -40 to -130, where -40 is considered as the best signal whereas -130 as no signal.

Note: the above numbers deal with mobile phone reception and do not reflect 3G/4G strength.

Nowadays, mobile phones make use of electromagnetic radiation of microwave range that is from 450 - 3800 MHz. According to the World Health Organisation, the electromagnetic radiations produced by mobile phones are said to be 'carcinogenic', even though most of the studies have not found any such association. The effects of radiofrequency electromagnetic radiation that is the RF-EMR released by the mobile phones on human beings is currently under active debate.

Conclusion

The use of phone is never stop but its affect or health issue remain the trend topic, and every effect of technology is directly affect us, So try to avoid continuous usage of mobile or if it use ,it should be in correct way.

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ANALYTICAL STUDY ON WIRELESS SENSOR NETWORKS

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Abstract

In recent digital communication era, sharing of information is increases meaningfully. The information being transmitted is fenceless to various attacks .so the information securities challenging aspects of communication in any modern network. Wireless sensor network (WSN) have set of algorithms as well as protocols with self-establishing capabilities. To solve the complexity of development and deployment of WSN application middle ware design like Complex Event Processing System for WSN is created. As the WSN's nodes not only smaller but also cheaper, the scales of WSN application expanding enormously. By such middleware design real time performance of system can increase. Due to this, energy saving and performance gaining are roughly evaluated. Various attacks are performed in this network passive and active attacks or insider and outsider attacks. The wirelessly network always required security in the form of data integrity, confidentiality and authenticity.

Keywords: Algorithm, Confidentiality, Authenticity.

Introduction

A Wireless Sensor Network is one kind of wireless network includes a large number of circulating, self-directed, minute, low powered devices named sensor nodes called notes. These networks certainly cover a huge number of spatially distributed, little, battery-operated, embedded devices that are networked to caringly collect, process, and transfer data to the operators, and it has controlled the capabilities of computing & processing. Nodes are the tiny computers, which work jointly to form the networks.



Wireless Sensor Network

The sensor node is a multi-functional, energy efficient wireless device. The applications of motes in industrial are widespread. A collection of sensor nodes collects the data from the surroundings to achieve specific application objectives. The communication between motes can be done with each other using transceivers. In a wireless sensor network, the number of motes can be in the order of hundreds/ even thousands. In contrast with sensor n/ws, Ad Hoc networks will have fewer nodes without any structure.

Complex Event Processing System for Wsn

A) System Architecture

In most of the WSN application the system architecture is same. The system consist of two parts-

1. Sensor Networks - Sink node, normal node.
2. Server Part - Users, processing server, database.

Here normal node and server are essential. When the system is in operation the two major processes are perform that are query process and history results uploading processes. Firstly the query process is triggered and then transfer into server query and node query. The event processing module compute the server query. By network protocol the node query is transferred to node and processed by history data record. When the memory for history data is about to fulfilled the uploading process is started by the node.

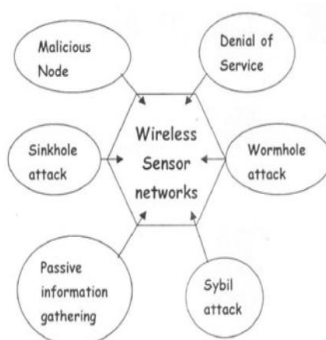


Figure 2: Security attacks on wireless sensor networks

B) History Data Uploading

Nodes should upload their data to the server through the wireless sensor networks due to limited nodes local memory. The energy consumption of the network communication is much more than the computation. In the network the number of packages is very important thing. It reduces both the communication data as well as package number, so it saves system's energy.

C) System Evaluation

- 7 Bytes - Packet additional information
- 0-29 Bytes - Real data
- 1 Byte - Each sensor reading
- 1 Node = 1-4 sensor

Characteristics of Wireless Sensor Network:

- The consumption of Power limits for nodes with batteries
- Capacity to handle with node failures
- Some mobility of nodes and Heterogeneity of nodes
- Scalability to large scale of distribution
- Capability to ensure strict environmental conditions
- Simple to use
- Cross-layer design

Advantages of Wireless Sensor Networks

The advantages of WSN include the following

- Network arrangements can be carried out without immovable infrastructure.
- Apt for the non-reachable places like mountains, over the sea, rural areas and deep forests.
- Flexible if there is a casual situation when an additional workstation is required.
- Execution pricing is inexpensive.
- It avoids plenty of wiring.
- It might provide accommodations for the new devices at any time.
- It can be opened by using a centralized monitoring.

Security Issues

- 1) As the sensor nodes are battery powered, the challenging optimization problem is increasing the autonomous lifetime.
- 2) Data compression is use to reduce the no of bits sent, that reduce energy for communication.
- 3) Trending computation for communication can save energy that typically on the order of 3000 instruction can be executed for energy cost required to communicate 1 Bit over distance 100 m by radio.
- 4) Key type attacks – Denial of service attacks, traffic analysis, privacy violation, physical attacks, node take overs, attacks on routing protocols, etc.
- 5) To protect the data from threats security properties like integrity, authenticity or confidentiality can be guaranteed.
- 6) Diffie-Hellman and public key based schemes that used in general networks, are not suitable for WSN.
- 7) When the network size is large, amount of memory used is also large so that the secret keys for all pairs of nades are not viable.
- 8) Due to problems like limited resources (memory, power), unreliable communication, unattended operation, etc. Variety of key generation methods have been developed they cannot be applied to sensor network environment.

Conclusion

Though may it have some security issue but WSN have many benefits which bring efficiency n productivity in work, WSN possible today due to technological

advancement in various domains and envisioned to become an essential part of our lives but with that Design Constraints need to be satisfied for realization of sensor networks and tremendous research efforts being made in different layers of WSNs protocol stack

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ANALYTICAL STUDY: GLOBAL POSITIONING SYSTEM (IMAGE MAPPING)

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Abstract

GPS or GLOBAL POSITIONING SYSTEM is a network of orbiting satellites that send precise details of their position in space back to earth. The signals are obtained by GPS receivers, such as navigation devices and are used to calculate the position, time and speed at the vehicles location. GPS is well-known for its military uses and was first invented by US to aid in its global intelligence efforts at the height of the cold war. Ever since the early 1980s, however, the GPS has been freely available to anyone with a GPS receiver.

Keywords: GPS, internet, satellite, signal, navigation

Introduction

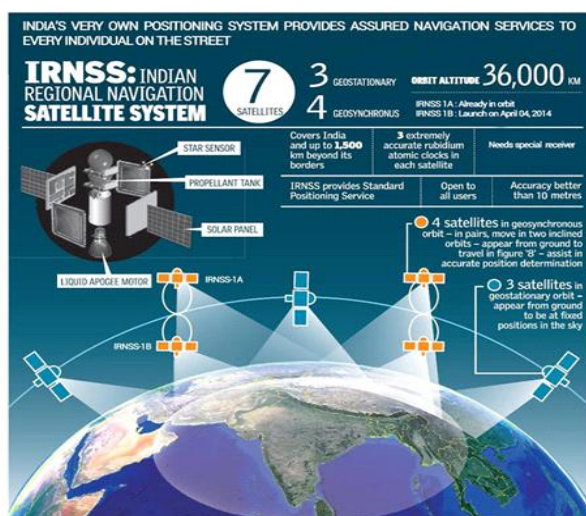
GPS (Global Positioning System) is a network of satellites that orbits the earth at fixed points and beam signals to anyone with a GPS receiver. These signals carry a time code and geographical data points that allows the user to pinpoint their exact position, speed and time anywhere on the planet. GPS relies between 24 and 32 satellites that sit in a "Constellation" orbiting the planet at a medium earth orbit of at least 20000KM, which is less than the 35,000 KM, that TV, Communications & Internet satellites and Weather satellites orbit at. A typical GPS receiver has an antenna tuned to the frequencies transmitted by the satellites that picks up the signal and feeds it to the receiver-processor, which then displays location and time very accurately.

As per my view, Indian GPS system can be more précised like US GPS system, the American GPS system is very strong and has ability to detect signal at a distance of just 10 cm whereas Indian GPS system detect it by a distance of 1m,so sometimes we can find our GPS hangs will taking a U-turn .

Also there should be updating of GPS regularly .If a person built a building he should upload his full proved address in GPS so that there won't be any problem for anyone to find the particular address.



The Proud thing to talk about is, India 's own navigational system ,the set-up for which was completed with the launch of the seventh and final Satellite, will be called NAVIC(Navigation With Indian Constellation),Prime minister Narendra Modi announced after the launch .The seventh and final satellite of the Indian Regional Navigation Satellite System, the IRNSS 1G,was launched into a sub geosynchronous transfer orbit with a perigree (nearest point to earth) of 284 km and a apogee(farthest point to earth) of 20,657km.The satellite was launched on the board the polar satellite launch vehicle (PSLV), which took off from the Sriharikota launch pad at 12.50 p.m. With this launch, the IRNSS constellation of seven satellites is now complete. This will allow the Indian Space Research .Organization (ISRO) to focus on the process of designing front and chips which will receive the navigational signals sent out by the satellites .Explaining the name Navic , Mr. Modi said the system was dedicated to India's mariners and fishermen who have been navigating using the sun and stars as waypoints for hundreds of years ."They have shown strength and determination in venturing out of sea for so many years. We have named this system for them, the 'naviks' (mariners),"he said.



How does GPS System Work?

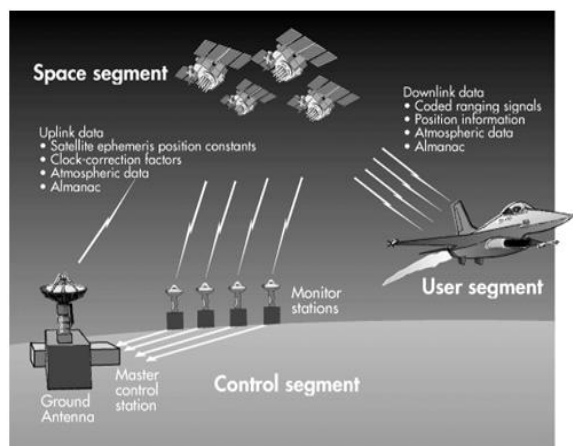
The GPS system consists of three segments:

- 1) The space segment: the GPS satellites
- 2) The control system, operated by the U.S. military,
- 3) The user segment, which includes both military and civilian users and their GPS equipment.

Space Segment

The space segment is the number of satellites in the constellation. It comprises of 29 satellites circling the earth every 12 hours at 12,000 miles in altitude. The function of the space segment is utilized to route/navigation signals and to store and retransmit the route/navigation message sent by the control segment. These transmissions are controlled by highly stable atomic clocks on the satellites. The GPS Space Segment is formed by a satellite constellation with enough satellites to ensure that the users will

have, at least, 4 simultaneous satellites in view from any point at the Earth surface at any time.



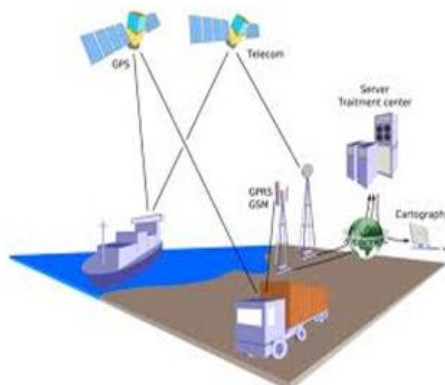
Control Segment:

The control segment comprises of a master control station and five monitor stations outfitted with atomic clocks that are spread around the globe. The five monitor stations monitor the GPS satellite signals and then send that qualified information to the master control station where abnormalities are revised and sent back to the GPS satellites through ground antennas. Control segment also referred as monitor station.



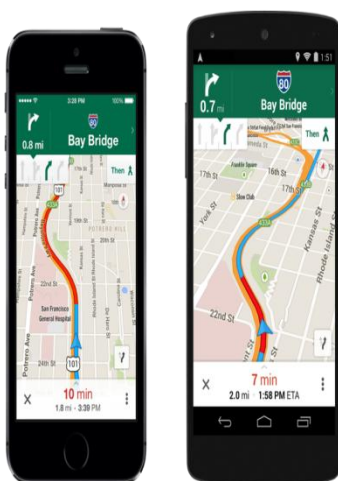
User Segment:

The user segment comprises of the GPS receiver, which receives the signals from the GPS satellites and determine how far away it is from each satellite. Mainly this segment is used for the U.S military, missile guidance systems, civilian applications for GPS in almost every field. Most of the civilian uses this from survey to transportation to natural resources and from there to agriculture purpose and mapping too.



How to Use Gps:

- 1) Tap the ‘ Google play’ app icon on your android device’s home screen to open the android market.
- 2) Tap “search” icon in the top right corner
- 3) Use the search bar to search for “Google maps”.
- 4) Tap the Google map icon and click install.
- 5) Launch the Google maps app by tapping the icon on your device’s home screen
- 6) Tap the GPS icon from the launcher to use GPS to locate yourself on a map.(it is located in the bottom right corner)
- 7) Tap the route icon from the launcher to enter a destination and get step by step directions.
 - 8) Tap the search icon from the launcher to search for a location using text.

**Conclusion**

Because of GPS, it became so easy to find any place on the world, also GPS helps us to find the shortest route will travelling towards the destination.

If GPS traces a route n finds traffic, it suggests another route to reach the desired destination.

Also if we want to save the route we can do so with the help of the option save my route and use it later when we need We can also find the route in our own language(mother tongue),this made easy to the less educated people to find the route in their own language

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IMPACT OF ICT IN EDUCATION AND SOCIETY

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Abstract

The major role of Information and communication technology, Enhancement of ICT on education and community or beyond has huge sentimental as it is need of every individual in the universe, specifically in the community and the area of education. Fascinating stable and ease access of communication within learners and teachers. ICT has in still sense of communication and relationship between two people from different society or different destination, it has lengthen the leisure time and more work and be accomplish in less time as people become more productive also home shopping through the ICT etc. On the society or community, the meaningful of ICT define certain roles in a company in establishment of new jobs which are form but it is uncertain whether ICT has positive impact creating /reduction of opportunity in future.

Some of the impact of ICT in companies advancement in technology have had a great impact on the side of entertaining industry in the process of downloading and streaming affects contribution of chain in delivery of product to a consumer as demand of physical media is reduced, hence fewer raw materials are required there for such impacts results to fewer employees and most people lose their job.

Keywords: Information and Communication Technology, Society/Environment and Education

Introduction

The use of ICT in education and training has been essential key priority in most of the countries in the world but progress has been varying in quality in some countries schools have embedded ICT into the curriculum in other to enhance high standard level of adequate and befitting ICT use to support teaching and learning in vast effective range of subjects areas. ICT has developed the relationship between different people from different set destination with different norms and culture which transform unification and support in all aspect of life.



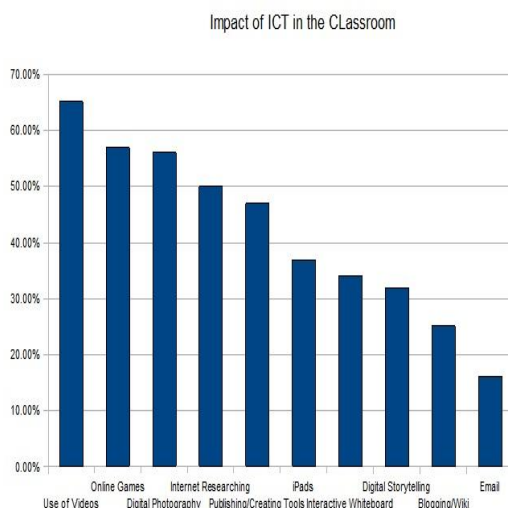
ICT facilitates learning for children with different styles and abilities, including the slow learners, the physically disabled learners such as the handicapped children, children that are talented and children with special problems. Making learning more effective involving multimedia contexts and more sense to those that live in remote areas, providing broader international context for solving problems.

It enables teachers save time and increase productivity, making it easy for teachers to make and update daily lesson plans. Enabling teachers to prepare question banks for examinations. ICT enables teachers to prepare individualised educational plans for slow learners, students with disabilities and those with special problems. Also enables teachers prepare grade books and do regular inspection and corrections of students' work on their computer.

ICT ensures easy access and communication with people living in different place. This improved technology enables proper and efficient infrastructure, including roads railways and more improved ships for easy movement. As ICT improves infrastructure becomes available and communication becomes easier. People no more need to write letters and wait for days to reach the receiver, we can send and receive letter within minutes through the email and other possible ways. Learners don't need to go to libraries to get books just to make research on a topic. ICT makes it a lot easier, you can do tour researches through the Internet which is way easier and time saving as well. The improvement in ICT increases the productivity of learners.

ICT enables the government to have a more appropriate census; it helps the government know the areas which need improvement. With an appropriate census the government can tell the size of the population, this will help the government to do their budget. Government can also easily tell on which areas they really need to improve on and what specific amount needed. ICT has helped improve students national test results in examinations at large. It helps students have more understanding on various subjects and topics in particular. This shows how ICT has helped learners improve on their results. Simultaneously ICT has helped teachers and learners complete syllabuses in time. This enables them to go over the topics for revision, and learners in turn do well because they have better understanding of their syllabus at school.





Recommendations

1) Plans for transformation and for ICT

Advocate the transformation process and management of motive of change, which will act as enabler to amplify the ratio of ICT in the community and the world .we can supplement by the process of management by connecting into realities.

2) Research and development

In such a complex area as education, qualitative methods are necessary to investigate impacts. There is need to go beyond pure observation and evaluate more concretely school context.

Conclusion

As ICT is one fundamental key to any developing and development country with its environment has affiliated with education and employment and such key areas can improve through the good govern of ICT. However, schools in some developing countries are in the early phase of ICT adoption which has been characterized by positive enhancement of ICT learning process, certain process has been invested in ICT in schools and in the community. Denmark has invested in their national ICT project for primary and secondary education schools) a sum of 43m pounds for the period of 4 year. Broadly, some form of ICT integration into education in terms of infrastructure and means of entry, such as the availability of computer connectivity and band width also. In a nutshell connection of human chain link, society/environment chain link and educational chain link.

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ANALYTICAL STUDY: DRIVERLESS CAR – TECHNOLOGY

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Abstract

Today everyone want everything simple and sorted that means they needed fast result with not so much hard work, then it may be in any field. Automobile is one of that field who boost very fast and trend everywhere. Driverless car is a vehicle that is capable of sensing its environment and navigating without human input. Such cars must have control systems that are capable of analysing sensory data to distinguish between different cars on the road. The potential benefits of autonomous cars include reduced mobility and infrastructure costs, increased safety, increased mobility, increased customer satisfaction and reduced crime. In this paper I present analytical study and impact of such cars in society.

Keywords: Autonomous, Collision, Liability, Sensors.

Introduction

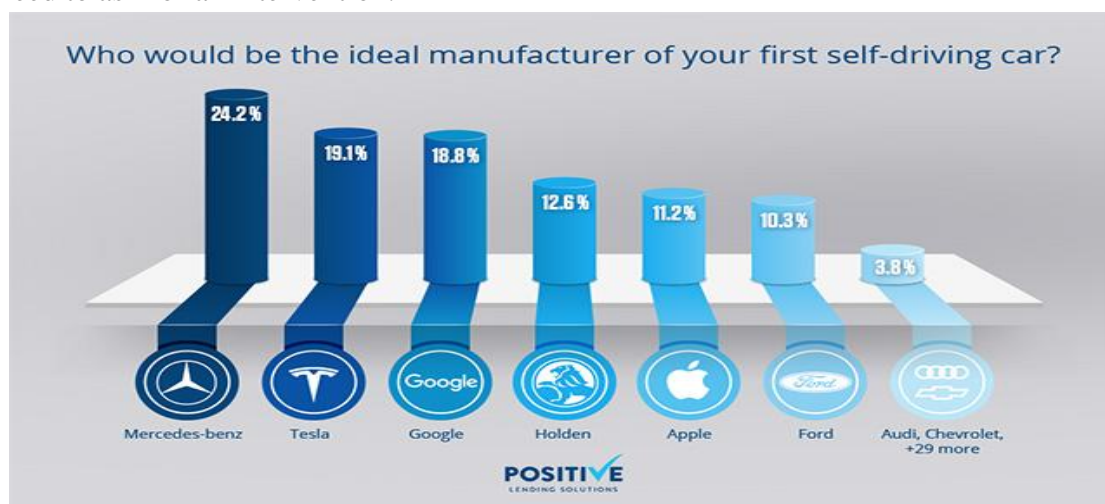
From past 1950s Experiments have been conducted on automating driving. The first truly autonomous prototype cars appeared in the 1980s, with Carnegie Mellon University's Navlab and ALV projects in 1984 and Mercedes-Benz and Bundeswehr University Munich's EUREKA Prometheus Project in 1987. Since then, numerous companies and research organizations have developed prototypes In 2015, the US states of Nevada, Florida, California, Virginia, and Michigan, together with Washington, D.C. allowed the testing of autonomous cars on public roads.

In 2017 Audi stated that its latest A8 would be autonomous at up to speeds of 60 km/h using its "Audi AI". The driver would not have to do safety checks such as frequently gripping the steering wheel. The Audi A8 was claimed to be the first production car to reach level 3 autonomous driving and Audi would be the first manufacturer to use laser scanners in addition to cameras and ultrasonic sensors for their system.

Levels of driving automation

- Level 0: Automated system issues warnings and may momentarily intervene but has no sustained vehicle control.
- Level 1 ("hands on"): Driver and automated system shares control over the vehicle. An example would be Adaptive Cruise Control (ACC) where the driver controls steering and the automated system controls speed. Using Parking Assistance, steering is automated while speed is manual. The driver must be ready to retake full control at any time. Lane Keeping Assistance (LKA) Type II is a further example of level 1 self driving.

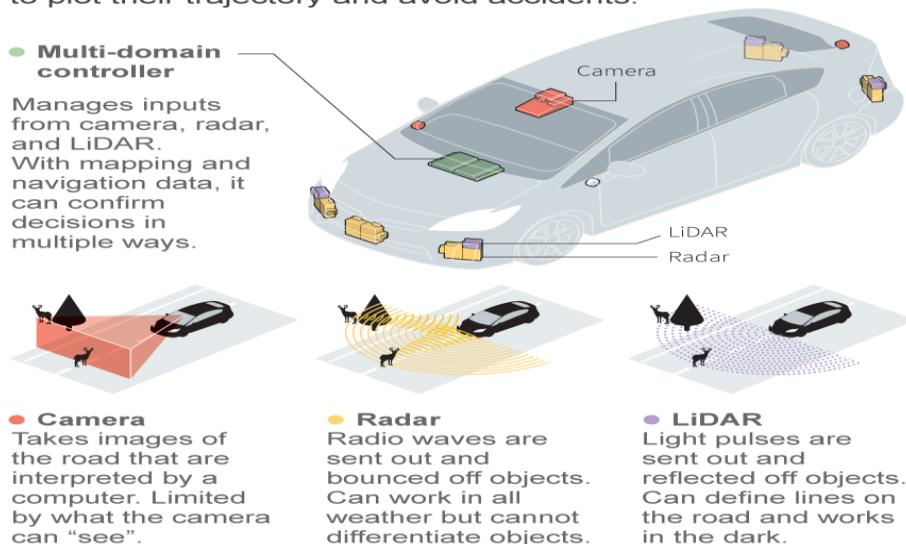
- Level 2 (“hands off”): The automated system takes full control of the vehicle (accelerating, braking, and steering). The driver must monitor the driving and be prepared to immediately intervene at any time if the automated system fails to respond properly. The shorthand ‘hands off’ is not meant to be taken literally. In fact, contact between hand and wheel is often mandatory during SAE 2 driving, to confirm that the driver is ready to intervene.
- Level 3 (“eyes off”): The driver can safely turn their attention away from the driving tasks, e.g. the driver can text or watch a movie. The vehicle will handle situations that call for an immediate response, like emergency braking. The driver must still be prepared to intervene within some limited time, specified by the manufacturer, when called upon by the vehicle to do so. In 2017 the Audi A8 Luxury Sedan was the first commercial car to claim to be able to do level 3 self-driving. The car has a so called Traffic Jam Pilot. When activated by the human driver the car takes full control of all aspects of driving in slow-moving traffic at up to 60 kilometers per hour. The function only works on highways with a physical barrier separating oncoming traffic.
- Level 4 (“mind off”): As level 3, but no driver attention is ever required for safety, i.e. the driver may safely go to sleep or leave the driver's seat. Self-driving is supported only in limited areas or under special circumstances, like traffic jams. Outside of these areas or circumstances, the vehicle must be able to safely abort the trip, i.e. park the car, if the driver does not retake control.
- Level 5 (“steering wheel optional”): No human intervention is required. An example would be a robotic taxi.
- In the formal SAE definition below, note in particular what happens in the shift from SAE 2 to from SAE 3: the human driver no longer has to monitor the environment. This is the final aspect of the “dynamic driving task” that is now passed over from the human to the automated system. At SAE 3, the human driver still has the responsibility to intervene when asked to do this by the automated system. At SAE 4 the human driver is relieved of that responsibility and at SAE 5 the automated system will never need to ask for an intervention.



How it works

How self-driving cars see the road

Autonomous vehicles rely on a host of sensors to plot their trajectory and avoid accidents.



Source: Delphi

Advantages

Safety

Traffic problems, caused by human errors, such as delayed reaction time, tailgating, rubbernecking and other forms of distracted or aggressive driving should be substantially reduced.

Welfare

It reduces labor costs; relieve travelers from driving and navigation chores.

Traffic

It increased roadway capacity; and minimized traffic congestion, due to decreased need for safety



Costs

Safer driving was expected to reduce the costs of insurance on cars.

Related effect

Such cars could reduce the number of cars that are individually owned, replaced by taxi/pooling and other car sharing services.

Disadvantage:

- 1) Expensive in cost
- 2) Machine is machine which may go off during emergency cases
- 3) Battery charging problem
- 4) Liability problems.
- 5) Ethical problems
- 6) Insufficient adaption of gestures.

Conclusion

Here according to my view, I think that there should be implementation of the driverless car and its technology much more, in India. In my opinion the advantages of the autonomous car driving are more and its benefits. Basically, this technique, and idea is having more advantages compared to its drawbacks.

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BLUE BRAIN: IS IT BOOM?

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Abstract

A most precious creation of god is Human Brain. Taking decisions and thinking is only possible because of brain. To preserve the knowledge of the person even after his death Scientist are working on a project named 'BLUE BRAIN'. The main purpose of this project is to keep alive the persons qualities, personalities etc., so that the valuable knowledge could be used in future.

Keywords: Blue Brain, Artificial Intelligence, Human Brain, Nanobotes, Sensory System.

Introduction

It is very difficult to understand the complexity of human brain which is the most complex circuit than any other. But now it is possible to create a human brain. The project named Blue Brain is in under process for uploading human brain on computer which resides in the Super Computer. In 2005, May by Henry Markram at EPFL in Lausanne Switzerland this project was founded.

Historical Information of Blue Brain



The main objective of the project was founded in May 2005 by Brain and Mind Institute in EcolePolytechnique Federal de Lausanne, Switzerland. Basic thought was to analyze the brain's architecture and functioning principles. Henry Markam, headed the project. Blue Gene super computer is used for this project which was developed by IBM and Michael Hines, neuron software runs on this super computer. It totally deals with the biological functioning of neurons and its structure.

What Is Blue Brain?

Blue Brain is the name of the super computer developed by IBM. If possible, it would be the world's first virtual brain. Within years we would be able to scan our

intelligence and knowledge into the computer. By this we can use this knowledge for the development of mankind even after the death of the person. It takes decisions based on the past experiences of the person and applies it to the similar situation occurring in the present. With the help of blue brain we can upload our brain into a computer. Different activities and structure of our central nervous system can also be studied.



Need of Blue Brain

Intelligence is the quality through which all of us are different from each other. It is the inborn quality. There are some people having a very high level of intelligence. Sometimes they think up to such extent that others cannot reach. Examples are Newton etc. But after the death the intelligence is lost. The solution to this is the Virtual Brain. Through this it can be preserved even after death. We all suffer from a problem of remembering history and important days etc. This all can be done by virtual brain.

Goals of Project

- 1) Neurocortical column modelling
- 2) Brain simulation

Functioning of Blue Brain

Firstly, it becomes quite important to understand how the person's brain can be uploaded into a computer. Raymond Kurgweil published a paper on this topic and provided that the use of small robots or nanobots is excellent. They are small enough to travel through our circulatory system. They would be able to monitor the activities of the nervous system. They will provide the interface with computer. By scanning our brain it will provide the clear information of the connections of neurons. They would record the current state of brain. All these information when entered into computer, it will work as us. All what is required is the super computer with large space and processing power.

Steps for Building Blue Brain

There are basically three steps:-

- 1) Collecting Data
- 2) Simulating Data
- 3) Conjure up (Visualizing data)

Collection of Data

Studying individually the electrical behavior of neuron and further the observed data is converted into algorithms for simulation.

Simulation of Data

There are 2 aspects of simulation-

- 1) Speed of simulation
- 2) Simulation Workflow

Advantages

- 1) It can help deaf people to hear with the help of direct nerve stimulation.
- 2) The activity and thinking of different animals can be understood by interpretation of electric impulse from their brain.
- 3) Even after the death of a person his/her intelligence can be used for development of the society.

Disadvantages

- 1) Human will become dependent on machines.
- 2) Super computers use a large amount of power as much as 1MW.
- 3) Hacking of neural scheme can lead to misuse of this technology.
- 4) Risk of technical issues i.e. machine could control over human brain which can lead to disastrous outcome.

Conclusion

It would be possible to have technical brain in future with the combination of biological and digital technologies. Despite all the problems and complexity faced in the implementation of this project, it is predicted that the project will be capable by the year 2023. As said by Henry Markam, "As with Deep Blue, Blue Brain will allow us to challenge the foundations of our understanding of intelligence and generate new theories of consciousness."

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SIXTH SENSE TECHNOLOGY

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Abstract

Sixth sense is a variable gesture interface that brings the part of the physical world to digital world. It is a combination of hardware devices like mirror, camera, and projector wirelessly connected to a smart phone. It is a bridge between the physical and the digital world. It is a concept of making whole world your computer, it could be handled by using simple hand gestures. Along with all these things the technology has many drawbacks or hurdles in bringing it to real world use due to which it just remained as a concept and haven't yet converted to a project. The paper ahead thus discusses all the points due to which the Sixth Sense Technology could not enter or expand in India and even why the technology should come in India.

Introduction

What is Sixth Sense Technology...?

Sixth Sense is a wearable gestural interface that augments the physical world around us with digital information and lets us use natural hand gestures to interact with that information. Every-day we encounter new objects around us hence we become curious about the particular object. This makes us to surf through the internet, arguably mankind today has gathered information and knowledge about whole world online. To access to it we commonly use the miniaturization of computers present in our pockets that keeps us connected to the digital world but still there is no connection between physical and digital world. Here the Sixth Sense Technology can be used instead to get information as soon as we see the object, it gives us the feeling that we are dealing with the real world. It bridges this gap connecting both the worlds together. It brings the digitally portrays information to interact physically in reality, making the whole world your computer.

The Sixth Sense Device can be interacted with by using natural hand gestures; The Device consists of a camera, microphone, projector & a mobile computing device. The camera acts as a digital eye, capturing the moments of the users handmade to interact with the device. The projector converts the physical objects, wall or any other surface to the screen. The mirror revert the projection coming out from projector allowing user to manually change the direction of projection. Microphone is an optional component, when we use paper as an interface a microphone is to be attached to sense the sound signal of user touching the paper, combining with tracking information about users fingers to computing device a touch interface is created. The main component mobile computing device is connected to all the other components wired or wirelessly. The Sixth Sense Software is available open source that runs all the features of this device being connected to 3G network or wireless connections.

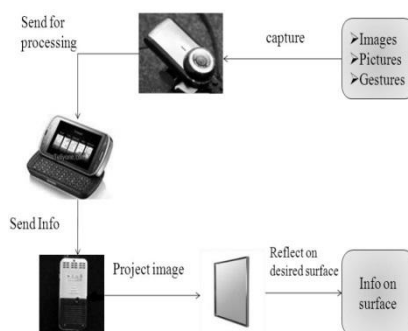


Figure 3.6: Working

Analysis

Why Sixth Sense Technology should come in India?

The Sixth Sense Technology is a concept which is meant to do all the following works. Here Google maps are used to find the places but not by using key words but by keeping the object in front of the device like a boarding pass gives details of the flight a coffee mug shows where you can get more and much more. Among all these experiments the common aim was bringing part of the Physical world to the Digital world and making computing more easily. But as humans are not interested in computing but are interested in information knowing about the things, thus this technology was further made more user friendly shaping it to a pendant as it can be carried anywhere you can use any wall any surface as an interface the camera is actually tracking the gestures of your hand you can start painting anywhere an any wall as there are colour markers attached to the fingers, it is even not restricted to a single finger but you can use all the fingers of your hand to perform actions like Zoom in Zoom out. Rather than taking the camera out of your pocket you can just do the gesture of taking a photo and it takes the photo for you, now you can find any wall and start browsing to the photos and even modify them and can share even. Even if you don't have any surface you can start using your palm for dialing a number and calling, the camera not only understands the hand moments but also recognizes the objects in your hand, a book cover will give you all the reviews of the book, the news- paper will show you live updates of the whether animated on the paper without needing to taking out your phones or computer. Drawing a small circle on your wrist will show you the watch.

It is all about finding an era where computing can merge with the Physical world. It will not only bring Physical world to the Digital world but will also change the also change the way humans interact with each other. The microphone when attached to the paper tracks the sound of your touch on the paper, while camera is tracking where the fingers are actually moving, on the paper, here you can watch a movie, and of course can play a game, browse to the net, coming back to home you can pinch the information from the paper to your desktop getting a larger screen.

Now at last as a thought using this device, we will not only get rid of using several digital devices, or move between these two worlds, but will also help us in some ways to stay humans being more connected to physical world, rather than becoming a machine sitting in front of another machine.



Why Sixth Sense Technology couldn't establish in India?

The Sixth Sense Technology was running on Windows 6.5, so to bring it to the market it has to be ported to run on a modern Operating System. The Sixth Sense Technology was a concept and not an actual product. Battery technology, miniature versions of camera and improvement in wireless data networks are the factors that need to come together in order to bring the concept of Sixth Sense Technology to reality. Pranav Mistry or MIT Labs never actually gave the demo of the device; they just showed its working by using several Videos.

The power consumption of such a device with a projector screen will be very high. Also a camera that is always ON all the time to recognise the finger moments is also power hungry. Thus the battery will run out in couple of hours with the common cell phone type battery.

Sixth Sense Technology claims that you can show a boarding pass or flight ticket and it will tell you the details of your file & even showing a book cover will give you the details of the books, but they even admitted that it is practically impossible to count every book that has ever been written (OCR that works on book covers will have thousands of different fonts or matching features of hundred million book covers). For a moment let us assume that such a powerful OCR system exists which has a very good accuracy of each and every kind of font then also there are no means to analyse the data as there are thousands of types of air tickets, boarding pass and knowing the location of the flight is itself a big task. And even showing the animated weather on the newspaper needs a specific application.

Even there is no trigger to specify that what you are looking at is a book, boarding pass, person or an object. No single algorithm can find this all without a manual trigger specifying what you are looking at.

It is not easy to carry projector on your neck it can be replaced by holograms and or even better substitutes for projection.

Due to all these drawbacks Pranav Mistry made it open source software so that anyone can build their own such prototype and modify it to their own use. In order to make Sixth Sense technology a success, many technical and physical difficulties have to be crossed

If we tackle all these drawbacks we can definitely bring this concept of Sixth Sense Technology to our daily use.

Advantages

- It is a portable Technology.
- Using this Technology doesn't need any special training or deep knowledge about computing.
- It is cheap to build.
- Its software is available open source.
- It can be used by physically disabled people (dumb, deaf and even blind and handicapped people).

Conclusion

The Sixth Sense Technology is a near future technology if all its negative points are removed and converted to positives then it would become the most popular technology ever. It is the real example of how we can greatly communicate with the technology making our life easier. It could become extra sense to the disabled people.

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ANALYTICAL STUDY OF CPU SCHEDULING ALGORITHMS

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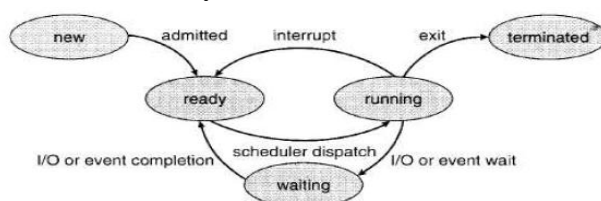
Abstract

It becomes very difficult to analyze the waiting time when there are number of processors. The selection of the processes from the ready queue is done through the various CPU scheduling algorithms. Scheduling algorithms allow one to decide which threads are given to resource from moment to moment. This paper presents a state diagram that depicts the comparative study of various scheduling algorithms for a single CPU and shows which algorithm is best for the particular situation. The best policy is the one that takes less waiting time. Various process scheduling algorithms exist and this paper focuses on the scheduling algorithms used for scheduling processes in a multiprogramming system namely First-Come-First-Served (FCFS), Round Robin (RR), Shortest Job First (SJF) and Priority Algorithm.

Keywords: Scheduler, State Diagrams, CPU Scheduling, Performance

Introduction

A process is simply program on execution. In single processor system one process can run at a time, the other processes have to wait in the ready queue until the CPU becomes free and can be rescheduled. The main objective of multiprogramming system is to load many processes in the main memory where they reside in the ready queues making link lists. CPU Scheduling is the basis of multi-programmed operating system. By switching the CPU among processes, it can have a big effect on resource utilization and the overall performance of the system.



The algorithms concern with CPU schedulers is known as CPU Scheduling algorithms. CPU scheduling decisions may take place when a process:

- Switches from running to waiting state
- Switches from running to ready state
- Switches from waiting to ready
- Terminates

Scheduling under 1 and 4 is non-preemptive. All other scheduling is preemptive.

The main goal of CPU scheduling algorithms is to utilize the resources effectively and efficiently. It can be accomplished by CPU busy as much as possible. And the number of processes in the job queue must be maximized. It is called the throughput. It is the

task of operating system is to provide the fair time of CPU to the each process in the ready queue. By this, each process participates in the execution of the CPU time.

Scheduling criteria:

CPU utilization

It keeps the CPU as busy as possible. It must have maximum value.

Response time

The amount of time it takes from when a request was submitted until the first response is produced, not output (for time-sharing environment). It must have minimum value.

Throughput

The number of processes that complete their execution per time unit. It must have maximum value.

Turnaround time

The amount of time to execute a particular process. It must have minimum value.

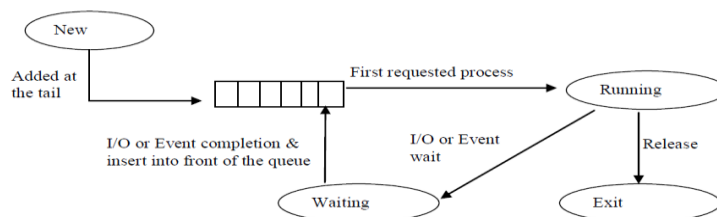
Waiting time

The amount of time a process has been waiting in the ready queue. It must have minimum value.

Process scheduling

FCFS (First Come First Serve):

This algorithm allocates the CPU to the process that requests the CPU first. This algorithm is easily managed with a FIFO queue. New process enters the queue through the tail of the queue and leaves through the head of the queue. A process does not give up CPU until it either terminates or performs s I/O.



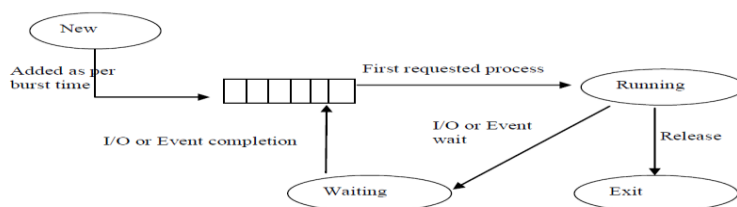
FCFS Scheduling

Characteristics

- The lack of prioritization does permit every process to eventually complete, hence no starvation.
- Turnaround time, waiting time and response time is high.
- One, Process with longest burst time can monopolize CPU, even if other process burst time is too short. Hence throughput is low.

SJF (Shortest Job first):

The SJF algorithm may be implemented as either a preemptive or non-preemptive algorithms. When the execution of a process that is currently running is interrupted in order to give the CPU to a new process with a shorter next CPU burst, it is called a preemptive SJF. SJF will allow the currently running process to finish its CPU burst before a new process is allocated to the CPU.

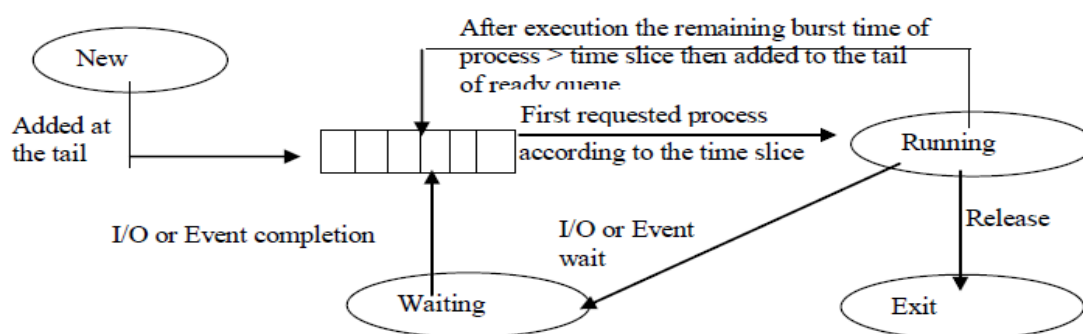


SJF Scheduling

Characteristics

- The real difficulty with the SJF algorithm is, to know the length of the next CPU request.
- SJF minimizes the average waiting time because it services small processes before it services large ones. While it minimizes average wait time, it may penalize processes with high service time requests. If the ready list is saturated, then processes with large service times tend to be left in the ready list while small processes receive service. In extreme case, when the system has little idle time, processes with large service time will never be served. This total starvation of large processes is a serious liability of this algorithm.

RR (Round Robin): It is often used in time sharing system. RR is similar to FCFS except that preemption is added to processes. In this algorithm, a time slice of 3 ms has been taken. After the time slice is expired, executing process will leave the CPU free and allocate the CPU to the next process in the ready queue.

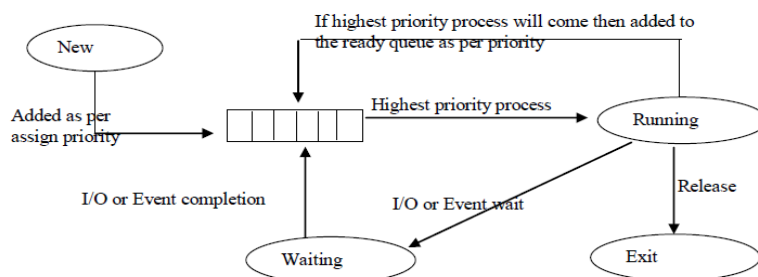


ROUND ROBIN Scheduling

Characteristics

- Setting the quantum too short causes too many context switches and lower the CPU efficiency.
- Setting the quantum too long may cause poor response time and approximates FCFS.
- Because of high waiting times, deadlines are rarely met in a pure RR system.

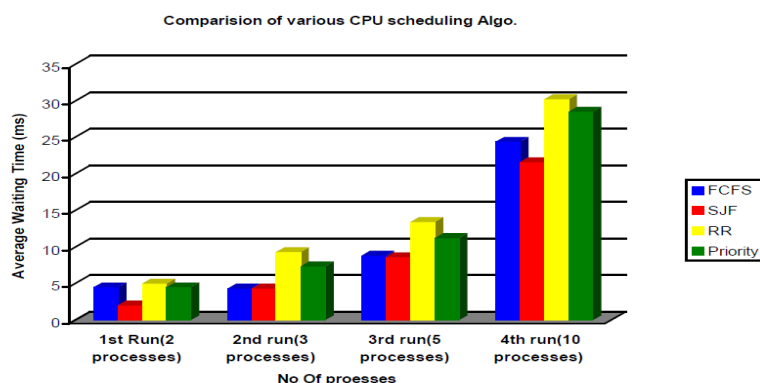
Priority Algorithms: A priority number is associated with each process. The CPU is allocated to the process with the highest priority .the smaller number is generally used for the highest priority. It runs the highest priority algorithms first. The disadvantage of the Priority Based Scheduling is that it may cause the low-priority processes to starve. Aging is the solution to this problem.



PRIORITY Algorithms

Characteristics

- Starvation can happen to the low priority process.
- The waiting time gradually increases for the equal priority processes.
- Higher priority processes have smaller waiting time and response time.



The Figure above gives comparative details of the various basic types of the CPU scheduling algorithms. The X axis is used to represent the number of the processes and the y axis used for the calculating average waiting time of each algorithm in millisecond. Different color are used for identify the differential gorithms. From the various run of simulator for process, it is concluded that SJF has the good criteria for selecting the process from the ready queue by the CPU scheduler.

Conclusions

This Paper has discussed various Process scheduling algorithms like First Come First Serve, Shortest Job First, Round Robin and Priority and after discussing and comparing all above algorithm it has been found that Shortest Job First algorithm is having least waiting time and is best among all other algorithm as shown in above figure

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CLOUD COMPUTING - THE FUTURE OF COMPUTING

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Abstract

Cloud computing can be rapidly provided, used and released with minimal effort on the part of users or service providers by the means of accessing a shared pool of configurable computing resources (including hardware, software, networks, servers, storage applications and services). Technology of cloud computing is allowing us for much more efficient computing (processing and structuring) by concentrating under storage, memory, processing and bandwidth. It is technology where the internet and central remote servers are used to maintain data and applications. In this paper I present Cloud Computing is today's need or not.

Keywords: Computing, Technology, Band-width and Server.

Introduction

Imagine a world where we (computer user) can save their documents in a very safe environment and at the same time make the documents available for the users in any corner of the world. It is just necessary to have a connection to the Internet and then all the information is ready to be consumed. A world where companies can rent a huge processing power for a period of time without spending a lot of money buying infrastructure hardware such as servers, switches, routers, gateways, etc. This world is real, and the name of the technology behind this is cloud computing.

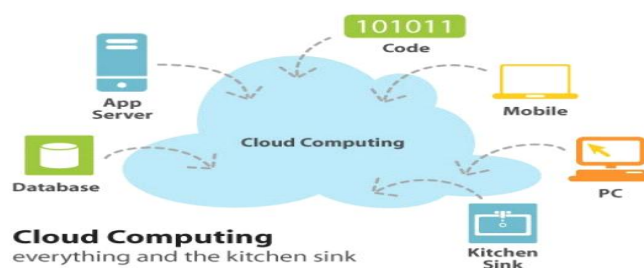


Fig : Depicting the basic of Cloud Computing.

In its simplest form, cloud computing consists of shared computing resources that are virtualized and accessed as a service, through an API. The cloud enables users in an organization to run applications by deploying them to the cloud, a virtual datacenter. The physical resources may stay in a number of locations like inside and outside of an organization i.e., on local hardware, in enterprise data center, or at remote or managed service providers on a pay-to-use basis. Resources of cloud computing are offered as a service on an as-needed basis, and delivered by IP-based connectivity, providing highly scalable, reliable on-demand services with moving quickly and easily management capabilities.

Key Features of the cloud Computing:

Cost is claimed to be greatly reduce able and operational expenditure is converted from capital expenditure. This apparently lowers barriers to entry, as infrastructure is typically provided by a third-party applications and there is no need of purchasing for onetime or rare vigorous computing tasks. Pricing on a utility computing basis fewer IT skills are required for implementation (in-house) and is fine-grained with usage-based options.

Location & Device independence enable users to retrieve systems using a web browser despite the prevailing circumstances of their location or what device they are using (e.g., mobile, pc). As infrastructure is in another location (typically provided by a third-party) and retrieve through the Internet, users can connect from any place of the world.

On demand: It is not necessary to consult someone or have an IT professional involved in provisioning the server or storage on the network.

Multiplatform: Just have an Internet connection to access the service on your laptop, tablet, Smartphone or desktop computer.

Pool Features: Follows the multi-tenant model, which means there are multiple users of the software.

Rapid flexibility: The user has an experience that is scaled based on demand and actual usage. Imagine a hotel that can change the size of the queen size bed to king size in the same "room".

Advantages of Cloud Computing

Cost Savings, Reliability, Manageability, Strategic Edge, Disaster Recovery, High speed, Back-up and restore data.

Disadvantages of Cloud Computing

Downtime, Security issues, Flexibility issues, Low Bandwidth, Vendor Lock-In, Incompatibility, Limited Control.

Conclusion

According to my view Cloud Computing is best technology today's era. And it is Useful to everyone. Cloud computing has the strength to cause force by affecting movement of equipment and use of technology. The cloud could be the next evolution in the history of computing, and completely changing the way contents managing Information Technology. Yes, it would be a severe understatement to say simply that cloud computing has generated interest in the marketplace.

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NEW APPROACH TOWARDS MOBILE SECURITY

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Abstract

In today's world, having a smartphone is a basic necessity. Personal information as well as business information can be stored in smartphones. Hence, mobile device security plays an important role in securing the information stored in smartphones. Mobile device security helps to maintain the privacy of the user. One of the mobile security facilities is LOCK SCREEN. A lock screen is a computer user interface element used by various operating systems to regulate immediate access to a device.

Keywords: Operating system, smartphone, security, pin, network, face recognition, access

Introduction

You probably recognize its smart follow to possess a parole, PIN number, or fingerprint check protective your phone. Otherwise any intruder, relative, or work colleague will merely decide it up and begin tomfoolery together with your banking apps, email account, and maybe even a lot of worryingly, your social media apps.

For previous years, when we talk about LOCK SCREEN, it only used to be about PIN, PASSWORD and PATTERN. But technology has driven the world so far that many more lock screen facilities have been implemented such as FINGER-PRINT, FACE RECOGNITION and IRIS SCANNER. Following are few lock screen facilities in detail

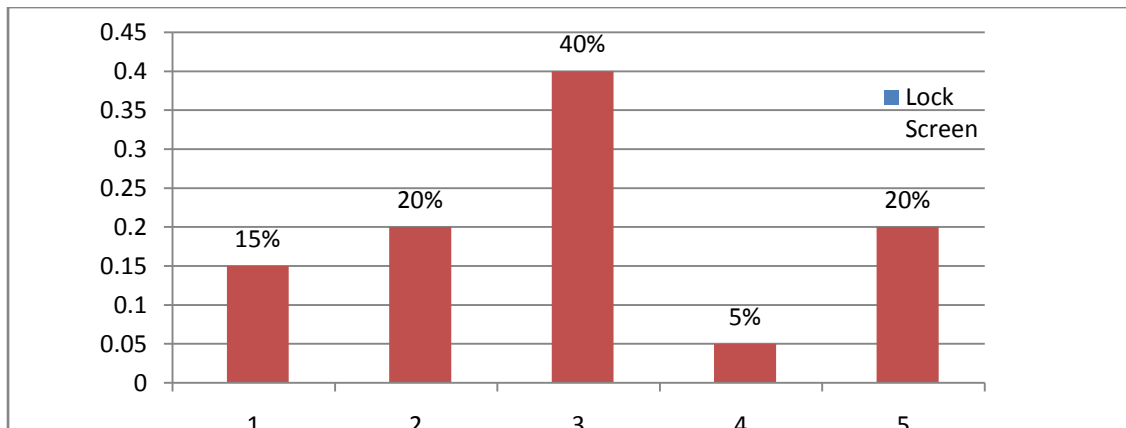
Iris scanner: The mechanism of iris scanner is similar to that of mechanism used by apple's face ID. Iris camera captures the image of your iris which is checked with the previous data stored before to unlock the smartphone.

Face recognition: Face ID uses your face for unlocking your device. Face ID is implemented very correctly in iphoneX and the components are as follows: Dot Projector, Infrared Cam, Flood Illuminator.

Finger Print: The best thanks to avoid the shoulder surfriding drawback is to avoid victimization PINs, passwords and unlock patterns. this may be done simply on associate degree iOS or automaton device with a fingerprint reader, by victimization fingerprint recognition to unlock the device.

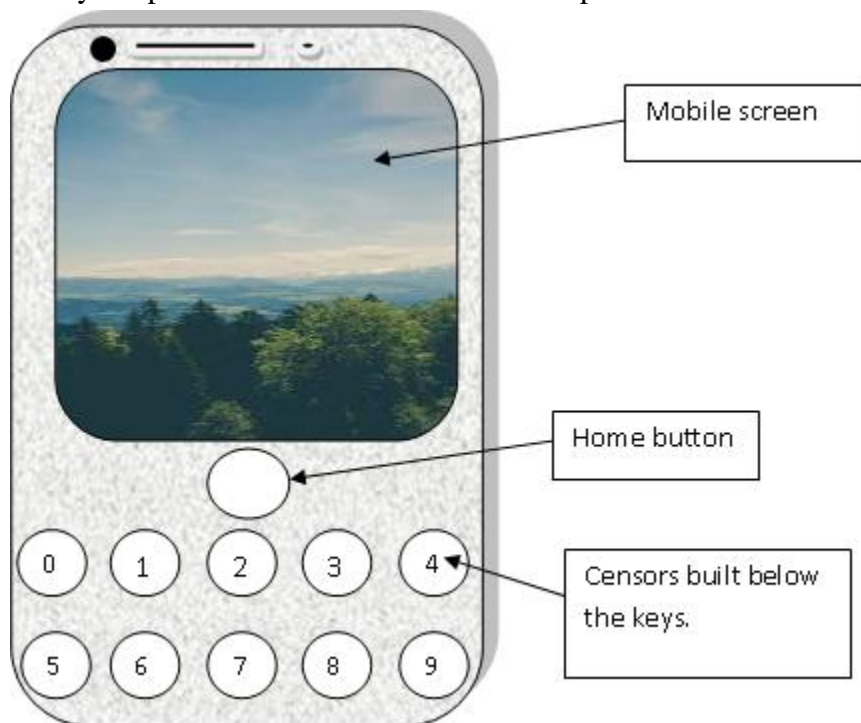
Pin Code: (Personal Identification Number) the PIN acts sort of a word preventing others from gaining unauthorized access to your device. This can be a numeric code that should be entered every time the device is started (unless the PIN security feature is turned off).

Password: Password is that type of lock screen which is similar to Pin lock screen. The only difference between them is that password includes numbers as well as alphabets and other special symbols.



Our Approach:

While studying about mobile security lock screens, we thought of how we can make smartphones much safer. So we thought of designing such a mobile phone which would unlock only when the passcode is entered with the fingerprints scanned in the mobile phone. There would be buttons below the mobile screen which would have sensors beneath it. So whenever the user wish to unlock the phone it'll ask for a passcode and the passcode should be entered with the same finger prints scanned by the phone initially. The sensors would detect the fingerprints and that too the passcode should be correct then only the phone would unlock. The mobile phone would look like this



Advantages:

- 1) Touch screen facility as well as keypad facility.
- 2) Censorized keypad.
- 3) Provides extra security as compared to above mobile security lock screens.
- 4) Secure personal information and business information.
- 5) It increases efficiency and compatibility.

Conclusion

As we know, there are many available mobile security technologies which provide a secure way to access the data in mobile. But each technology can be misused, but it is necessary to provide security to our confidential data. So, time to time new mobile security technology must come to overcome the drawbacks of available mobile security technology and our approach is that step.

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- 5) Modern High Security Locks by Steven Hampton.

A NEW APPROACH FOR SORTING DOUBLY LINKED-LIST BASED ON DIVIDE AND CONQUER METHOD

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Abstract

Linked -list is a sequential representation of nodes used to store data. Sorting of linked-list is an important task. In general, if one wants to sort a linked-list then it is got sorted after its creation traversing from first node. In this paper, a new approach for sorting a doubly linked-list at the time of insertion of new node based on divide and conquer method is proposed. Here, three pointers namely low, mid and high are maintained to sort a doubly linked list during insertion of node.

Keywords : Doubly Linked List, sorting, divide and conquer method.

Introduction

Linked list is a linear data structure and it consists of group of nodes which is divided into two parts. Each node of linked list contains two fields; its data and address of next node. The number of nodes in a list is not fixed or limited; we can insert number of nodes at the run time because it is dynamic data structure. It is divided into following categories,

Singly linked list

In singly linked list, each node in a list stores its data and address of the next node. In this linked list, each node only has a single link to another node that's why it is called as singly linked list.

Doubly linked list

The node structure of doubly linked list is quite different from other linked list types, as it contain three fields; previous address (which store the address of the previous node), its data and next address (which store the address of the next node). And here, each node has double link i.e. one link is for accessing the previous node and the other link is for access the next node.

In this paper, we have deal with the sorting of doubly linked list because with the help of this linked list we can traverse in both the direction. Sorting of data is very important because data for retrieval becomes more easy and efficient in linear data structure. Here the proposed algorithm sorts the element of doubly linked list during creation of node into the list rather than first create the list and then sort them. Initially, the first element is inserted in the list and all the three pointers (i.e. low, mid and high) will points to this element, after that the element which will going to insert into the list is compare with these pointer's element. If the inserted element is less than then low's

element then it will insert before the low, if the inserted element is greater than high's element then it will insert after the high otherwise it will jump into the mid condition i.e. If the inserted element is less than mid's element then it will insert before the mid else it will insert after the mid.

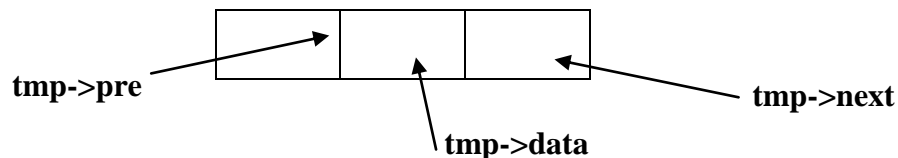
Proposed Algorithm

In general, if we want to sort the linked-list, then it can be sorted after the creation of linked-list. Here, we are proposing an algorithm to sort the doubly linked-list at the time of insertion of node only. We are considering ascending order.

- Step 1:** Start
- Step 2:** Create a doubly linked list with structure objects high, mid, low.
- Step 3:** Initialize *low=NULL, *mid=NULL, *high=NULL, i=0, j=0.
- Step 4:** Accept the element.
- Step 5:** if low=NULL, then low=mid=high=tmp, else go to step 6.
- Step 6:** If inserted data<=low->data, then add the inserted data to the left side of low and make it as low and go to step 7, else go to step 8.
- Step 7:** Maintain the mid, go to step 12.
- Step 8:** If Inserted data>=high->data, then add the inserted data to the right side of high and make it as high and go to step 9, else go to step 10.
- Step 9:** Maintain the mid, go to step 12.
- Step 10:** If Inserted data<=mid->data then search for the location in left side of mid and add the data to the proper location and go to step 7, else go to step 11.
- Step 11:** Search for the location in right side of mid and add the data to proper location and go to step 9.
- Step 12:** Stop.

Creation of linked list using proposed algorithm

In the k3p algorithm, the structure used is as below:

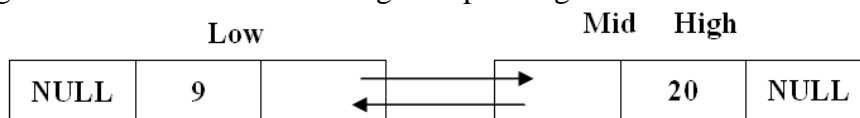


Consider the unsorted elements **20, 9, 11, 25, 14** to insert in the sorted form. These five elements will be inserted in the doubly linked list as below:

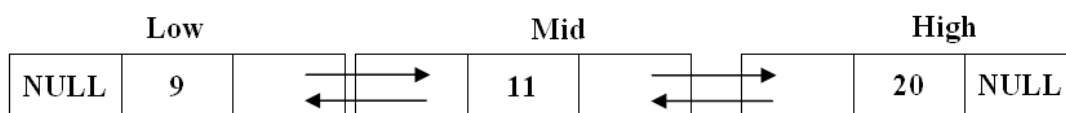
Step 1: When first element 20 is inserted, the pointer low, mid, high are points to the first node.

low	mid	high
NULL	20	NULL

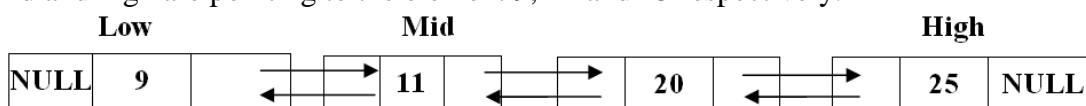
Step 2: The element 9 is less than 20 therefore element 9 is inserted before 20. Now low is pointing to element 9 and mid and high are pointing to 20.



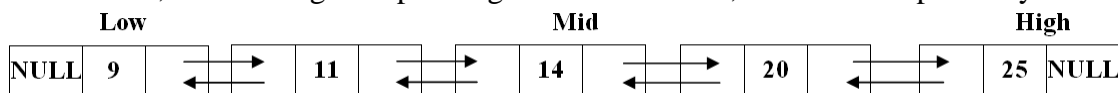
Step 3: The element 11 is less than 20 and greater than 9 therefore element 11 is inserted in between the elements 9 and 20. Now low, mid and high are pointing to the element 9, 11 and 20 respectively.



Step 4: The element 25 is greater than 20 therefore 25 is inserted after 20. Now low, mid and high are pointing to the element 9, 11 and 25 respectively.



Step 5: 14 is less than 20 and greater than 11 therefore 14 is inserted in between 11 and 20. Now low, mid and high are pointing to the elements 9, 14 and 25 respectively.



Conclusion

In this paper, the location of the element is decided at the time of its insertion in a linked-list. This algorithm is executed on the basis of divide and conquers method. Creation of a linked-list using this proposed algorithm do not require explicit sorting of a doubly linked-list. The sorting of a doubly linked-list at its creation time will reduce the execution time. The enhancement of this work can be comparison of the proposed algorithm with various linked-list sorting algorithms using simulation.

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5G EVOLUTIONS – CONCEPT AND ARCHITECTURE

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Abstract

The objective of this paper is including study related to 5G technology of mobile communication network. Currently research process in mobile communication is related to 5G technology. 5G technology will transition the way most high bandwidth user's approach their phones in 5G. All Research regarding to the expansion of WWW (World Wide Wireless Web), DAWN (Dynamic Adhoc Wireless Networks) and Wireless Communication. presently 5G is not officially used, yet made public by telecommunication companies such as 3PPP, WIMAX Forum or ITU-R. The implementation of standards under a 5G Technology would likely be around the year of 2020.

5G Technology stands for 5th Generation Mobile technology. 5G technology has revision the means to use cell phones within very high bandwidth. User never experience ever before such a high value technology. Nowadays mobile users have much experience of the cell phone (mobile) technology. The 5G technologies incorporate all type of advanced features which makes 5G technology most supreme and in huge demand in near future

Keywords: 5G, Adhoc, www, DAWN, Wi-Fi

Introduction:

Each generation of mobile technology has been inspired by the need to meet a concern identified between that technology and its prior (see Table 1). For case, the evolution from 2G to 3G was expected to prepare mobile internet on consumer devices, but during it did add data connectivity, as the composite of mobile broadband networks and smartphones brought about a expressive enhanced mobile internet experience which has finally led to the app-centric interface we see today. From email and social media through music and video continue to controlling your home appliances from anywhere in the world, mobile broadband has brought huge benefits and has fundamentally changed the lives of many people through supply provided both by operators and third party players.

Information technologies have become an essential part of our society, having a deep socio economic impact, and upgrading our daily lives with a plenty of services from media (e.g. video) to more gracefully and safety demanding applications (e.g. e-commerce-Health, etc.). If analysts indication are correct, just related every physical item we see (e.g. clothes, cars, trains, etc.) will also be consecutive to the networks by the end of the decade (Internet of Things).

5G Generation aims at accommodating big data bandwidth, infinite facility of networking and vast signal coverage in order to guide a rich area of high-quality personalize services to the users.

Generation	Service	Differentiator	Weakness
1G	Analogue phone calls	Mobility	Major security issue
2G	Digital phones calls & Secure, messaging	mass adoption	Limited data rate
3G	Phone calls, messaging, data	Better internet	Real performance fail to match hype
4G	Broadband data, IP Service	Broadband internet, application	Tied to legacy
5G	All IP service	Faster broadband internet	Implementation & cost

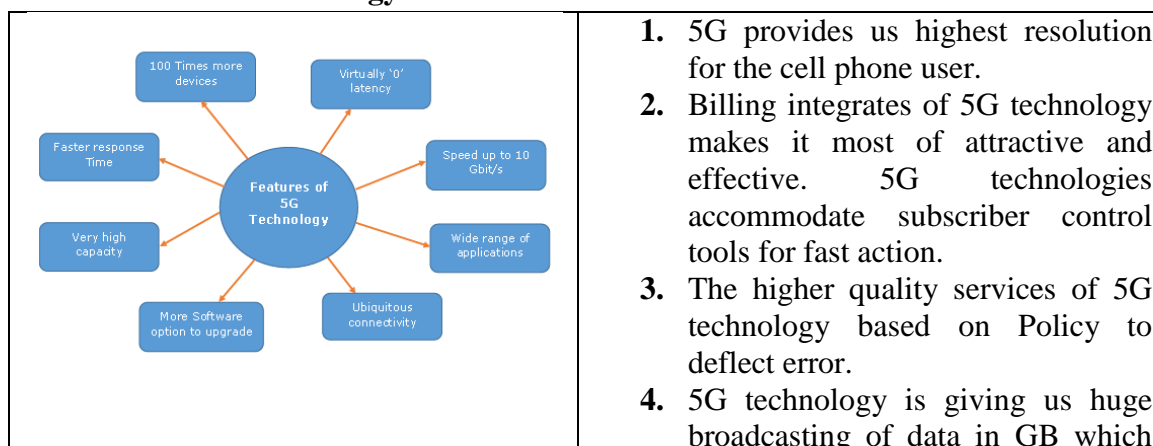
Advantage

The 5G technology is standard to provide a new frequency bands along with the larger phantom bandwidth per frequency channel. As of now, the generation's mobile technologies have signified substantial increase in point bitrate. There is need to know how is 5G different from the previous one (especially 4G). It is not only boosting in bitrate made 5G definite from the 4G, but rather 5G is also advanced in terms of:

- High boost peak bit rate
- Bigger data volume per unit area (i.e. high system spectral ability)
- High capacity to allow more devices connectivity parallel and spontaneously. Lower battery consuming
- Better network irrespective of the geographic division Larger number of collateral devices
- Higher reliability of the connection

As a result of this blending of requirement, many of industries push that have growth with work on 5G

Features of 5G Technology :



1. 5G provides us highest resolution for the cell phone user.
2. Billing integrates of 5G technology makes it most of attractive and effective. 5G technologies accommodate subscriber control tools for fast action.
3. The higher quality services of 5G technology based on Policy to deflect error.
4. 5G technology is giving us huge broadcasting of data in GB which

	<p>supports almost 65,000 connections. 5G technology offer transporter class gateway with unparalleled consistency.</p> <ol style="list-style-type: none"> 5. The traffic data by 5G technology makes it more authentic. 6. Through remote administration offered by 5G technology a user can get better and fast result. The remote problem also a useful feature of 5G technology. 7. The 5G technology is accommodate up to 25 Mbps connectivity speed. The 5G technology is also platform for virtual private network. 8. The new 5G technology will take all distribution service out of business expectation The transmitting and receiving speed of 5G technology touching the peak. 9. The 5G technology network providing enhanced and available connectivity
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Architecture

The Architecture of 5G is hugely advanced, it is network aspects and numbers of terminals are characteristically upgraded to allow new stations. However, upgrading is based upon subjective radio technology that includes number of significant features such as ability of devices to identify their geographical location as well as weather , temperature, etc..

5G network Architecture

As per below figure shows the system model that advise design of network planning for 5G mobile systems, which is all-IP stationed model for wireless and mobile networks inter operable. The system be expressed by a user terminal (which has a vital role in the new architecture) and a number of separate, independent radio approach technology. In each of the terminals and the radio access technologies is seen as the Internet Protocol link to the outer Internet world. However, there should be distinctive radio interface for every Radio Access Technology (RAT) in mobile terminal. For an example, if we need to have access to four distinctive RATs, we need to have four distinctive accesses - distinct interfaces in the mobile terminal, and to have all of them active for the same time, with aim to have this architecture to be utility. Applications and servers on the Internet. Routing of packets should be drifting out in accord with fixed policies of the user.

<p style="text-align: center;">Architecture for 5G Mobile Networks</p> <p style="text-align: center;">Functional Architecture for 5G Mobile Networks</p>	<ol style="list-style-type: none"> 1) GPRS (General Packet Radio Service): It used to transfer data at 60kb/sec. It consumes less battery during send & receive mails or browse internet. 2) EDGE (Exchanged Data Rate for GSM Evolution) : Advance version of GPRS . It provides a data speed of 473kb/sec. 3) 3G : Because of 3G make it possible to do video call through mobile network. 4) It is also provides productive way to browsing internet on mobile network. 5) WLAN(Wireless LAN) : WLAN(Wireless LAN) provide short range, high speed wireless data connection in between mobile data device using radio or signal. 6) LTE(Long Term Evolution) : LTE is as standard for mobile connections for high speed data transmission for the mobile network. and its Speed is up to 100mb/sec.
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Protocol Architecture

Architecture of 5G used to prepares new business convenience getting the essential of large number of use cases as well as enable 5G to be future proof by means of (i) implementing network segment in cost efficient way, (ii) address both of the user and operational services, (iii) supports softwarization natively, (iv) integrates communication and estimation and (v) integrating varied technologies (incl. fixed and wireless technologies).

Below depicts 5G protocol stack mentioning 5G protocol layers mapped with OSI stack. As shown 5G protocol stack consists of OWA layer, network layer, Open transport layer and application layer.

<p>1) OWA Layer: OWA (Open Wireless Architecture) layer. It operation as physical layer and data link layer of OSI stack.</p>	
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<p>2) N/W Layer: N/W(network) Layer uses to route data from the source Internet Protocol device to destination IP device. It divides into lower and upper network layers.</p> <p>3) Open Transport Layer: It combines functionality of both transport layer and session layer.</p> <p>4) Application Layer: It marks the data as per proper format required. It also does encryption and decryption of the data. It selects the best wireless connection for given service.</p>	<table border="1"> <tr> <td>APPLICATION LAYER</td> <td rowspan="2">APPLICATIONS of SERVICE</td> </tr> <tr> <td>PRESENTATION LAYER</td> </tr> <tr> <td>SESSION LAYER</td> <td>OPEN TRANSPORT PROTOCOL</td> </tr> <tr> <td>TRANSPORT LAYER</td> <td>UPPER NETWORK LAYER</td> </tr> <tr> <td>NETWORK LAYER</td> <td>LOWER NETWORK LAYER</td> </tr> <tr> <td>DATA LINK LAYER</td> <td rowspan="2">OPEN WIRELESS ARCHITECTURE</td> </tr> <tr> <td>PHYSICAL LAYER</td> </tr> <tr> <td><u>OSI stack</u></td> <td><u>5G network stack</u></td> </tr> </table>	APPLICATION LAYER	APPLICATIONS of SERVICE	PRESENTATION LAYER	SESSION LAYER	OPEN TRANSPORT PROTOCOL	TRANSPORT LAYER	UPPER NETWORK LAYER	NETWORK LAYER	LOWER NETWORK LAYER	DATA LINK LAYER	OPEN WIRELESS ARCHITECTURE	PHYSICAL LAYER	<u>OSI stack</u>	<u>5G network stack</u>
APPLICATION LAYER	APPLICATIONS of SERVICE														
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DATA LINK LAYER	OPEN WIRELESS ARCHITECTURE														
PHYSICAL LAYER															
<u>OSI stack</u>	<u>5G network stack</u>														

C. S/W & H/W used for 5G

a) Software :

5G will be single unified standard of different wireless networks, including LAN technologies, LAN/WAN, WWW- World Wide Wireless Web, unified IP & seamless combination of broadband

- Software defined radio, encryption, flexibility, Anti-Virus.

b) Hardware :

- Uses UWB (Ultra Wide Band) networks with higher BW at low energy levels.
- BW is of 4000 Mbps, which is 400 times faster than today's wireless networks
- Uses smart antenna
- Uses CDMA (Code Division Multiple Access)

Application

- It will make unified global standard for all.
- Network availability will be everywhere and will facilitate people to use their computer and such kind of mobile devices anywhere anytime.
- Because of the Internet Protocol version 6 technology, visiting taking care of mobile IP address will assigned as per connected network and geographical position.
- It is application will be makes world real Wi Fi zone.
- Its subjective radio technology will facilitate different version of radio technologies to share the same spectrum efficiently.
- Its application will facilitate people to avail radio signal at higher altitude as well..

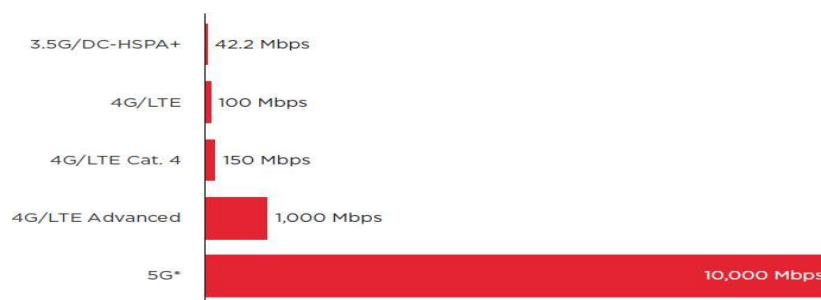


Figure 3: Maximum theoretical downlink speed by technology generation, Mbps
 (*10 Gbps is the minimum theoretical upper limit speed specified for 5G)

Conclusion

In this paper we discussed about 5G mobile phone concept and the architecture. The 5G mobile phone is designed as an open platform for the different layers, from the physical layer up to the application layer. Currently, the continuing work is on the module that shall provide the best Quality of Service and lower cost for a given service using one or more than that of wireless technology at the similar time from the 5G mobile phone.

The new revolution of the 5th generation technology is about to begin because of the 5G technology going to give hard fulfillment to computer and laptop whose forum value will be effected. There are a number of improvements from 1G, 2G, 3G, and 4G to 5G in the telecommunications world. The coming 5G technology is applicable in the market with low cost rate, high point future and much accuracy than its previous technologies.

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AN ANALYTICAL STUDY : SELECTION OF NETWORK TOPOLOGIES

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Abstract

As the emerging need of computer operations, requirement of high bandwidth, low latency etc. there is need of right selection of network topology in particular network. A network topology is the arrangement of a network, including its nodes and connecting lines. There are two ways of defining network geometry: the physical topology and the logical (or signal) topology.

This study examines network topologies and their effect on overall network performance.

Keywords: Network, technology, Workstations, hub, switch, cables.

Introduction

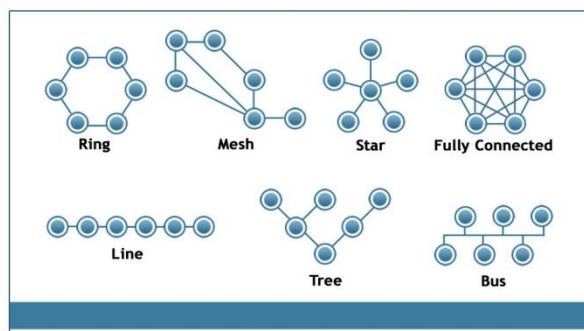
A network topology is the arrangement of a network or a pattern for arrangement which including its nodes and connecting lines. The network geometry is generally either the physical topology or the logical (or signal) topology.

The physical topology of a network is the actual geometric layout of workstations. There are many common physical topologies which widely used, from that some as shown in the illustration.



- 1) In bus topology is a network setup in which each computer and network device are connected to a single cable or backbone.
- 2) In star topology is a topology for a local area network in which all nodes are individually connected to a central connection point, like hub or a switch.
- 3) A ring topology is a network configuration pattern in which device connections create a circular data path, in token ring the signal travels in only one direction, carried by a so-called token from node to node.
- 4) Mesh topology is a type of networking where all nodes cooperate to distribute data amongst each other. It has types of full mesh and partial mesh.

- 5) A tree topology is a network configuration where many connected elements are arranged like the branches of a tree.



- 6) The fully connected network topology where each workstation is connected to every other workstation in that network. Logical topology based on paths the signals follows from node to node or point to point.

Network topology comparison

Topology	Information Transfer way	Setup pro.	Expansion	Troubleshooting	Cost	Cable Req.
Line	One computer at a time sends information. Information goes along the cable one by one to other computer.	Every computer connect to next one and so on.	To add a computer, you must shut down the network	If one computer malfunctions, the entire network goes down	It is a cheapest network since there is usually one continuous copper cable	Uses coaxial or twisted pair cabling
Star	All information passes through the central workstation.	In this every computer must be close to the central workstation.	Add a new computer by just plugging in a new cable from the computer to connection device.	When one computer goes down, the rest of the network is unaffected but if the connection device fail, then the network is down.	It Usually cheaper than a hybrid network .	Generally Uses twisted pair cable.
Bus	One computer at a time sends information.	Connect the cable from	To add a computer, you must shut down	If one computer Affected or fail, the entire network	A cheaper network	Uses coaxial or twisted pair

	the computer accesses the information off the cable.	one computer to another till end. A terminator is required here.	and disconnect the network and cable.	goes down.		cabling.
Ring	Information goes in one direction around the ring, until it reaches the correct computer	Setup is easy. There is no connector. The ring has no beginning and no end.	Cable must be broken to add a new computer, so the network is down until new connection is added.	If there's a problem in the cable or an error in the network then also information continues to transfer through the rest of the ring until reach the point of break. This makes troubleshooting easy.	more expensive topologies due to high cable costs required here.	Requires much more cabling than other topologies. Uses twisted pair.
Mesh	Mostly used long distances. Information transfer can happen in different ways, depending on the other topologies.	Often created when expanding an existing network. Can use a variety of connection devices	Connection devices make combining different networks and different topologies easy.	Troubleshooting is most difficult in this topology because of the variety of technologies	Expensive, large, and usually complicated	Cabling depends on the types of networks. Can use twisted pair, coaxial cable, fiber optic cabling over long distances.
Tree	Information goes from one root computer to	Can use a variety of	New computer easily added without much	Troubleshooting is Not much difficult in this	Expensive	Optic fiber cable mostly

	other all connected computers	connection devices	affecting the whole network.	topology		preferred.
Fully Connected	Information goes from every computer to other all connected computers	Can use a variety of connection devices like connector	Computer added to network easily	Trouble shooting is very easy	Expensive but not complicated.	Cabling depends on the types of networks

Conclusion

The best topologies we found during the course of this study were mesh topology because in this many topologies get interacted according to need and requirement.

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CRYPTOGRAPHY ALGORITHMS IN DATA SECURITY

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Abstract:

The applications of Cryptology in the data security in order to provide elite immunity to the system are discussed in this Paper. All the techniques used for hardening the data security used, are analyzed based on strength, effectiveness, implementation time, and commercial aspects. Implementation of various Encryption Techniques for the cause of continuous improvisation in Securing Data and protecting the millions of users all over globe from fatal Cyber treats. In this paper, an attempt is made to review the various concepts of Network Security and Cryptography.

Keywords: Cryptography, Network Security, Vulnerable, Cyber Security, Intrusion.

Introduction

Nowadays, cryptography plays a significant role in protecting the information of technology applications. data security is a crucial issue, for a few applications. This article provides an insight for the analysis of the Research done on Applications of Cryptography in Data Security with Techno-Commercial study of various Techniques of Cryptography to be implemented to gain elite security. Thus, Data Security is a vital part of network Security.

Let's make the introduction more relatable.

Cryptography Terminologies

Here are some of the basic Terminologies in Cryptology: -

- 1) Cryptography is the science of securing data and limiting its usage only for intended, providing protection to Intellectual Rights.
- 2) Encryption is the process of converting legible information (Plain-text) into unintelligible text (Cipher-text) by a phase of a complex operations.
- 3) Decryption is converse of Encryption, in other words Decrypting (Cipher-text to Plain-text) by performing inverse operations.
- 4) Cipher is the algorithm that is used to transform plaintext to cipher text (Encrypted text)
- 5) The key is an input to the encryption algorithm, and this value should be independent of the plaintext. This input is employed to remodel the plaintext into cipher text, thus totally different keys will yield different cipher text, within the decipher side, the inverse of the key are going to be used within the algorithm rather than the key.
- 6) Network security refers to any activity designed to safeguard the usability, integrity, dependability, and safety of information throughout their transmission on a network, Network security deals with hardware and software, The activity can be

one amongst the subsequent anti-virus and anti-spyware, firewall, Intrusion prevention systems, and Virtual private Networks.

- 7) Cryptanalysis (code breaking) is the study of principles and ways of deciphering cipher text without knowing the key, generally this includes finding and estimate the secrete key, it is a complex method involving statistical analysis, analytical reasoning, math tools and pattern-finding, the sector of both cryptography and cryptanalysis is called cryptology
- 8) Symmetric Key encryption refers to the method of converting plaintext into cipher text at the sender with identical key that will be accustomed to retrieve plaintext from cipher text at the recipient.
- 9) Asymmetric Key encryption refers to the method of converting plaintext into cipher text at the sender with totally different key that will be accustomed retrieve plaintext from cipher text at the recipient.
- 10) Authentication is the method of deciding whether someone is the same person who really is, like login and password in login pages while authorization is the process of ensuring that this person has the ability to do something.

Goals of Cryptology

1) Cryptography has some Goals. Primarily they are stated below: -

- Confidentiality: It ensures the confidentiality of the message/data. That is nobody can understand the message except the one who is intended and has the decryption key.
- Authentication: It is the process of conforming the identity, that does assure that the communicating entity is the same that it claimed to be. This means that the user or the system can establish its identity to other parties who don't have Information about the communicating entity.
- Data Integrity: It ensures that the received message has not been tampered or altered in any way from its original state. This can be achieved by using hashing method at both sides that is sender and the recipient in to create a unique message digest and compare it with the one that is received.
- Non-Repudiation: It is a mechanism which is used to prove that the sender itself truly has sent this message, and the message was received by the intended party, so the recipient cannot refuse the message delivery status.
- Access Control: It is the process of preventing unauthorized access and unwise use of available resources.

Cryptographic Principles: -

A. Redundancy Cryptographic principle 1: The first principle says that all encrypted messages to be sent should contain some redundancy, that is a vague information which is not needed to understand the original message. Thus, Messages should contain some redundancy.

B. Freshness Cryptographic principle 2: Some methods are needed to be adopted so better Security can be obtained. One such method is including a timestamp in every

message which will be valid only for, about 10 seconds. The receiver can keep messages only for 10 seconds, to compare newly arrived messages to older to filter out duplicates. Messages older than 10 seconds can be thrashed, since any replays sent more than 10 seconds later will be rejected as too old queries.

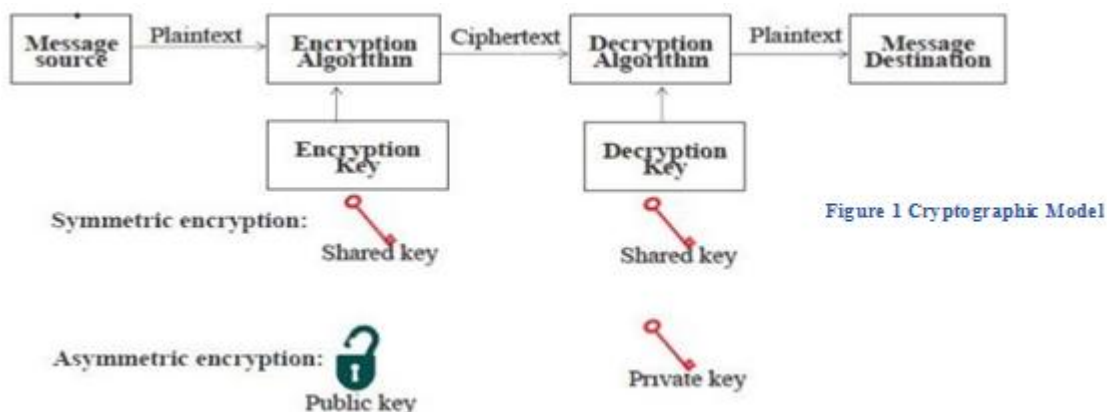


Figure 1 Cryptographic Model

Encryption Methods

A. Symmetric Encryption Algorithms:

- Cipher Block Chaining (CBC)
 - Cipher Feedback (CFB)
 - Output Feedback (OFB)
 - Most widely used:
- 1) Data Encryption Standard (DES): DES is a block cipher which employs a 56-bit key that operates on 64-bit blocks. DES algorithm takes under consideration a fixed-length string having plain text/bits and converts it through Number of Phases of complex mathematical operations into cipher text/bit string of equal length as both. The 3DES (Triple DES) is an enhancement of DES, it is 64 bit block size with 192 bits key size.
 - 2) Advanced Encryption Standard (AES): AES is a block cipher deliberated to replace DES Algorithm for commercial and industrial applications. It uses a 128-bit block size and a key size of 128, 192, or 256 bits. There are 10 number of rounds for 128- bit key. Unlike its precursor DES, AES does not use a Feistel network. Feistel networks do not encrypt an entire block per iteration.
 - 3) Blowfish: Blowfish is a symmetric 64-bit block cipher, invented by Bruce Schneier. Its Key lengths can vary from 32 to 448 bits in length. Blowfish is available freely for use and intended as a substitute for DES or IDEA Encryption algorithms. It is widely used in large number of products in Industry. It is a 16-round Feistel cipher which uses a large key-dependent S-boxes. The S-boxes accept 8-bit input and generate 32-bit output.
 - 4) Twofish: Twofish is a 128-bit block cipher which uses 128-bit, 192-bit, or 256-bit keys. Designed so as to provide highly secure and flexible procedure execution. It is Designed by a team which was led by Bruce Schneier and was one from the Round 2 algo.in the AES process.

B. Asymmetric key Encryption Algorithms

- RSA: - Today RSA is employed in many software's and may be used for key exchange, digital signatures, or encryption of small blocks of data. RSA uses a variable size encryption block and a variable size key. The key-pair is derived from a very big number 'n', that's the product of 2 prime numbers chosen with respect to special rules. RSA has three phases: Key Generation Phase, Encryption Phase, and Decryption Phase.
- Diffie-Hellman Key Exchange: A very simple public key encryption algorithm is Diffie-Hellman key exchange. This protocol enables the two users to create a secret key using a public key scheme which is totally based on discrete logarithms. The protocol is said secured only if the two participants can establish their Identity. DH is used for secret key exchange only, and not for the purpose of authentication or digital signatures.
- Elliptic Curve Cryptography: It is analog version of Diffie-Hellman Key Exchange Algorithm. ECC (Elliptic Curve Cryptography) is a public key cryptography algorithm which is based upon elliptic curves. For purpose of ECC, elliptic curve arithmetic does involves the use of an elliptic curve equation which is defined over a finite field. The coefficients and variables in the equation are the elements of finite field. Security of ECC is totally based on the intractability of ECDLP.
- Digital Signature Standard: - The digital signature standard (DSS) is an NIST standard that uses the method of secure hash algorithm (SHA). A digital signature is like an authentication mechanism that enables the Sender of a message to embed a code that acts as a signature. Basically the signature is generated by taking the hash of the message and encrypting the message with the sender's private key.
- Hash functions: -Hash functions are also called message digests and single-way encryption and are algorithms that in some sense, use no key while its execution. The compression function used in secure hash algorithms falls into one of two categories: a function specifically designed for the hash function or an algorithm based on a symmetric block cipher.
 - 1) SHA
 - 2) Whirlpoolare two examples of above two approaches stated, respectively.

Conclusion

The security for the data has become highly important so as to maintain its confidential status. The user's data privacy is a core question over cloud. With more mathematical tools and complex calculations, cryptographic schemes are getting more versatile and involve multiple keys just for a single application. We have studied various cryptographic techniques to increase the security of Data and immune the network. Cryptography, together with suitable communication and authentication protocols, can provide a strong level of protection in against intruder attacks.

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E-COMMERCE SECURITY ISSUE SAND SOLUTIONS

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Abstract

In modern era of internet, all business activities are carried out using e-commerce websites. The main features of e-commerce websites is buying and selling of products online. Information security is the requirement for any payment / business transactions so we need to protect our business transactions through e-commerce security. E-commerce security is protection of e-commerce resources from unauthorized sources, modifications or destructions. E-commerce has a wide scope in banking , but simultaneously it also increases the risk and vulnerability. There are various ethics or principles of security. They include Data integrity , non-repudiation, authenticity confidentiality , privacy and availability. Information security should therefore be effective and efficient in case of all business transactions.

Keywords: E-commerce security, solutions, threats to business & its issues

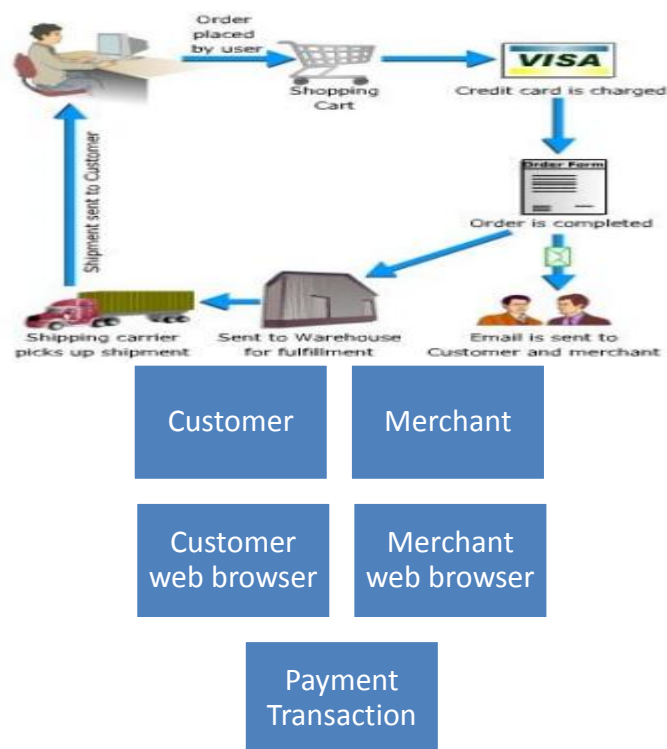
Introduction

E-commerce has proved to be an important aspect of modern technology. But today privacy and security are major concern for all e-commerce transactions. E-commerce is now highly accepted by the business community for buying and selling products online with the help of world wide web and other social networking sites. So, in all such cases, privacy is a most important aspect. There are various challenges to E-commerce which can be overcome effectively monitoring the particular website. Web applications which carry out payment transactions like credit card, debit card, etc. has more risks as compared to data loss or modification. This paper has focused on how a customer can ensure that a particular website is secured or not. There are many online websites which are flourishing now-a-days. Educating the customers about e-commerce security issues is an important task .This paper would help customers to make their transaction safe & secure by adopting such measures which are discussed in this paper. It has put forward a solution strategyfor e-commerce security issues.

Digital E-commerce Cycle

Security in E-commerce is the most important aspect. While making online shopping you should be sure that your transactions are safe. Digital E-commerce Cycle explains to you how a shopping is done online. Customer visits the web browser of Merchant & decides on the commodity. Before selecting the commodity the customer should always check whether the website is secured or not. Customer sends request to the merchant's browser. Merchant verify the customer's information & then confirms the order. After conformation of deal the organization authorize payment transaction. Payment transaction takes place through various sources like Credit card like VISA,

Master Card, etc. Transactions can also be done with the help of bank accounts like Debit card, online Banking, etc. There are various electronic cards such as Pay Pal, Smart cards etc.



E-Commerce Challenges

The major challenge of e-commerce is to protect the business policies from attackers. So, data in the particular website should be effectively monitored constantly. E-commerce security should ensure that there is no involvement of third party intruders.

Issues And Threats To Business:

Providing security or protecting a consumers personal information is most important concern for any online business. So, while making business transaction consumers should feel a sense of security. This can be achieved by adopting security policies which may be costly for any business organizations.

If the company won't adopt such measures then the company may face:-

1. **Financial Loss** :They would have to pay fines & face other legal problems.
2. **Trust** :Consumers will loss trust of such companies.
3. **Data loss** : There may be damage or loss of data.
4. **Configuration**: Server may not function properly & efficiently.

So in order to avoid such circumstances the company should adopt proper security measures. Since, there has been a huge development in technology hackers are always finding new ways to procure data of consumers & business organizations.

Purpose of Security

Integrity: It ensures that information displayed on a particular website is true & that it is not modified by unauthorized sources.

Authenticity: It means providing identity to the consumer with whom you are dealing with.

Confidentiality: To ensure that all the information provided are available for authorized parties only.

How to make a secured online shopping?

For a secured online shopping following measures should be taken:

1. Shop at secured websites:

Following care should be taken to ensure whether the website is secured or not:-

- i) When you enter the order page in a particular website ,you need to check on the address bar whether "https://" is displayed . The letter 's' on this bar indicates that the website is secured.
- ii) You also need to ensure by checking whether there is a closed padlock displayed on the address bar of the screen . If the lock is open it indicates that the website is not secure.
- iii) You should read the merchants privacy & security policies to safeguard your personal information.

2. Read the privacy policies of website:

Any reputed online websites offers information about how they protect your personal information from third party intruders. In this way you get to know how safe is the website & then continue with your shopping & business.

3. Provide only relevant information:-

You should not disclose your Social Security Number to any organization . If you do so, your identity may get stolen. Sometimes , the websites may ask your annual income or any such questions. There is no need to provide such information because it is "spam".

4. Check the website Address:-

You should also check whether your web address is URL (Uniform Address Locator) is mentioned to ensure that the company with whom you are dealing with is the right one.

5. Always print & save copies of your orders:-

After placing your order you get a conformation letter that is e-mailed by merchant. You need to save its copy to ensure that later deal is safe. The copy should include the commodity name, its warranty, company name, its postal address, mobile no. of company, its legal terms & policies.

6. Shop with companies in United States:-

When you shop within U.S. companies it provides state & federal consumer laws under which your deal is safe to occur.

Security Measures

- 1) **PCI Data Security Standard :-**Hackers may steal or modify the data which is sent to business organization through web sources so the so the card organizations like VISA, Master card, etc. advice e-commerce merchants to introduce PCI Data

Security Standard.

- 2) **Cryptography or Encryption Software :-** Encryption is a process in which the data is converted to a specific format that other introduces couldn't read it. The readable part of data is called as plain text & the unreadable format is called cipher text. The process of converting plain text to cipher text is called encryption & cipher to plain text is called decryption
- 3) **Firewall :-** It is a device which protects the data of a particular organization from unauthorized sources. It filters the traffic & won't allow harmful programs to enter the webpage.
- 4) **Digital Signature :-** In this process, signature is attached to message is sent to the company by the sender. For such cases, digital certificates are also used. For the use of such certificates they should get authenticity from a certificate authority (CA).
- 5) **Smart Cards :-** These smart cards helps the consumers to make their transaction safe & maintain their privacy. Smart cards have a cash value attached to the cards. If once the card is lost, the card value attached to it will also be lost.

Conclusion

E-commerce has a wide range of demand in modern era. In all such cases, information security is the most important constraint. Privacy is an important aspect. Integrity, confidentiality, authenticity are important principles of security. These help in protecting e-commerce transactions from fraudulent threats. To achieve such objectives, various cryptography techniques, firewall, etc. are implemented in order to protect the privacy of customers & sellers. Such techniques would not allow the entry of third party intruders or unauthorized sources. E-commerce business should also focus on a safe & reliable payment transaction for a better digital world.

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IMPLEMENTATION OF DEFRAGMENTATION USING SINGLY CIRCULAR LINKED LIST

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Abstract

From the era when the computer where invented and now when it has been used to a great extent, it is very important that every user of the computer is aware with the aspects of storing data. Storing data depends on the size of hard disk. We can store the data in computer as the size of hard disk. Defragmentation is one the concepts used to store data in sequential manner. Fragmented memory space is defragmented i.e. empty memory space is formatted together. This makes operating system easier to access and store data. This paper demonstrates the defragmentation concept in operating system using singly circular linked list.

Keywords: Fragmentation, Defragmentation, Memory Management, Circular Linked List

Introduction

In the maintenance of file systems in operating system, defragmentation is a process that reduces the amount of fragmentation. It does this by physically organizing the contents of the mass storage device such as hard disk drives, magnetic tape etc. used to store files into the smallest number of contiguous regions (fragments). It also attempts to create larger regions of free space using compaction to delay the return of fragmentation. Fragmentation is caused when an operating system breaks a file into pieces because there is not enough space on the storage device where the file was originally saved. Defragmentation is the term given to the process of scanning the file system and rejoining the split files back into consecutive pieces.

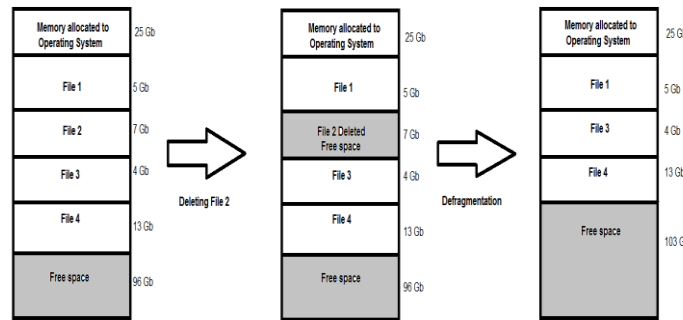
This paper shows working of defragmentation in Operating System using linked list. Linked list is concept of data structure. Data structure is a particular way of organizing and storing data in a computer so that it can be accessed and modified efficiently.

Defragmentation means rearrangement of the files on hard disk for faster data access. After the files are removed from hard disk, the Operating System tries to fill the vacant space with the new files. If a new file is too big to fit, it stores the excess data to another location. Over times, hundreds of files are scattered all over the disk in non-contiguous space resulting in higher data access time. Hence, defragmentation is done.

Advantages of Defragmentation

- 1) One of the biggest reasons for defragging hard disk is we'll likely experience faster speed and less loading time.
- 2) When files are not scattered but are stored in one place, they load faster and whole system speeds up.
- 3) Computer can sort and locate files much easier.

- 4) The process of defragmenting can be time consuming, but it is one of the easiest ways to increase the performance of your computer. The frequency at which a PC should be defragmented will directly depend on the amount of usage area.



Algorithm of Defragmentation:

Following is the algorithm for the defragmentation, to implement this algorithm we have used the concept of circular linked list by using ‘C’ Programming

Step 1: A fixed number of nodes are created by using dynamic memory allocation.

Step 2: Ask user whether they want to enter, delete, display data or defragment.

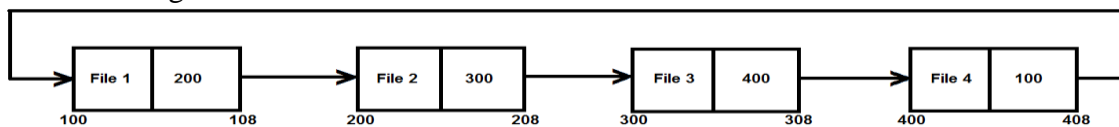
Step 3: While inserting data for first time, the data is entered in a contiguous manner.

Step 4: Data can be deleted as per user’s choice. Here, only the data is deleted but the memory allocated is not freed.

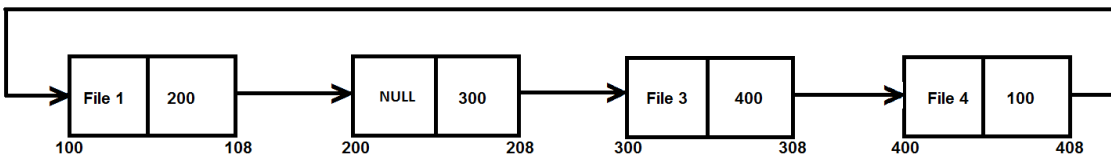
Step 5: When the user selects defragment option, the fragmented data is brought together providing a contiguous free space for further use.

Diagrammatic Representation:

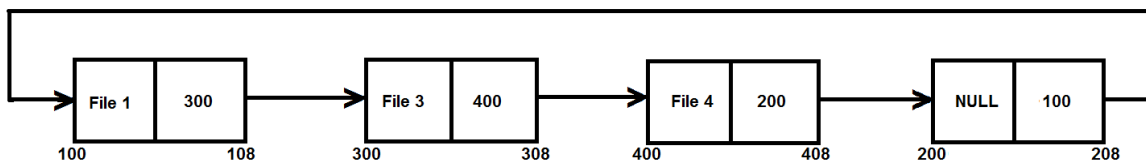
After inserting data for first time



After deleting data by user’s choice



After defragmentation



Conclusion

Defragmentation is one the important concept to collect the fragmented memory into continuous fashion so to increase the searching speed of the file content. In this paper we discuss the concept of fragmentation and defragmentation, as well as the advantages of defragmentation over fragmentation. There are number of ways to defragment the

fragmented memory by using the numerous data structure, in this paper we discussed and implemented the circular linked list data structure for defragmentation

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MOBILE CHARGING USING SOUND ENERGY/NOISE POLLUTION

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Abstract

Use of non-conventional sources from our environment to recharge portable devices is the need of the hour. On the other hand we see that in this modern world there is lot of noise pollution in roads, airports, industries which involves mainly sound energy. As sound has enormous amount of energy with it, which could be used, it can be treated as an alternative source of energy. Sound is a mechanical form of energy which travels in the form of wave, mechanical wave that is an oscillation of pressure this pressure created by the sound could be used to convert it into electric energy or other form of energy. The basic concept of our research is to utilize the excess of noise present in our surrounding for charging our mobile phones using piezoelectric crystals. The piezoelectric material is preferred because it is very sensitive to external mechanical force.

Keywords: Sound, Piezoelectric material, Sound absorbing pads , Conversion circuit, Battery.

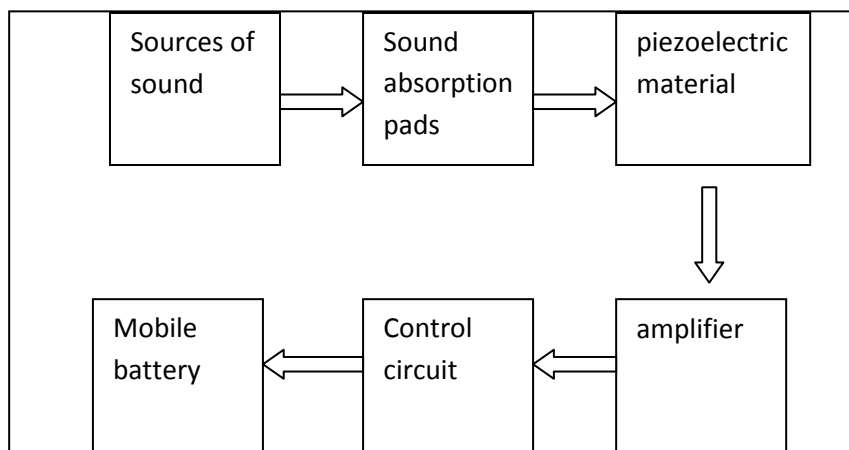
Introduction

A Mobile phone is the basic necessity for everyone. People of all age groups are now using mobile phones. If in any case or due to some reasons we cannot get sufficient amount of electrical power supply. Scientist and researchers are desperately searching for renewable green energy sources for production of electrical energy. Sound energy(noise pollution) is one of the best source present in our surroundings. This type of energy can be utilize in many applications and can be use in further research in favour of mankind. One of such application is that by using this excess of noise or sound present in our surrounding can be utilize for charging purpose of some portable devices like mobile phones, some Bluetooth devices, and other related devices. This can be done by using a piezoelectric material, which is very sensitive to external pressure when applied on it.[1] In our research paper we are trying to generate some electrical energy by using piezoelectric material and we had designed a simple electric circuit for that purpose. So by using this we can charge our mobile phones and some other portable devices.

Methodology

The main purpose of this study is making mobile battery charger with utilization of renewable energy sources. Therefore we will be introducing simple circuit that converts sound energy into electrical energy through which we can charge a mobile or

store some amount electric energy in batteries. An effective way of producing usable electric power from available random sound energy is presented here. Piezoelectric crystals are sensitive to air pressure or sound therefore they produce electric energy in response to any type of mechanical pressure. These crystals are mainly made up of quartz crystals or mostly of Rochelle salt [2]. We are considering a crystals of quartz for purpose of electricity generation.



The above block diagram gives us idea about the piezoelectricity model. In this model the main components are piezoelectric material, sound absorption pads, amplifier. When the circuit comes in contact of any type noise or sound source, the sound absorption pads absorbs or collect the sound energy from its surrounding. This collected sound energy is then applies mechanical pressure on piezoelectric material. A piezoelectric crystal is an active sensor and it does not need the help of external power as it is self-generating. A quartz crystal is a piezoelectric material that can generate a voltage proportional to stress applied to it. When the force is applied on the quartz crystals produces electric charges on the crystal surface. The charge thus produced can be called as piezoelectricity. The input mechanical pressure to the piezoelectric crystals is then converted into its equivalent electrical charge. As the charge produced is small, a charge amplifier is needed so as to produce an output voltage which is much enough to charge mobile battery. So this electrical current is then amplified by amplifier which is placed next to piezoelectric material in the proposed model. This amplified current is then controlled by using current control circuit[1]. Finally this current is applied to the mobile battery.

In our proposed diagram we consider that there are five piezoelectric material are used since one piezoelectric material can produce 0.5V for 80-90db.

Table1: Some places where the noise pollution measured.[3]

Place	Noise (db)
Traffic areas	70-80db
Jet Aircrafts	110-130db
Industries	100-110db

Above table shows some of the observation had been observed . By using this quantity sound energy we can generate electrical energy.

Conclusion

An effective way of producing usable electric power from available sound energy is presented in our research paper. Piezoelectric materials can be used for conversion of sound energy into electric energy. The produced electric energy from multiple piezoelectric material is amplified through amplifier. The resultant electric power can be used to charge a rechargeable mobile battery. The proposed method opens the door of a relatively less explored source of energy i.e. Sound energy can contribute in global search for renewable energy. If we will be able to convert sound energy to electric energy efficiently we can reduce much noise pollution present in our atmosphere. The noise pollution on roads and runways due to traffic could be converted into electric energy and power the street lightning, signals and various other electrical appliances. With some advanced research in this technology, we can expect the world with no external chargers for mobile phones in the future which may lead to reduce E-WASTE too .This work on mobile charging system will eliminate the adapter wired charging system. Also this system can be installed in a small case with a rechargeable battery for power bank. So when the user travel on road can hold the power bank so that it can be charged up for battery power storage.

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CRYPTOGRAPHY ENCRYPTION AND COMPRESSION TECHNIQUES

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Abstract

Data is nothing but any type of store information which generally in digital format. Data security refers to protective digital privacy methods that are used to prevent unauthorized access to computers, personal databases and websites from other unauthorized way. Cryptography is process which protects users confidential data by using methods like encryption of data and authentication of other users. Compression is the process of reducing the number of bits or bytes required to represent a given particular set of data. It save more data. Cryptography is also a popular ways of sending vital information by using secret passage or way . There are many cryptographic techniques available like Encryption Standard (DES), Triple DES, Blowfish and the Advanced Encryption Standard (AES) and among them AES is one of the most powerful techniques. The scope of present day of information security system includes confidentiality, authenticity, integrity, non-repudiation. The security of communication is todays most trended topic and need of today. This paper some aspects of cryptography and compression techniques.

Keywords: Data Encryption and decryption, Compression, Cryptography Concept, Security, Integrity.

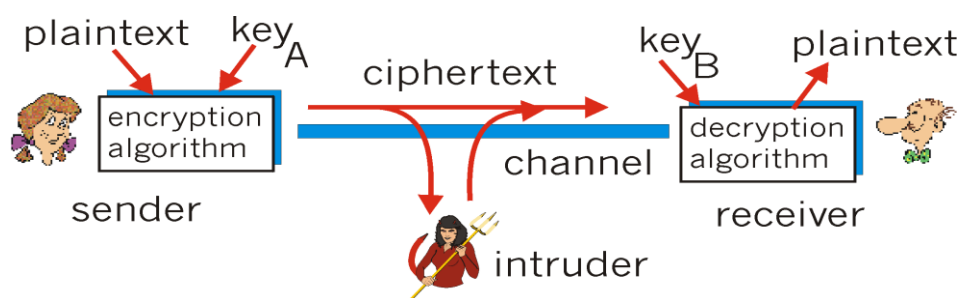
Introduction

Cryptography basically used for provide message confidentiality and integrity and sender verification. The basic activity of cryptography is encryption, decryption and cryptographic hashing. In order to encrypt and decrypt messages, the sender and recipient need to share a secret. Typically this is a key, like a password, that is used by the cryptographic algorithm. The key is used by the sender to encrypt the message (transform it into cipher text) and by the recipient to decrypt the message (reverse the cipher text back to clear text). This method can be apply on a fixed message, such as an e-mail, or a communications stream.

Basic Terminology of Cryptography

Encryption is the process of convert a Plaintext into a data stream which looks like a meaningless and random sequence of bits, which we called ciphertext and vice versa process of this is called decryption.

Cryptography deals with making communications secure. Cryptoanalysis deals with breaking cipher text, that is, recovering plaintext without knowing the key. Cryptology is a branch of mathematics which deals with both cryptography and cryptanalysis.



Cryptography Goals

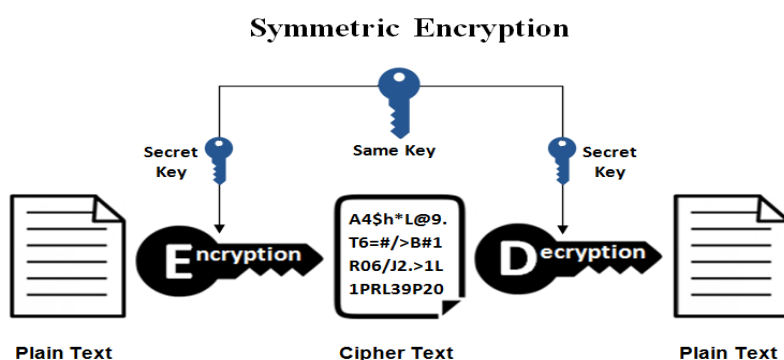
1. Authentication: Used to prove one's identity.
2. Privacy/Confidentiality: It keeps information secret from all others.
3. Integrity: Ensures that information is not altered by any other unauthorized persons.
4. Non-Repudiation: It prevents denying of messages from either sender and receiver.

Data Encryption

Data encryption translates data into another form, or code, so that only people with access to a secret key (formally called a decryption key) or password can read it. Encrypted data is commonly referred to as ciphertext, while unencrypted data is called plaintext. Currently, encryption is one of the most popular and effective data security methods used by organizations. Two main types of data encryption exist - asymmetric encryption, also known as public-key encryption, and symmetric encryption.

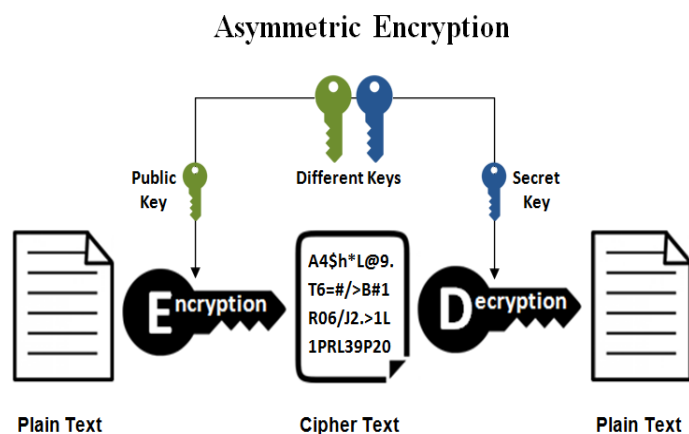
Symmetric Key Cryptography

In this cryptography, the sender and receiver of a message share a single, common key that is used to encrypt and decrypt the message. These methods are simpler and faster, but their main problem is how to exchange the key in a secure way. It is sometimes called secret-key cryptography.



Asymmetric Key Cryptography

Asymmetric key, also called public-key cryptology, which uses two keys - a public key to encrypt messages and a private key to decrypt them. Public-key encryption avoids this problem which occurs in symmetric cryptography because the public key can be distributed in a non-secure way, and the private key is never transmitted.



Compression

Data compression implies sending or storing a smaller number of bits. Compression is the reduction in size of data in order to save space or transmission time. Many methods are used for this purpose, in general these methods can be divided into two broad categories: Lossy and Lossless methods. Lossy Compression generally used for compress an Image. In this original data is not identical to compressed data that means there is some loss e.g. Block Truncation Coding, Transform Coding, etc... Lossless Compression used for compress any textual data. In this original data and compressed data are equal that means there is no loss e.g. Run Length Coding, Huffman Coding, LZW, Arithmetic Coding.

Compression techniques:

- 1) Run Length Encoding: compress data made of any combination of symbols
- 2) Huffman Coding: The Huffman algorithm is based on statistical coding, which means that the more probable the occurrence of a symbol is, the shorter will be its bit-size representation
- 3) LZW compression: compress a file into a smaller file using a table-based lookup algorithm
- 4) Arithmetic Coding: method of generating variable-length codes, is useful when dealing with sources with small alphabets such as binary sources

Conclusion

Cryptography is used to ensure that the contents of a message are confidentiality transmitted and would not be altered. Confidentiality means nobody can understand the received message except the one that has the decipher key, and "data cannot be changed" means the original information would not be changed or modified.

Compressions used for shorting the message it improve security by reducing the redundancy in the plaintext and by making cryptanalysis harder.

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AN IMPROVED VERSION OF DOUBLY LINKED-LIST SORTING BASED ON QUICK-SORT

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Abstract

Sorting of elements is the most basic task in the computer science. As quick sort is highly efficient because of its fast nature and its structure, it is widely used. This paper proposes a new approach for sorting of doubly linked list based on the concept of quick sort. For evaluating the performance of proposed work, we compared our algorithm with quick sort.

Keywords: quick sort, mid, doubly linked list.

Introduction

Sorting of data items is an important aspect of computer science as it is required in most of the applications starting from simple user applications to complex software.

Data items can be easily sorted since we have different sorting techniques which works efficiently but the problem arises when large amount of data has to be sorted and especially with the speed of sorting. Talking about quick sort where the pivot element plays an important role, many attempts are made to select the pivot element in different ways in order to improve its efficiency.

Quick Sort:

In quick sort the major role is played by the element selected as pivot where the number of swaps is done accordingly to make the list in such way that all the smaller elements than the pivot appear on its left side and the greater one's on its right, hence when the pivot gets placed the sorting is further applied with the left part of list and with remaining right part. The same process goes on until the data items are sorted completely.

Doubly Linked List:

A doubly linked list uses dynamic memory allocation for storing the data items along with address of its previous node and next node.

Doubly linked list is more efficient than arrays, as we can move in backward direction too.

In this paper, we present the sorting of data items in a different way by using quick sort and by storing the elements dynamically in the doubly linked list.

Proposed Work:

In our algorithm we try to sort the first element of the list at the beginning itself and further the elements are compared with this element say middle element or the first pivot element placed and then after the comparison the elements are either stored in its left side or in right side accordingly, further the sorting is applied over the left half and right half of middle element thereby which reduces the number of swaps taken by original algorithm.

Algorithm:

- Step 1 : Start.
- Step 2 : Accept each element one by one. [Position of first element is fixed].
- Step 3 : For the remaining elements, check the value of elements with mid (first element).
If (element value < mid) then element will get stored at left of mid then go to next step.
- Step 4 : if (element value > mid) then element will get stored at right of mid.
- Step 5 : After accepting all values we get two lists. All elements less than mid are at left of mid. All elements greater than mid are at right of mid.
- Step 6 : Apply quick sort on every sub-lists and so on.
- Step 7 : Stop.

Performance Evaluation:

- **List with 5 elements considered:-**

9 0 1 11 10

- **Using original quick sort:-**

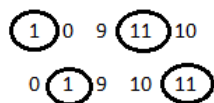
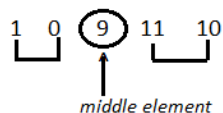
Total number of swaps: - 3

- **Using proposed sort:-**

The list is 9 0 1 11 10 the it will be,

Initially Sorted as:-

1 0 9 11 10



Therefore the sorted list is: - 0 1 9 10 11

Total number of swaps: - 2

- **List with 10 elements considered:-**

35 20 10 5 23 0 53 7 78 9

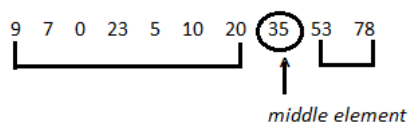
- **Using original Quick Sort:-**

Therefore total number of swaps: - 13

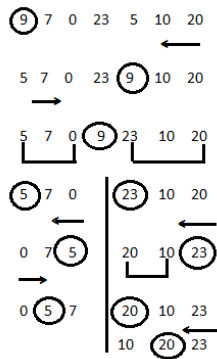
- **Using Proposed Sort:-**

The list is: - 35 20 10 15 5 23 0 53 7 78 9 will be,

Sorted as:-

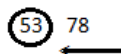


- **Sorting left half:-**



0 5 7 9 10 20 23 is Left Half.

Right part is:-



Therefore the sorted list is: - 0 5 7 9 10 20 23 35 53 78

Total number of swaps: - 6

Number of elements	Number of swapping's in quick sort	Number of swapping's in proposed algorithm
5	3	2
10	13	6
15	15	11

Conclusion

As the number of swapping are concerned, the proposed algorithm is performing better. The performance is evaluated on the linked list of size 5, 10 & 15. For all three linked list, proposed algorithm requires less number of swapping than the quick sort concept. Future scope of this work lies in constructing the same concept in more generic manner.

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HADOOP - A FRAMEWORK USING BIG DATA

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Abstract

Nowadays, the social media, websites, industries generating lots of data and this data is unable to manage and stored on servers and software. But bigdata is a concept through which we can manage our data efficiently and properly. The data has different form like data is either structured or un-structured or semi-structured. Bigdata has some properties like volume, velocity and variety. Bigdata is managed by a process or framework called as 'HADOOP'. The hadoop is a framework which stores and processes the large amount of data sets efficiently. Hadoop is the core platform for structuring Big Data, and solves the problem of making it useful for analytics purposes. Hadoop is an open source software project that enables the distributed processing of large data sets across clusters of commodity hardware and has several components namely as HDFS, MAP-REDUCE , YARN etc. These component together perform a task and it helps to store and managing the various data. In this research paper we are comparing different hadoop technology and find out which is better according to their accessing speed and performance.

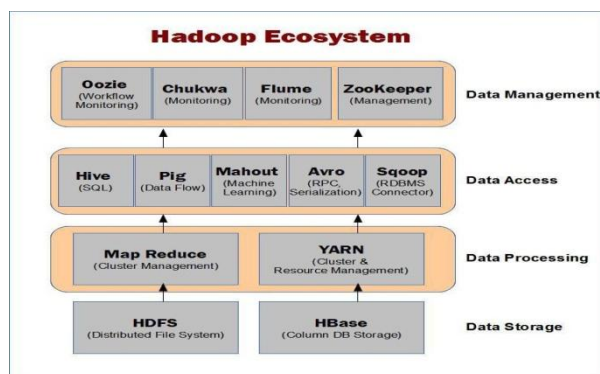
Keywords-Bigdata, Hadoop, hdfs, map-reduces, yarn.

Introduction

Big data is a term that refers to data which is too big. 'BIG DATA' is a term used to describe collection of data that is huge in size and yet growing exponentially with time. The data which is generated across the globe at an unprecedented rate. The data could be either structured or un-structured. it has certain characteristics

- a. volume: Refers to the actual amount of data.
- b. velocity: Refers to rate at which data can be generated.
- c. variety: Data has various heterogeneous forms i.e either video, text, image etc.

Hadoop is open source software developed by apache foundation. it is a java based framework. The web services ,web media and social media are generating lots of information in a daily basis and it was becoming very difficult to manage data around one billion pages of content . apache hadoop is most important framework for working with big data it is used for storage, performing operations on data, security and large scale processing of data sets. It is generally used by websites who have huge data and need proper management of their informations



1. Comparison between Hadoop 1 and Hadoop 2 - Hadoop 1-

i) HDFS (HADOOP DISTRIBUTED FILE SYSTEM)-

Hdfs is fault-tolerant system. Hdfs holds very large amount of data and provides easier access hdfs is built to support application with large data sets including individual files that reach into the terabytes. HDFS uses master slave architecture with each cluster consisting of single namenode that manages file system operations and supporting datanodes that manage data storage on individual computing nodes. HDFS provides high throughput access to application data and is suitable for applications that have large data sets.

Name node:

It is software that can be run on commodity hardware. The system having the name node act as master server. It manages the file system namespace. It performs read, write, closing, opening operation on files sets. It stores the metadata (data about data).

Data node-:

For every node there will be datanode. the file is split into blocks and this blocks stored managed by datanode. A datanodes stores data in the hdfs. a functional file system has more than one datanode with data replicated across them.

ii) MAP-REDUCE-

Map reduce is a programming paradigm. it provides massive scalability across thousand of hadoop clusters on commodity hardware . The map reduces model processes large unstructured data and structured data in hdfs. The framework allows the specification of an operation to be applied to a huge data set, divide the problem and data, and run it in parallel mode.

Hadoop 2-

1) Hdfs and Map-reduce are common in both hadoop1 and hadoop 2.

2) YARN (yet another resource negotiator) -

It is a very efficient technology to manage the hadoop cluster.YARN is a part of hadoop 2 version .it is a completely new way of processing data. it is a platform for getting consistent solutions , high level of security and governing of data over entire module of hadoop cluster. YARN performs job scheduling and resource management.

Conclusion

In this research paper, we have compared 2 hadoop frameworks hadoop1 and hadoop2. In hadoop1, map-reduce is a cluster resource management and data processing unit but in hadoop2 the tasks are separated. Map-reduce performs the data processing and YARN performs the cluster resource management. YARN is responsible for managing and monitoring workloads. Hadoop YARN is an advancement to Hadoop1 released to provide performance enhancements which will benefit all the technologies connected with the Hadoop Ecosystem along with the Hive data warehouse and the Hadoop database (HBase). Hadoop YARN comes along with the Hadoop 2.x distributions that are shipped by Hadoop distributors. YARN performs the job scheduling and resource management duties devoid of the users having to use Hadoop MapReduce on Hadoop Systems. So Hadoop2 has resolved most of the hadoop1 limitations by decoupling a Map-reduce component into different. YARN is used for resource management. Hadoop2 is highly scalable, reliable supports multiple programming models it also improves cluster utilization. So, hadoop2 is better than hadoop1 and hadoop2 provides faster access and efficiency.

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EFFICIENCY COMPARISON OF 'C' LOOPS

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Abstract

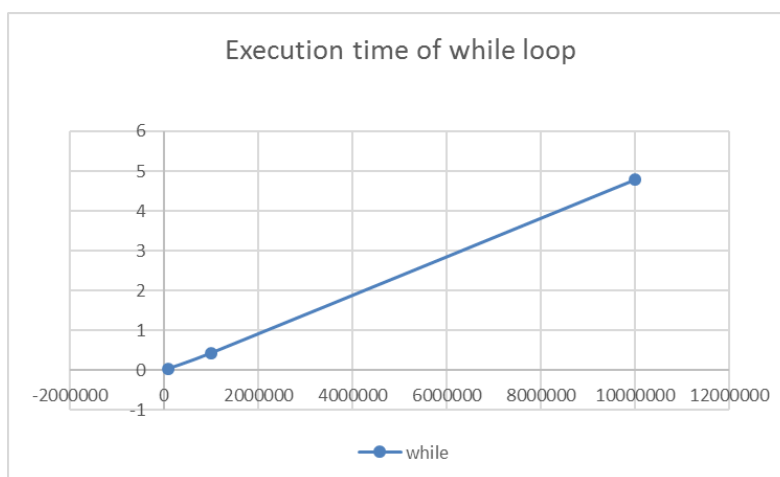
All we know that Dennis Ritchie describes three loops in 'C' programming language. That is while(),do-while() and for(). But on which purpose this three loops are get distinguish as we know the basic concept of loop is if we want to perform certain block no of times then we use the loop. Whether which loop is to be use is depend upon the personal preference. Then why Dennis Ritchie described the three loops, this is the topic we are concluding from this research paper. In this research paper we are come to know which loop has faster execution and why it gets invented.

Keyword: while loop, for loop, do-while loop

Introduction

We know there are three loop, but which loop is more efficient in certain condition of code we don't know. On which condition we have to use which loop there is no any specification about the loop. Till this date we are just using any loop for any condition. But each loop has its own existence. On which purpose they get distinguish we are come to know. The for () and while () both loop are depending upon the redundancy.

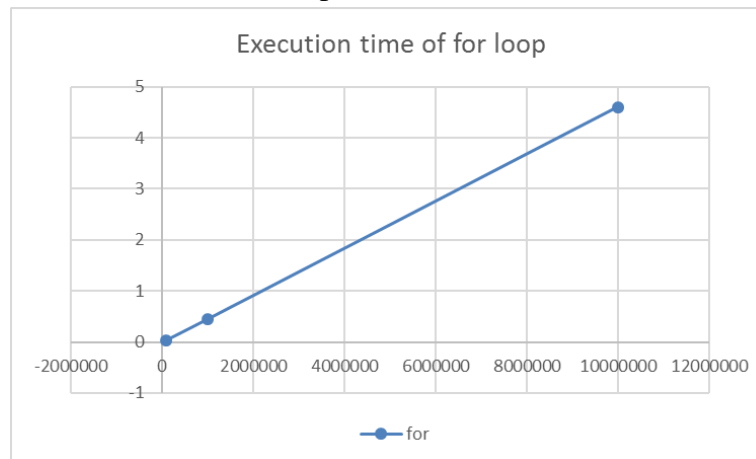
A) while () loop :While loop is used to perform the certain task until the condition is true. Itis called as top-tested loop. Because the condition is checked before the execution. In this loop there is no initialization and re-initialization that's why while loop is most natural loop. Basically while loop is used when there is not a constant increment or decrement in the code where the loop is required. For an example to print the reverse number there is no initialization and constant increment or decrement that's why we choose the while loop rather than for loop. Mostly while loop is less used in the nesting concept because initialization, condition and increment is get complex and difficult to understand.



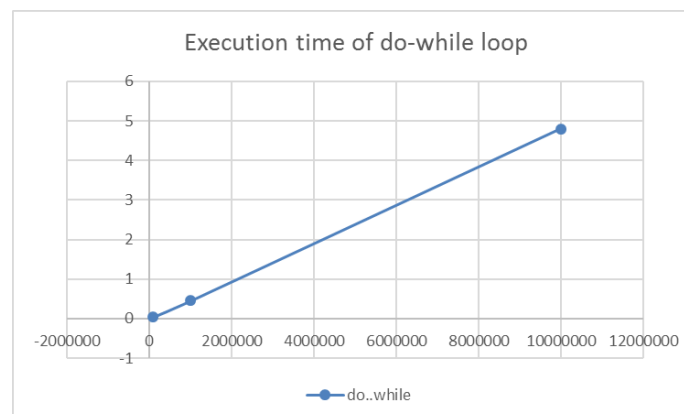
Graph: Execution time of while loop

B) for () loop :

In computer science, a for-loop (or simply for loop) is a control flowstatement for specifying iteration, which allows code to be executed repeatedly. The for loop is most preferable when there is simple initialization and increment, since it keep the loop control statement together and visible at the top of the loop. It is also known as top-tested loop. Mostly choosing the for loop in the code is depend upon the increment and decrement if there is constant increasing or decreasing in the code to execute certain condition for loop is most favourable loop. In nested loop concept for loop is mostly used, because it has initialization, condition and increment at same line. In for loop, initialization, condition and adjustment statements are all put together in one line which make loop easier to understand and implement.

**Graph:** Execution time of for loop**C) do-while() loop :**

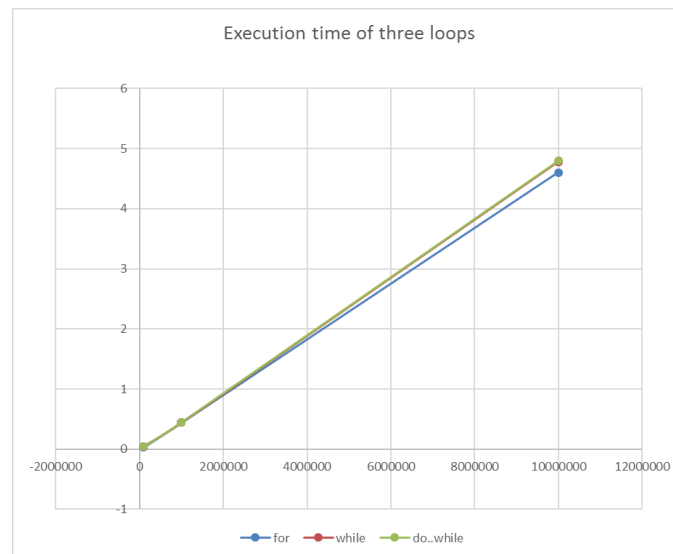
The do-while is preferable when programmer want to execute a certain condition at list one times then do-while loop is used. It is called as bottom tested loop. In this loop condition checked at last that's why at list one time the certain condition is executed. There is a specific use of this loop, if our starting condition and last condition is same then this loop is get used. For example, in the circular singly linked list our starting condition and termination condition is same that's while loop is used in such cases.

**Graph:** Execution time of do-while loop

Conclusion

From this research paper we conclude that the for loop is mostly used rather than while and do-while. We are concluding that from the graph for loop has execution speed greater than the while and do-while. While loop having execution speed grater then the do-while. The relation between the three loop on the basis of time is as follows for<while<do-while time required. And we come to know that Dennis Ritchie describing three loop and basic function of each loop is repeat certain thing till the condition true. But each loop has its own existence or feature in the programming language.

Element	for	while	do-while
100000	0.03s	0.05s	0.04s
1000000	0.44s	0.44s	0.45s
10000000	4.6s	4.78s	4.8s



Graph: Execution time of three loops

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USE OF CLOUD COMPUTING APPLICATION IN WATER BUDGETING AT VILLAGE LEVEL

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Abstract

In planning of water resources of any village water budgeting is very important aspect. It is very difficult to calculate manual water budgeting because of time consuming process. If the relevant data is available then using cloud computing application one can easily carry forward scientific assessment of water resource at Village level. In this investigation we carry forward cloud based technology for water budgeting which is need of country for planning this precious resource.

Keywords: Cloud computing, water budgeting, village

Introduction

The basic principle of watershed approach is not to let the rain water run away. The approach is to make the running water flow smoothly. Rain water is the only primary source of water; rainfall in most of the areas is restricted to only about 20-40 days in the year during which it was necessary to conserve and provide for water for the remaining days of the year. Under the watershed approach, water from the rainfall in conserved in the watershed through a ridge to valley sequenced treatment. For this purpose water budgeting is important part of watershed planning.

For conservation of water through a cascade of watershed activities, a watershed management committee (WMC) at village level is need to be formed and trained. The WMC was then asked to identify the problems related to natural resources in the village and then come up with an integrated village development plan based on watershed approach. Consequently scientific water budgeting is also important for harvesting rain water.

Water Budgeting at VillageLevel

Water budgeting of village includes water received from rainfall and it is utilized for all type of needs. All types of allocations of the water receipt including anticipated within the crop period and its detailed account of expenditure for efficient and profitable farm management is called water budgeting. Water budgeting for rain-fed and irrigated region is quite important for judicious use of water resources in village authority. Importance of water budgeting is as follows.

Objectives:

To estimate water harvesting potential of any village in India

Scope and Importance of Water Budgeting

- Efficient utilization of available recourse (water) for bringing more area under

- Irrigation.
- To increase the productivity of a region / farm.
- To increase cropping intensity of a region / farm
- To tide over some dry-spells
- To reduce excess irrigation and losses caused thereby
- To avoid run off losses

Methodology

Manual water budgeting

Manual water budgeting is complicated and time consuming process. It will require investment of time, money and manpower. With some data cloud computing based water budgeting is scientific assessment of water resource at village in different agro-climatic zones of country.

Water Budgeting at Village Level

Water budgeting of Village includes water received from rainfall and it is utilized for all type of needs. All types of allocations of the water receipt including anticipated within the crop period and its detailed account of expenditure for efficient and profitable farm management is called water budgeting.

Use of cloud computing in water budgeting-

By implementing the water budgeting computerised, calculation of water budget would be very easy. Anyone can calculate that and get the water budget of any village. For that only the correct information about rainfall and other things is essential. At Village level the technical person in Village can calculate the water budget of village in just few minutes.

Screen shot of inputs and outputs of cloud:

Nature	Quantity
(1) Water from rainfall	= Total area of the village 1200 hectare x total rainfall 120 centimetre x 10 = <u>144000000 cubic meter.</u>
(1A) Water in a moisture format in the soil (30 %)	30% of total available water from Rainfall (1) = 144000000cu m x 0.30 = 43200000cu m
(1B) Water flowing from surface (25 %)	25 % of total available water from Rainfall (1) = 144000000 <u>cu m</u> x 0.25 = 36000000 cu m
(1C)Ground Water (10 %)	10 % of total available water from Rainfall (1) = 144000000 <u>cu m</u> x 0.10 = 14400000cu m
(2)Water loss due to evaporation(35%)	35% of total available water from Rainfall (1) = <u>144000000 cu m</u> x 0.35 = 50400000cu m
<i>(Note: The percentage stated in 1A,1B, 1C and 2 should be determined as per the type of soil, local geographical conditions, geological structure etc. These should be decided accurately with the help-of the equipment in the nearest water research center.)</i>	
(3) Availability of water	Total available water from Rainfall (1) -Water draining off (1B)+ Water loss due to evaporation (2)= <u>5,76,00,000cu m</u>

End Users

End user of this cloud is government functionaries, Non-government organizations, educational institutions, cloud industries working in natural resource management, research institutes and grampanchayat representatives.

Conclusion

We are going to calculate the water budget of every village to use the ground water judiciously. This is going to result in increasing the level of ground water. After implementing the cloud based water budgeting application, farmers can easily calculate the water budget of respective villages. For that only the correct information about rainfall and other things is essential. We can collect the information from appropriate authority who can give the correct information. At Village level the technical person in Village can calculate the water budget of village in just few minutes by this application. This will help farmers in crop management depending on the rain water and available water in village.

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INTERNET CENSORSHIP: NEEDS, PROS AND CONS

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Abstract

A standout amongst the most famous yet disputable advancements of innovation is the web. It is a medium for self-articulation and spreading data crosswise over on a worldwide unnerve. The Internet has likewise step by step turn into an apparatus of dissidence in subdued countries everywhere throughout the world - to spread data, design and sort out activists and direct challenges. As anyone might expect, harsh administrations see the Internet as a danger. In any case, regardless of the advantages it offers, there are additionally difficulties that drive individuals and countries to push for and hone web control. For shielding their nationals from the negative impacts of the Internet, (for example, explicit entertainment and detest discourse), numerous nations have, and are, effectively checked Internet use by their residents by embracing different oversight measures and barricades. In this paper, we have discussed about what is internet censorship, its need and tools and discussed some pros and cons.

Introduction

What is Censorship?

Restriction is the concealment of discourse, open correspondence, or other data, on the premise that such material is viewed as frightful, unsafe, delicate, and politically wrong or "badly arranged" as controlled by government experts or by group agreement. Oversight could be immediate or backhanded. It happens in a wide range of media, including discourse, books, music, films, and different expressions, the press, radio, TV, and the Internet for an assortment of guaranteed reasons including national security, to control vulgarity, tyke explicit entertainment, and despise discourse, to ensure youngsters or other powerless gatherings, to advance or confine political or religious perspectives, and to counteract defamation and slander.

What is Internet Censorship?

This is the demonstration of forbidding or obstructing a few or all of substance that can be gotten to, distributed, or seen on the Internet authorized by controllers, or all alone activity. Divisions which execute this boycott can incorporate governments, private segments and people with a shared objective to control what individuals can read and post on the World Wide Web. The degree of Internet control shifts on a nation to-nation premise. While most fair nations have direct Internet restriction, different nations venture to restrain the entrance of data, for example, news and stifle dialog among residents. Web oversight likewise happens in light of or in foresight of occasions, for example, decisions, challenges, and uproars. A case is the expanded restriction because of the occasions of the Arab Spring. Different regions of control incorporate copyrights, slander, provocation, and vulgar material.

Needs and Tools for Internet Censorship:

The inspirations for oversight run from well meaning wants to shield kids from unsatisfactory substance to dictator endeavors to control a country's entrance to data. Regardless of what the controls' reasons are, the final product is the same: They piece access to the Web pages they recognize as unfortunate. Web control isn't only a parental or legislative instrument. There are a few programming items on the purchaser showcase that can point of confinement or square access to particular Web destinations. A great many people know these projects as Web channels. Oversight adversaries have another name for them: Censorware.

While there are some straightforward supporters and rivals of Internet control, it's not generally simple to separate everybody into some camp. Not every person utilizes similar strategies to fulfill objectives. A few adversaries of oversight challenge government strategies in court. Others play the part of data opportunity contenders, furnishing individuals with surreptitious approaches to get to data.

There's no denying that the Internet contains a great deal of material that most guardians wouldn't need their youngsters to see. Regardless of whether it is explicit entertainment, loathe discourse, visit rooms or betting destinations, many guardians stress that their youngsters will be presented to negative or even risky substance. While a few adversaries of restriction may feel that parental supervision is the most ideal approach to protect kids on the web, many guardians call attention to that it's troublesome - if certainly feasible - to regulate a youngster's entrance to the Internet constantly.

Many guardians swing to programming and equipment answers for this issue. They can buy Web separating programs like Net Nanny or CYBER sitter to square access to unwanted Web destinations. These projects as a rule have a progression of alternatives guardians can choose to constrain the locales their youngsters can get to. These choices advise the program which channels to empower. For instance, CYBER sitter has 35 channel classes, including explicit entertainment and informal communication destinations

Another alternative for guardians is to introduce a firewall. A PC firewall gives assurance from risky or bothersome substance. Firewalls can be programming or equipment. They go about as an obstruction between the Internet and your PC organize. They just let safe substance through and continue everything else out. Firewalls require somewhat more contribution from the system overseer (for this situation, a parent) than Web sifting programming. Technically knowledgeable guardians won't not have an issue introducing and keeping up a firewall. Others want to utilize Web channels, which do the vast majority of the work for them.

List of Pros of internet Censorship:**1) It helps in strengthening national security:**

By executing laws against hacking and forcing robust discipline to violators, national security can be safeguarded. With no type of control, it will be difficult to shield awful components and psychologicalmilitants from getting to data that will represent a danger to the security of the country.

2) It lessens the incidents of identity theft:

Supporters for web oversight say that by restricting what data is gotten to in the web, individual data won't be effortlessly gotten to. By utilizing hostile to phishing programming, which fills in as a type of web oversight since it cautions the client that a sort of programming is attempting to get to, it allows the client to shield programmers and organizations from getting relevant data.

3) It can control illegal activities:

Supporters guarantee that directing substance in the web is a powerful approach to decrease if not absolutely dissuade unlawful exercises since it shields individuals from advancing malignant substance which can without much of a stretch impact others, if no controls are forced.

4) It will keep children from being victims of sex trafficking and pornography:

Defenders of controlling substance on the web assert that blameless youngsters who progress toward becoming preys of predators holding up to connect with youthful children in kid erotica and different noxious acts that can be made conceivable through the web are given security. With this, violators will be rebuffed and lesser kids will be casualties.

5) Parents cannot be there always to watch out for their kids:

Defenders of web control call attention to that guardians have the duty to show youngsters about profound quality and guide them on what is great or awful yet truly, they additionally need to win a living to accommodate their children. They don't have the ability to be on watch on most parts of the day.

6) A free society should be able to set limits:

A few columnists who advocate for web oversight keep up that regardless of whether there is the right to speak freely and articulation, there shouldn't be supreme opportunity. On the off chance that there is no restriction of any sort, a few people can be casualties of digital tormenting and supremacist discourse which ought not be the situation. These practices ought not be permitted in the internet.

List of Cons of Internet Censorship:**1) It removes the freedom of expression and deprives people of learning the truth:**

Adversaries of web oversight contend that by making this a law, flexibility of the press, articulation and discourse is executed and is an infringement of the First Amendment, which incorporates the forbiddance of making a law that encroaches opportunity of the press and discourse, among others. For them, control will be an infringement of this correction. In addition, if individuals are not given the chance to take in reality, this can prompt obliviousness.

2) It can be used by the government to keep pertinent information from its citizens:

Pundits likewise say that by executing a law on web oversight, harsh government authorities will escape with their wrong practices, for example, mishandle of energy and debasement. An administration pioneer, for instance, can boycott the arrival of recordings and online substance demonstrating his or her illicit exercises by forcing news power outage. They additionally assert that tyrants can utilize this to just

distribute pictures and stories that will work for their own pick up and not of his or her constituents.

3) People can practice self-autonomy:

A few gatherings that contradict restriction contend that people can have control of what to see and read, making it insignificant to have a law forbidding substance on the web. They additionally include that guardians should require the additional push to screen what their youngsters are seeking on the web and this is a piece of their duties as guardians.

4) It can harm businesses:

Pundits of web restriction say that there are organizations that depend on the web to publicize their administrations and items. Prohibiting their sites to be gotten to by purchasers of lawful age will hurt the deals and benefit of these organizations. In the event that oversight is actualized, these organizations won't have the capacity to achieve its worldwide market.

5) It is an added expense to the government:

Individuals who are not for blue penciling the web contend that with a specific end goal to execute control and guarantee all territories are secured the administration needs to put resources into hardware, labor and different expenses. Beside forthright costs, there are additionally included expenses for upkeep and checking. What's more, with the energy of the web and its scope, it is difficult to be on screen all day, every day and not spend for it.

Conclusion:

The disputable civil argument on web control will keep on being an interesting issue. With the talk of different issues concerning the Internet, it is anything but difficult to see that the subject has no obvious determination. Maybe web oversight ought to be controlled in order to have adjust albeit supreme restriction won't not be the arrangement. Numerous people are currently venturing forward to voice their sentiments about this point. It is left to the peruser to settle on their own choice on Internet restriction. Ideally the peruse feels more taught about the requirements, focal points/hindrances of Internet control that must be managed later on.

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ARTIFICIAL INTELLIGENCE: APPLICATIONS, AREAS AND TECHNIQUES

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Abstract

Artificial Intelligence is a branch of computer science in which machines can be trained to exhibit intelligence like humans and other animals. Artificial intelligence has wide area of applications in various disciplines like medical, business, fundamental science, arts, engineering and so on. Several different areas which are using applications of artificial intelligence have seen an increase in quality of efficiency and productivity. Regression, classification, clustering are some of the few techniques used in artificial intelligence. This research paper is a study of artificial intelligence, its applications, sub-areas and techniques used in artificial intelligence. It also contains details about how many different areas are using artificial intelligence applications.

Keywords: Artificial intelligence, Expert system, robotics, natural language processing.

Introduction

Intelligence can be termed as the capability of gathering knowledge and to apply it to solve various problems. So AI is nothing but the capacity of machines to gather knowledge and apply them on various activities, it is mainly done by studying, learning, gathering knowledge and communicating, manipulating and perceiving the object. Artificial intelligence was found in 1956 in a way of making computer behave, act, plan, learn and be as smart as humans. It makes machines smarter and more useful. The field was developed so that 'Human Intelligence' can actually describe that a machine can be made to mimic it. The goal of artificial intelligence (AI) is to create a technology that allows computer and machine to function in an intelligent manner. Artificial Intelligence has certainly reached to a point where we apply it in our real practical life in many of the applications and we can observe that humans are getting benefited by it. Natural language processing, computer vision, scene recognition, speech understanding, expert, robotics, sensory systems, computer vision, intelligent computer aided instructions, neural computing, expert system are the key areas of artificial intelligence. The further paper consists of description about applications and areas of artificial intelligence, different techniques used in artificial intelligence and several disciplines which are widely using artificial intelligence techniques.

Major Fields and Applications of Artificial Intelligence

1) Natural language processing:

This is a term which defines how our natural or human language can be processed or made so that it can communicate or control the intelligent system. NLP helps

computers to read and understand this natural language and response to it .The best example is that we use in our day today life is "skype".

2) Speech Understanding:

It includes capturing and then digitizing the sound waves, constructing the words from phonemes analyzing the words to ensure correctness and using it to communicate to machines .It is used in variety of applications like robotics, display, commands to computers and dictation.

3) Logic:

McCarthy in 1958 introduced logic in artificial intelligence. Logic is used mainly to solve problems and planning. Fizzy logic is a type of logic which tells weather the statement made is true or false. Several extensions in logics are made to handle specific domains of knowledge.

4) Medical Diagnosis:

Medical reasoning has been improved more with the help of AI also various treatments and operations are done with the help of AI .The main aim is to create a store of medicinal knowledge expressed as descriptions of possible disease more accurate than human doctors.

5) Computer Gaming:

One of the most popular uses of computer technology is playing games. The growth of the computer games is in such a way that it has grown up from the modest text based games to 3D graphical games. It became possible just because of artificial intelligence.

6) Robotics:

Robotics is a specific field that deals with the study of development mechanisms, constrains and architectures that allows us the open ended learning of new skills and knowledge in embodied machines .As in humans learning phase we tend to learn progressively from self exploring the environment in combination with social interactions . The typical approach consists of starting from theories of human and animal's development elaborated in fields such as neuron science, development and evolutionary biology, development and evolutionary biology, development psychology and linguistics, then to formalize and implement them in robots.

Sophia Robot:

Artificial intelligence has gifted the world a humanoid robot named “Sophia” which is developed by a Hong Kong based company “Hanson robotics”. Sophia can response to questions .She has been interviewed around the world .In October 2017 this robot became the first robot ever to have a Saudi Arabian citizenship and the first robot to have a citizenship of any country. Sophia was activated on April 19 2017. Sophia is very special as she has human like appearance and also human like behavior which is very different from previous robotic variants. According to manufacture David Hanson, Sophia uses artificial intelligence, facial recognition, and visual data processing. Sophia is designed to have conversations on predefined topics like “weather”. It is designed to get smarter over time by using voice recognition technique by using “alphabet Inc”. Artificial intelligence program analysis conversations and extracts data that allows it to

improve response in future .Sophia was actually designed to be a companion for the elderly at nursing homes, or to help crowds at event or park. Hanson hopes that Sophia can gain social skills by interacting with humans. ELIZA a computer program which was one of the first attempt at simulating human conversations. Sophia is conceptually similar to ELIZA .Sophia responses in such a way that it creates a illusion that the robot is actually able to understand conversations like “Is the door open or shut?” .Information is shared in cloud networks which takes the input and then responses which is analyzed by “block chain” technology .

Techniques Used In Artificial Intelligence

1) Expert System:

An expert system is a computer system which compete the human’s decision making ability. These systems are developed to solve the complex problems. These are the first truly successful form of artificial intelligence. They are branched into two systems the knowledge base and the inference engine. The inference engine applies the rules to the known fact to invent new facts, similarly the knowledge base system act in place of facts and rules.

2) Machine Learning:

Machine learning is a subset of AI .Machine learning is a term to make computers learn or understand or grasp knowledge on its own without and explicit programming done. In 1959 Arthur Samuel coined the term Machine learning in the fields of computer gaming and artificial intelligence .Samuel taught a computer to play checkers. His main aim was to make the computer play checkers better than him, so he worked in this field and aim success in 1952.Machine learning study and constructs algorithms that can learn and make predictions on data. Machine learning is practiced in wide range of computing tasks, where it is difficult to program explicit algorithms with good performance. The following graph shows different fields which are benefited with AI. Figure-1 shows the applications of artificial intelligence in different fields and figure-2 is the future benefitting areas with artificial intelligence.

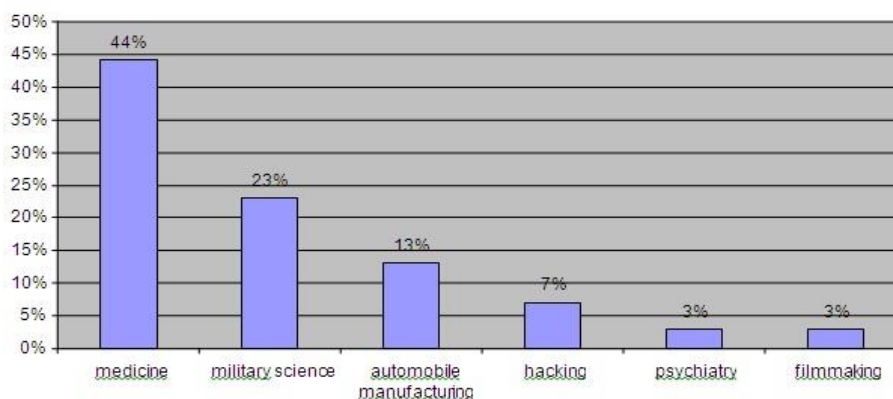


Figure-1: Applications of AI in different fields

Figure-2 shows that medicine field is benefited the highest with (44%) with the help of AI. followed by military science with (23%). then is automobile manufacturing with (13%). Followed by hacking (7%) and the field with least benefit is psychiatry (3%) with filmmaking also (3%).

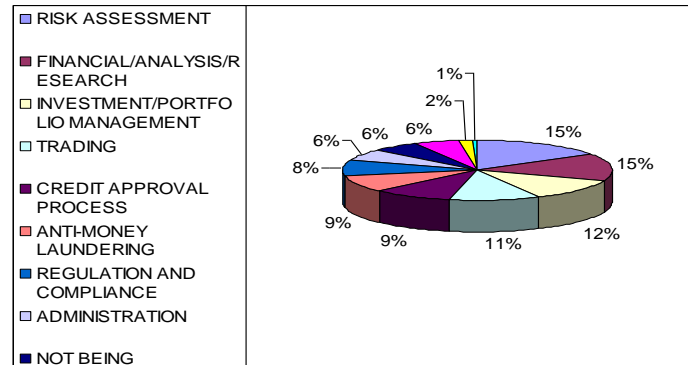


Figure-2: Future benefitting areas with artificial intelligence

Figure-2 shows that how and in which further fields AI will influence .Risk assessment 49 % , Financial analysis and research 45%, investments and portfolio management 37 % , trading 33 %, credit approval process 29 % , KYC anti money laundering 29 % , regulation and compliance 26 % , administration 19 % , not introduced 17 % , sales 17 % senior management 5 % and others 2%.

Conclusion:

Artificial intelligence plays an important role in this developing world. It has caused a tremendous change in the fields of computer science. Artificial intelligence gives machine an ability to think and act like humans using various concepts. Artificial intelligence will continue to play an important role in various fields. There are several different areas which are getting benefit from artificial intelligence. Technological growth of AI is very faster. There are several fields like medicine, automobile manufacturing, psychiatry, military science and so on are using various applications and techniques of artificial intelligence. Natural language processing, speech understanding, logic, medical diagnosis, robotics are few techniques used in artificial intelligence.

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EFFECTIVE WAYS OF QUERY OPTIMIZATION

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Abstract

Sql statements are used to obtain the data from the database. To obtain the results/records from the database we need to write some sql queries. If the structure of database is huge then the queries will be complexed to fetch the records/data. The complexity leads towards the sluggish performance of queries. To improve the performance of queries we need to take some tips into consideration and do some optimization work. For better performance we need to use better, fastest and efficient queries. This paper comprises of some very important things which we need to consider while writing efficient and tuned queries.

Keywords: Query Optimization, Performance Tuning

INTRODUCTION

Query optimization is the process of ensuring that the SQL statements will run in the fastest possible time. The best way to improve performance of the query is to write the queries in a number of different ways and compare their IO reads and execution plans. Query optimization is an important asset for SQL developers and database administrators (DBAs). In order to improve the performance of SQL queries, developers and DBAs need to understand the query optimizer and the techniques it uses to select an access path and prepare a query execution plan. Query tuning involves knowledge of techniques such as cost-based and heuristic-based optimizers, plus the tools an SQL platform provides for explaining a query execution plan. Tuning SQL statements is finding the fastest route to answer your question, even if that route is not very intuitive[1].

Approaches to Query Optimization

- Exhaustive Search Optimization: In these techniques, for query, all possible query plans are initially generated and then the best plan is selected. Though these techniques provide the best solution, it has an exponential time and space complexity owing to the large solution space. For example, dynamic programming technique.
- Heuristic Based Optimization: Heuristic based optimization uses rule-based optimization approaches for query optimization. These algorithms have polynomial time and space complexity, which is lesser than the exponential complexity of exhaustive search-based algorithms.

General Tips for Query Optimization

Each tip was tested by running both the original query and improved query while retrieving information from the PostgreSQL database especially on Sales schema. I recorded the average time of each query to show the speed increase of using the more efficient query.

Use names of column instead of * in a SELECT statement.

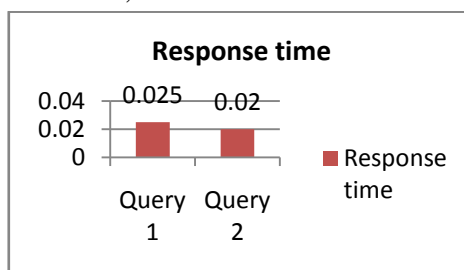
If we want to find a particular record, then avoid using * in a select statement because * searches and queries on whole table which leads into poor performance.

Original query:

Query1-: select * from sales;

Improved query:

Query2-: select prod_id from sales s;



Graph 1 :- Comparison for select query with column names and with *

Use count(1) instead of count(*).

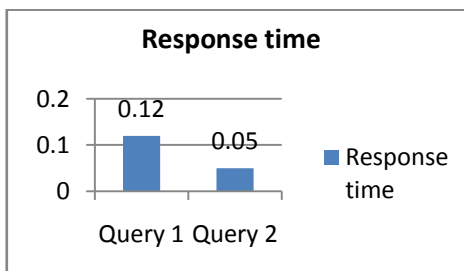
Count (*) counts the record wise where ascount(1) gives u faster results.

Original query:

Query1-: select count(*) from customers where cname='Mona';

Improved query:

Query2-: select count(1) from customers where cname='Mona';



Graph 2 :- Comparison for select query for aggregate function count()

Avoid including a HAVING clause in SELECT statements instead use a like operator.

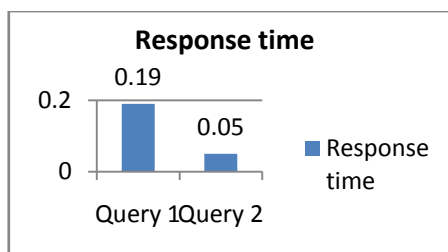
The HAVING clause is used to filter the rows after all the rows are selected and it is used like filter. It works by going through the final result table of the query parsing out the rows that don't meet the HAVING condition.

Original query:

Query1-: SELECT cust_id, count(s.cust_id) FROM sales s GROUP BY s.cust_id HAVING s.cust_id != '1660' AND s.cust_id != '2';

Improved query:

Query2-: SELECT s.cust_id, count(cust_id) FROM sales s WHERE s.cust_id != '1660' AND s.cust_id != '2' GROUP BY s.cust_id;



Graph 3 :- Comparison for select query for aggregate function count() with having clause

Eliminate Unnecessary DISTINCT Conditions.

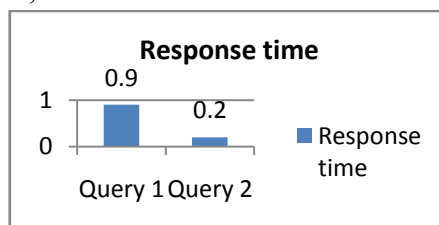
Distinct conditions takes much more time to give you results. If we put distinct keyword on columns which are already having unique values, it is useless. Like on primary keys we should not put distinct keywords. Usedistinct only when you have a column with duplicate entries.

Original query:

Query1-: Select DISTINCT * from sales s JOIN customers c ON s.cid=c.cid WHERE c.cust_marital_status='single';

Improved query:

Query2-: Select * from sales s JOIN customers c ON s.cid=c.cid WHERE c.cust_marital_status='single';



Graph 4 :- Comparison for select query with Distinct clause

Un-nest Sub queries.

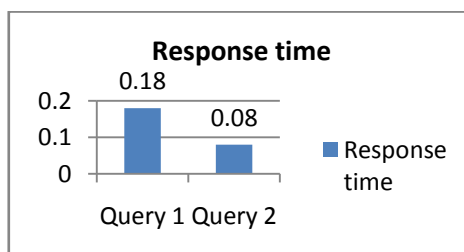
Rewriting nested queries as joins often leads to more efficient execution and more effective optimization. In general, sub-query un-nesting is always done for correlated sub-queries with, at most, one table in the FROM clause, which are used in ANY, ALL, and EXISTS predicates.

Original query:

Query1-: SELECT * from products p WHERE p.pid=(SELECT pid FROM sales s WHERE s.cid=1 AND s.quantitiesold=2);

Improved query:

Query2-: SELECT p.* FROM product p, sales s WHERE p.pid=s.pid AND s.cid=1 AND s.quantitiesold=2);



Graph 5 :- Comparison for Nested select query

Use EXISTS instead of DISTINCT when using table joins that involves tables having one-to-many relationships.

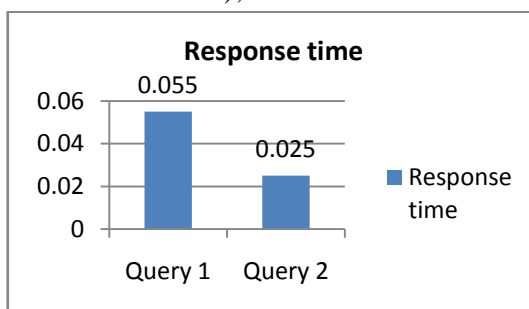
The DISTINCT keyword works by selecting all the columns in the table then parses out any duplicates. Instead, if you use sub query with the EXISTS keyword, you can avoid having to return an entire table.

Original query:

Query1-: `SELECT DISTINCT c.cid, c.name FROM countries c, customers e WHERE e.cid = c.cid;`

Improved query:

Query2-: `SELECT c.cid, c.cname FROM countries c WHERE EXISTS (SELECT 'X' FROM customers c WHERE e.cid = c.cid);`



Graph 6 :- Comparison for select query with Exists

Use semi joins over joins.

Joins operations are heavy operations in comparison with the semi joins because joins are applied onto the whole table where as the semi joins are applied only onto required columns as a subquery.

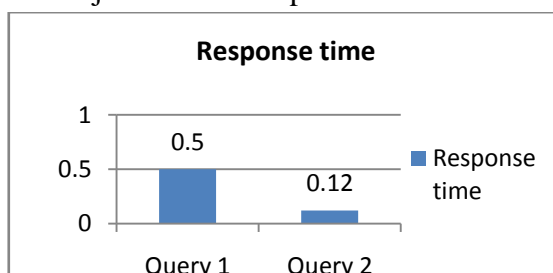
Join:

Query1-: `SELECT orders.oid, customers.cname, orders.odate FROM orders INNER JOIN customers ON orders.cid= customers.cid;`

Semi Join:

Query2-: `SELECT * FROM customers WHERE EXISTS (SELECT * FROM orders WHERE customers.cid=orders.cid);`

Always prefer semi joins over joins for better performance.



Graph 7 :- Comparison for select query with semi joins

Try to use UNION ALL in place of UNION.

The UNION ALL statement is faster than UNION, because UNION ALL statement does not consider duplicates and UNION statement does look for duplicates in a table while selection of rows, whether or not they exist.

Remove any redundant mathematics.

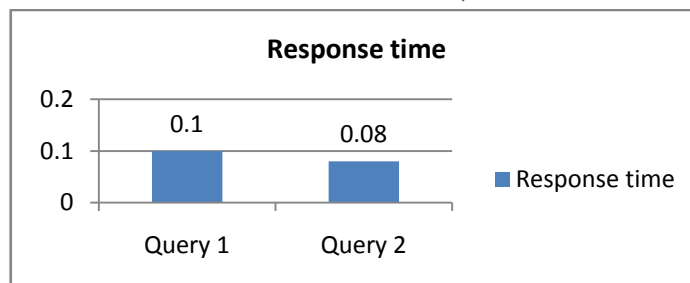
There will be the times where you will be performing mathematics within an SQL statement. They can be drag on the performance if written improperly. For each time the query finds a row it will recalculate the math. So eliminating any unnecessary math in the statement will make it perform faster.

Original query:

Query1-: `SELECT * from sales s WHERE s.cid+10<30;`

Improved query:

Query2-: `SELECT * from sales s WHERE s.cid<20;`



Graph 8 :- Comparison for select query with Mathematics Expression

Conclusion:

Query optimization is a common task performed by database administrators and application designers in order to tune the overall performance of the database system. The purpose of this paper is to provide SQL scenarios to serve as a quick and easy reference guide during the development phase and maintenance of the database queries. Even if you have a powerful infrastructure, the performance can be significantly degraded by inefficient queries. Query optimization has a very big impact on the performance of a DBMS and it continuously evolves with new, more sophisticated optimization strategies. So, we should try to follow the general tips as mentioned above to get a better performance of queries. Optimization can be achieved with some efforts if we make it a general practice to follow the rules. The final results show that optimized/tune queries offers more performance than un-optimized queries.

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DIGITAL CONTROL AND DATA LOGGING FOR SOLAR POWER PLANT USING RASPBERRY PI

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Abstract

This paper is about Digital control and Data logging for solar power plant using Raspberry pi, which monitors the Weather parameters like temperature, humidity and wind speed along with current and voltage values of the solar power plant.

Keywords: Digital Control, Data Logging, Solar Power Plant, Raspberry PI.

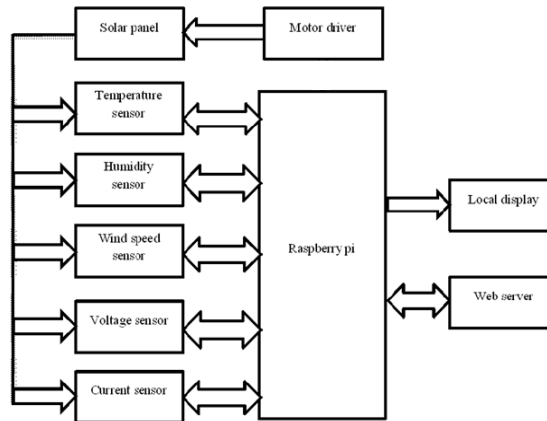
Introduction:

In the growing twenty-first century, importance of the green energy has tremendously increased. This in turn has brought a great ray of hopes for the non-conventional form of energy. Amongst the non-conventional forms, the solar energy tops the other forms as the most reliable source of the future. It is calculated that the normal solar plants can convert 15 % of the sunlight into electricity while the more experimental setup like concentrating solar panel can convert up to 40% of sunlight into electricity.

The weather stations are built with complex and rigid sensors increasing the cost with a guaranteed performance. With the introduction of internet, data transfer has been made to the simplest forms. The introduction of IOT is blissful in performing cloud based automation and data transfer much easier than before.

IOT means Internet of Things. It provides inter-networking of physical devices, buildings, vehicles and other components like sensors and actuators. By giving network connectivity to systems embedded with electronics, software, sensors and actuators; these objects are able to collect and exchange data. By using IOT objects to be sensed or controlled remotely through existing network. It gives opportunity to connect physical world with computer-based systems. IOT improves efficiency, accuracy, economic benefits along with reduced manpower. IOT frameworks help for the interaction between “things”. Also supports for more complex structures like distributed computing and development of distributed applications. Now a day's most of IOT frameworks seem to focus on real-time data logging solutions.

Block Diagram



Solar Panel:

Solar panels are devices that convert light into electricity. The word solar is used as they derive energy for operation from the sun. They are sometimes called photovoltaic which means "light-electricity". Solar cells or PV cells rely on the photovoltaic effect to absorb the energy of the sun and cause current to flow between two oppositely charge layers. A solar panel is a packaged, connected assembly of photovoltaic cells. The solar panel can be used as a component of a larger photovoltaic system to generate and supply electricity in commercial and residential applications.

Stepper Motor:

A stepper motor is an electromechanical device which converts electrical pulses into discrete mechanical movements. The shaft or spindle of a stepper motor rotates in discrete step increments when electrical command pulses are applied to it in the proper sequence.

Wind speed sensor:

Wind speed sensor is used for measuring wind speed by closing magnet switch. Due to switch close to per second causes 1.492 MPH or 2.4 km/s wind speed. The air pressure on the inside of the cup, which help push the cups and due this it start to revolve at more than two- fifth the speed of the wind. This cup are fixed with arm on one point.

Temperature and Humidity Sensor:

The DHT11 is basic low cost digital temperature and humidity sensor. It uses capacitive humidity sensor and thermistor to measure the surrounding air, and spits out a digital signal on the data pin.

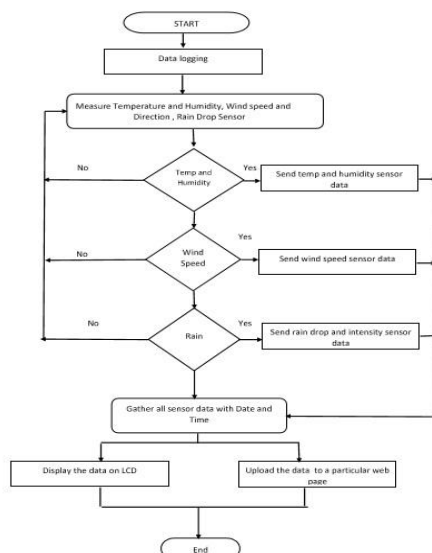
Rain Drop Sensor:

The rain sensor module is an easy tool for rain detection. It can be used as a switch when raindrop falls through the raining board and also for measuring rainfall intensity. The analog output is used in detection of drops in the amount of rainfall.

Raspberry Pi:

RaspberryPi-3 Model-B is the low cost, credit-card sized main computing device used for running the Image Processing algorithms. Database of images to identify the products is stored on Raspberry Pi. Raspberry Pi will also generate the data for sorting mechanism.

Flowchart



Algorithm

- 1) Collect the sensor data
- 2) Measured data going to the Raspberry-Pi
- 3) Output of Raspberry-Pi going to server
- 4) Display the received o/p on LCD display.

Conclusion

This project's aim is to measure the various parameters like Temperature, Humidity, & wind speed sensor. The system uses a good combination of analog and digital sensors in wired and wireless modes of operation. Thus, a proof of concept for an Internet of Things device for a remote digital control and data logging for solar power plant for raspberry pi system has been established.

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GOOGLE DORKS: ANALYSIS, CREATION

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Abstract

The Google Search Engine finds answer to everyone's questions, but many people use Google Dorks in Penetration Testing and Hacking. Google Hacking is abused by hackers to find vulnerabilities on websites over Internet. Through searching specific terms of vulnerabilities in search engines, hackers can easily find a lot of vulnerabilities on websites in a large scale to leak confidential information and data. However, to study the characteristics of vulnerable target by Google Hacking no enough efforts has been taken yet (e.g., usually what kind of population is under vulnerabilities threat? By using Google Dorks what kind of vulnerabilities are generally targeted? What is the impact of Google Hacking on society and how to defend against Google Hacking?). Google Dorks are – a way to use the search engine to pinpoint websites that have certain flaws, vulnerabilities, and sensitive information that can be taken advantage of. In this paper, we conduct few experiments on how hackers uses Google Dorks for stealing sensitive data over internet, and search for potentially vulnerable websites and test if they are available for intrusion. the wonderful thing in google hacking is that this is an incredibly passive form of attack that doesn't draw much attention to the owner.

Keywords: Hacking, dorks, operators, sql, commands, query.

Introduction

Originally created by Johnny Long. A Google Dork query, sometimes just referred to as a dork, is a search string that uses advanced search operators to find information that is not readily available on a website. In other words, Google hacking is the use of a google search engine to locate different security vulnerabilities on the Internet and access pages on certain websites which are not openly available. Just like math equations and programming code, Google uses a unique searching algorithm and indexes most of the websites. There are many types of vulnerabilities that we can found on the Web, over all the main two are: misconfigurations and software vulnerabilities. The Google Hacking Database is an authoritative source for querying the ever-widening reach of the Google search engine. In the Google hacking database (GHBD), we will discover many search terms for server's vulnerability, and even files holding usernames and passwords. Many hacker uses Google dorks to penetrate for sensitive files/data without notifying latent targets -- and when a target is discovered, the hacker can access its data/files from the Google cache without building any communication with the target's server. The only server with any logs of the attack would be Google's, and it's unlikely they will realize an attack has taken place. By using the search techniques

combined with Google's advanced operators, we can perform information-gathering and vulnerability-searching using Google. This technique is commonly referred to as Google hacking or Google dorking.

A hacker generally fires the desired parameters like:

Operator	Description	Example	Additional search argument required?
site:	Limit the search query to a specific domain or web site.	site:indiraicem.ac.in MBA	YES
filetype:	Limit the search to text found in a specific file type	filetype:txt password	YES
link:	Search for pages that link to the requested URL	link:indiraicem.ac.in	NO
intitle:	Search for a string text within the title of a page.	intitle:wifi Hacking	NO
inurl:	find sites containing search_term in the URL of the page	allinurl:iccs admin	NO

inurl = the URL of a site you want to query

domain = the domain for the site

dorks = the sub-fields and parameters that a hacker wants to scan

Attackers use these techniques for illicit and *illegal* activities such as identity theft, cyberwarfare, digital terrorism and whole other undesirable activities which violate not only laws but moral codes as well.

Advanced Operators

The basic syntax for advanced operators in Google is:

operator_name:keyword

Google advanced operators help refine searches.

They are included as part of a standard Google query.

Advanced operators use a syntax such as the following.

inurl:index.php?id=

There are no spaces between the operator, the colon, and the search term!

Google Advanced Operators Summary

Data which can be extracted Using Google Dorks?

Admin login pages

Email lists

Sensitive/private documents

Government/military data

Vulnerable sites/data

Username and passwords
Bank account details and lots more

Google hacking techniques

Domain searches using the 'site' operator

The site operator can be expanded to search out entire domains.

For example: site:gov secret

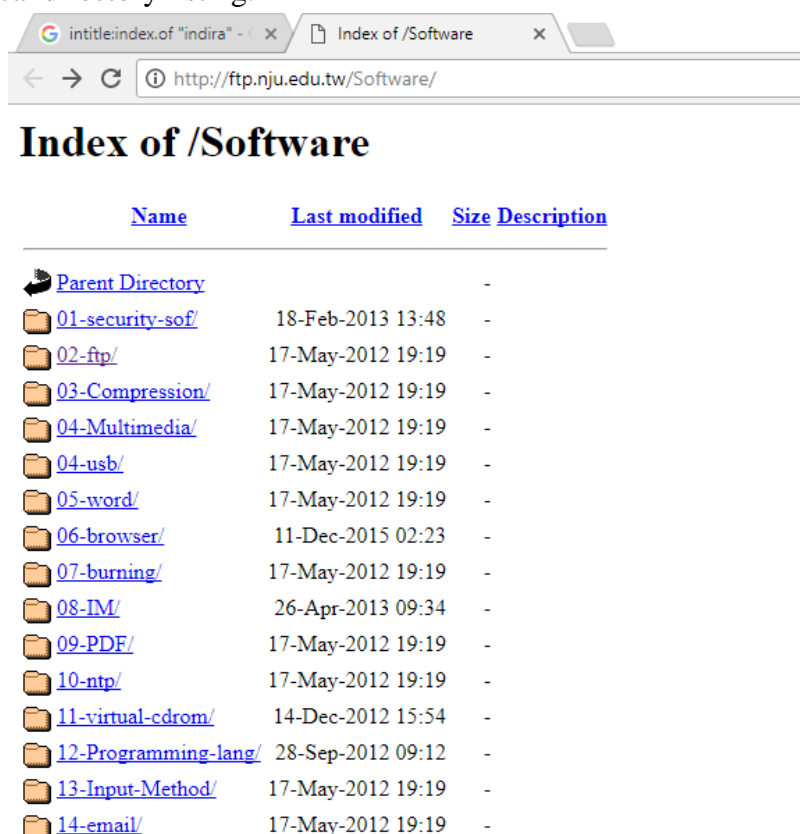
This query searches every web site in the .gov domain for the word 'secret'. Sending unexpected queries like these are part of a competent Google hacker's arsenal.

How this technique can be used

1. Journalists, troubleshooters can easily apply this technique to create Much hyped 'gossip' about a group of websites owned by government or non-profit organization. We must not forgot that top-level domains often very detailed and can include interesting groups such as: the U.S.Government (.gov or .us)
2. Hackers searching for targets. If a hacker harbors a grudge against a specific country or organization, he can use this type of search to find sensitive targets.

Finding Directory listings

Directory listings provide a list of files and directories in a browser window instead of the typical text-and graphics mix generally associated with web pages. Figure below shows a typical directory listing.



Directory listings are often placed on web servers purposely to allow visitors to browse and download files from a directory tree. Most of the times, directory listings are not planned. A misconfigured web server produces a directory listing if an index, or main web page file is missing. In some cases, directory listings are setup as a temporarily storage location for files. Either way, there's a good chance that an attacker may find something interesting inside a directory listing. Most directory listings begin with the phrase "Index of", which also shows in the title. An obvious query to find this type of page might be "intitle:index.of", which may find pages with the term 'index of' in the title of the document. Remember that the period (.) serves as a single-character wildcard in Google. Unfortunately, this query will return a large number of false-positives. These queries indeed provide directory listings by not only focusing on "index.of" in the title, but on key words often found inside directory listings such as "parent directory" "name" and "size."

How this technique can be used

Keep in mind that many directory listings are purposeful. However, directory listings provide many hackers a very convenient way to easily navigate through any website. For the resolutions of finding sensitive or attention-grabbing information, browsing through lists of directory & file names can be much more useful than surfing through the shown content of website pages. Directory listings deliver a means of manipulating other techniques such as versioning and data and file searching.

Protecting yourself from Google hackers

Don't Keep your personal or sensitive data on the web!

Make sure you are not sharing your personal information on the internet publicly with the whole world, because it is shared by Google, whether you want it or not.

Don't add your website to Google's index.

The Google webmaster delivers priceless information about different ways to securely protect and/or expose your website to Google database.

Always Use a robots.txt file.

Google Web crawlers follow the robots exclusion standards. This exclusion standard summarizes the process for "graciously requesting" that web crawlers ignore all or pages of your site. Everyone must footnote that attackers may not have any such principles, as this data is positively a suggestion.

Conclusion

Google Dorking is considered as a hacking technique that uses Google Searches and other Google based applications to find flaws in the security configuration and computer program. Google is a very massive web search engine and is clever enough of doing many things which are very constructive for a hacker. By Using Google dorks, people are skillful to hack and compromise any websites and many web developers are unable to protect themselves or their customers data from such kind of attacks. Example, by using Google dorks, the hacker can source various information/data like

the database configuration, username, passwords, directory listings, files, error messages, etc.

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CHALLENGES AND ISSUES IN BIG DATA

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Abstract

Big data is new driver of the world economic and societal changes. The world's data collection is reaching a tipping point for major technological changes that can bring new ways in decision making, managing our health, cities and education. Big data analytics poses a grand challenges on the design of highly scalable algorithms. Big data analytics that discover useful and hidden knowledge from the big data efficiently and effectively.

In all the fields around the world we need to use big data, it a very demanding field and also a very important topic and that's why there is a need to discuss issues and challenges about this topic .We live in on-demand, on-command digital universe with data rapid reproducing by institutions, individuals and tools at very high rate. This data is categorized as big data due to its volume, variety, velocity and veracity. Analysing the issues and challenges comes first as we begin a collaborative research program into methodologies for big data analysis and design. [1]

Keywords: Big data, Information Retrieval, Data mining

Introduction:

To uncover hidden pattern and correlations Big Data is extensively used. Now-a-days, it is possible to analyse the data and get answers from it almost immediately - an effort that's slower and less efficient with more traditional business intelligence solutions. Big data is used to store large amount of data in database and easy to retrieve the data, and information from that database.

An exact definition of "big data" is difficult to nail down because projects, vendors, practitioners, and business professionals use it quite differently. **Big data** is large datasets, the category of computing strategies and technologies which are used for handling large datasets.

Importance

The evolution in the technology has helped organisations apply the findings, not only while strategizing but in almost every aspect of the functioning of an organisation, for internal and external benefits. Only fetching data is not important, but to understand what knowledge you get from that data is helpful in decision making.

- Big data, eliminates intuition such that all imperative decisions can be made through a structured approach, and with a data-driven insight. We can take data from any source and analyse it to find answers that enable cost reductions, Time reductions, new product development and optimized offerings, Smart decision making. When we combine big data with high-powered analytics, we can

accomplish business related task such as determining root causes of failures, issues and defects in near-real time.

Characteristic of Big Data:

- **Volume**
Big data implies enormous volumes of data. It used to be employees created data. It measures the amount of data available to an organization, which does not necessarily have to own all of it as long as it can access it. [2]
- **Variety**
Variety refers to the many types of data both structured and unstructured. We used to store data from sources like spreadsheets and databases. Now-a-days the data is available in various forms such as emails, photos, videos, monitoring devices, PDFs, audio, etc. This variety of unstructured data creates problems for storage, mining and analysing data.
- **Velocity**
Velocity of Big Data deals with data flows from sources like business processes, machines, networks and human interaction with things like social media sites and mobile devices. This real-time data can help researchers and businesses make valuable decisions that provide strategic competitive advantages.
- **Veracity**
Big Data Veracity means the data that is being stored, and mined meaningful to the problem being analysed. In scoping out your big data strategy you need to have your team and partners work to help keep your data clean and processes to keep 'dirty data' from accumulating in your systems.
- **Validity**
Veracity is the issue of validity just like big data, meaning is the data correct and accurate for the intended use. Valid data is key to making the right decisions.
- **Volatility**
Big data volatility refers to how long is data valid and how long should it be stored. In this world of real time data you need to determine at what point is data no longer relevant to the current analysis.
Big data clearly deals with issues beyond volume, variety and velocity to other concerns like veracity, validity and volatility.

Types of Big Data:

- **Unstructured Data**
Unstructured data traditionally does not have any organized row-column format. For instance, email texts, images, audio files, video files, presentations, webpages, and any kind of multimedia or business contents. These kinds of contents do not fit neatly into a database. In order to sustain in the competitive environment, it is an essential step for managing the unstructured data in such a way that one could extract even the most difficult information at any given point; which is why most organizations would go to any extent in designing their software with a flexible

format as much as possible. It is growing rapidly but most of the organizations are quite aware of that; they thus efficiently make utmost use of the available space and extend as well, if required.

- **Structured Data**

As the name suggests, it basically refers to that kind of data which is organized and has a fixed size, so that it could be easily stored and managed within relational databases. In this case the data model, is already decided, like how the data will be stored, processed, retrieved and manipulated in any way. This means that the data type, size, etc. will be pre-defined and the protocol will be followed throughout. These have the advantages of being easy. Learning the Structured Query Language (SQL), first introduced by IBM and later modified by Oracle Corporation (through developing relational model), is what it all requires to manage these kinds of information.

Challenges of Big Data

- **Data storage and quality**

Companies and Organizations are growing at a very fast pace. Moreover, the growth of the companies rapidly increases the amount of data produced. The storage of this data is becoming a challenge for everyone. The problem, however is when a data lakes/ warehouse try to combine inconsistent data from disparate sources, it encounters errors.

- **Good quality analysis**

The companies and organisations make the best decisions possible with help of big data. Consequently, the data they are using should be accurate. This high reliance on data quality makes testing a high priority issue. This requires a lot of resources to ensure the accuracy of the information provided. The process of creating accurate data is very time consuming and requires the use of tools that can be expensive.

- **Security and privacy of the data**

Once, companies and organizations figure out how to use big data, it gives them a varied range of opportunities. When it comes to security and privacy of the data it involves big risks. The tools used for analysis, stores, manages, analyses, and utilizes the data from a different variety of sources. This ultimately leads to a risk of exposure of the data. Therefore, the production of more and more data increases security and privacy concerns. Thus making it essential for analysts and data scientists to consider these issues and deal with the data in a manner that will not lead to the disruption of privacy.

- **Various sources of data**

Dealing with the volume of data being produced and the velocity at which it is being produced is a challenge. The data comes from the company's internal sources like finance, marketing etc. Moreover, external sources like social media produce a huge amount of data. Therefore, making the data extremely diverse and massive. Any number of tools and Big Data experts will not be enough to manage and utilize this amount of data optimally.



Issues of Big Data

- It's difficult to get insights out of a huge lump of data. In order to use Big Data, There has to be a discernible signal in the noise that you can detect, and sometimes there just isn't one.
- According to a recent report from Experian Data Quality, 75% of businesses believe their customer contact information is incorrect. If we have a database full of inaccurate customer data, we might as well have no data at all. The best way to solve the issue of inaccurate data eliminating data silos is by integrating your data.
- In a credit union, data comes from many various sources from all facets of the organization. In order to overcome this, a data warehouse is essential. The problems such as inconsistent data, duplicates, logic conflicts, and missing data all result in data quality challenges. Poor data quality results in faulty reporting and analytics necessary for optimal decision making.

Conclusion

From this paper we studied the importance of Big Data, characteristics of Big Data, different types of Big Data like structured and unstructured, challenges and issues faced in Big data.

The availability of Big Data, low-cost commodity hardware, and new information management and analytic software have produced a unique moment in the history of data analysis. It means that we have the capabilities required to analyse astonishing data sets quickly and cost-effectively for the first time in history. These capabilities are neither theoretical nor trivial.

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REVIEW OF ELECTRONIC VOTING PROTOCOL IN CRYPTOGRAPHY AND IT'S APPLICATIONS

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Abstract

In computer information security one of the most important fields is Cryptography. It is a method of transferring private information and data through open network communication. Electronic voting systems are increasingly used in electoral processes ranging from specialized standalone machines, up to complete paperless and remote voting system. In this paper the researcher has given the information about the Public-Key Cryptography, Electronic voting protocol.

Keywords: Cryptography, Public-Key, E-Voting Protocol.

Introduction

Cryptography:

In computer information security one of the most important field is Cryptography. It is a method of transferring private information and data through open network communication.

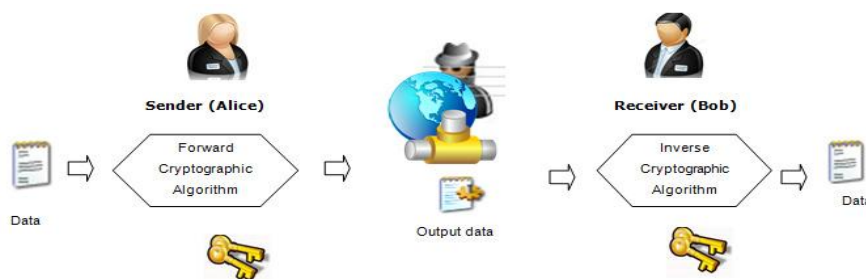


Figure-1: Cryptographic scheme

Many services provided by cryptography are confidentiality, authentication, integrity, non-repudiation, and accessibility. Cryptography provides the information security for other useful applications such as in encryption, message digests, zero-knowledge proof of identity, key-sharing and digital signatures. The length and strength of the Cryptography keys are considered an important mechanism. The keys used for encryption and decryption must be strong enough to produce strong encryption. They must be protected from unauthorized users and must be available when they are needed. Cryptography also contributes to Computer Science, particularly, in the techniques used in computer and network security for access control and information confidentiality.

Applications of Cryptography:

- Electronic Voting.
- Computer passwords.

- ATM cards.
- Electronic commerce.

Generally, Cryptography can be divided into two main categories:

- 1) **Asymmetric (two key/ public-key):** Cipherring and deciphering using a pair of keys.
- 2) **Symmetric (one key/ secret-key):** Cipherring and deciphering using the same key (or without key – in the case of Hash function) [2].

Types of Cryptography:

Secret Key Cryptography (SKC): Secret key cryptography uses single key for both encryption and decryption; also called *symmetric encryption*. Primarily used for privacy and confidentiality.

Public Key Cryptography (PKC): It uses one key for encryption and another for decryption; also called asymmetric encryption. Primarily used for authentication, non-repudiation, and key exchange.

Hash Functions: Uses a mathematical transformation to irreversibly "encrypt" information, providing a digital fingerprint. Primarily used for message integrity [5].

Public-key: In cryptography, a public key is a large numerical value that is used to encrypt data. The key can be generated by a software program, but more often, it is provided by a trusted, designated authority and made available to everyone through a publicly accessible repository or directory [3].

Public-Key Cryptography: Public-key encryption (also called asymmetric encryption) involves a pair of keys, a public key and a private key, associated with an entity. Each public key is published, and the corresponding private key is kept secret..

Figure(2)Public-Key Encryption shows a simplified view of the way public-key encryption works.

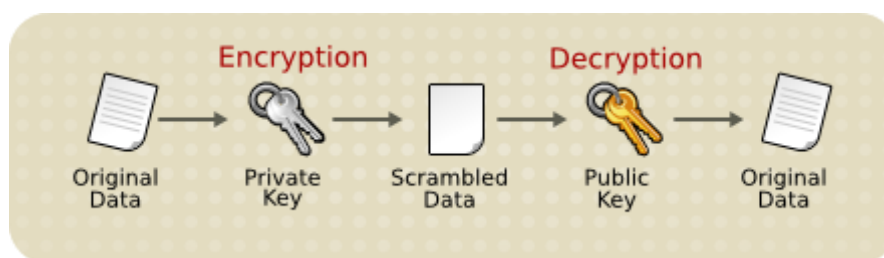


Figure-2: Public-Key Encryption

In Figure-2 Public-Key Encryption allows public keys to be freely distributed but only authorized people are able to read data encrypted using this key. In general, to send encrypted data, the data is encrypted with that person's public key, and the person receiving the encrypted data decrypts it with the corresponding private key.

Public-key encryption may not be feasible for encrypting and decrypting large amounts of data. However, it is possible to use public-key encryption to send a symmetric key, which can then be used to encrypt additional data. The reverse of the scheme shown in Figure-2Public-Key Encryption also works: data encrypted with a private key can be decrypted only with the corresponding public key. This is not a recommended practice

to encrypt sensitive data, however, because it means that anyone with the public key, which is by definition published, could decrypt the data. A digital signature can be done using private key encryption, an important requirement for electronic commerce and other commercial applications of cryptography. Client software can then use the public key to confirm that the message was signed with the appropriate private key and that it has not been tampered with since being signed [4].

E-Voting protocol:

In today's world of democracy election and voting plays a major role. E-voting over the Internet would be much more profitable since many voters would appreciate the possibility of voting from anywhere. E-voting is the voting process held over electronic devices (computer). An internet voting system should satisfy the following requirements. A significant factor in the introduction of E-voting is the elimination of election forms. Due to the electronic systems nature, the voting form removal may never be suitable with confidential elections. There are many E-Voting protocols have been done successfully. Among them are Cryptographic Protocols, A Novel in E-Voting of Egypt and A Simple Protocol for Yes-No Electronic Voting. In terms of security properties two different protocols were analyzed.

Literature Review

- Paper [1] ensures that the system provides security from all types of attacks, when vote is going from voting client to voting server, these attacks include the security threats from active and passive intruders. The system can also be used to take opinion of employee on certain issue. The main advantages of this system are it saves money, time required in traditional Voting system, security also the system is eco-friendly and avoids wastage of paper.
- "E-VOTING PROTOCOL BASED ON PUBLIC-KEY CRYPTOGRAPHY". International Journal of Network Security & Its Applications (IJNSA), Vol.3, No.4, July2011[2], this paper has shown the possibility of establishing E-Voting protocol based on public-key encryption cryptosystem. E-Voting protocol it allows the user to vote from his/her personal computer without any extra cost and effort, this protocol is proposed to replace the unreliable previous voting system, since voters feel justifiable justifiably confident that their votes will be counted. As well as, the protocol needs only the basic requirement such as: PC, internet connection, voting website and mobile phone.
- In this paper [6], authors have described two main approaches to cryptographic e-voting, one directly based on IND-CPA secure homomorphism encryption and second that is based on verifiable shuffles. From these two approaches the first one is more efficient but the second one is more universal. They have also mentioned that all described e-voting protocols have some flaws in common also they have outlined some major problems in e-voting protocols and propose some initial solutions.

- In paper[7], authors have presented different well known cryptographic algorithms. Cryptography can enhance secrecy, authentication and confidence of messages communications. It also says that there is no evolution of any E-Voting system made, neither a new one is presented. Its main objective is to remark the importance and benefits of the use of ciphering elements and remember that any distributed electronic voting system has a critical message communication process to do where cryptographic algorithm must be applied.

Conclusion

This paper has shown the need of establishing E-Voting protocol. This protocol is more efficient than any other protocol as it allows the user to vote from his/her personal computer (PC) without extra efforts and cost. In this system the voters will also feel justifiably confident about their votes as they will be counted. A few security problems may arise as the full process is going to be online, the site can be hacked wherein the votes can be misplaced. Hence a few more cryptographic algorithms must be studied In order to maintain and balance the security problems. In our country such Voting system should be enhanced and must be used so that security can be maintained during voting process.

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VIRTUAL REALITY FOR EDUCATION

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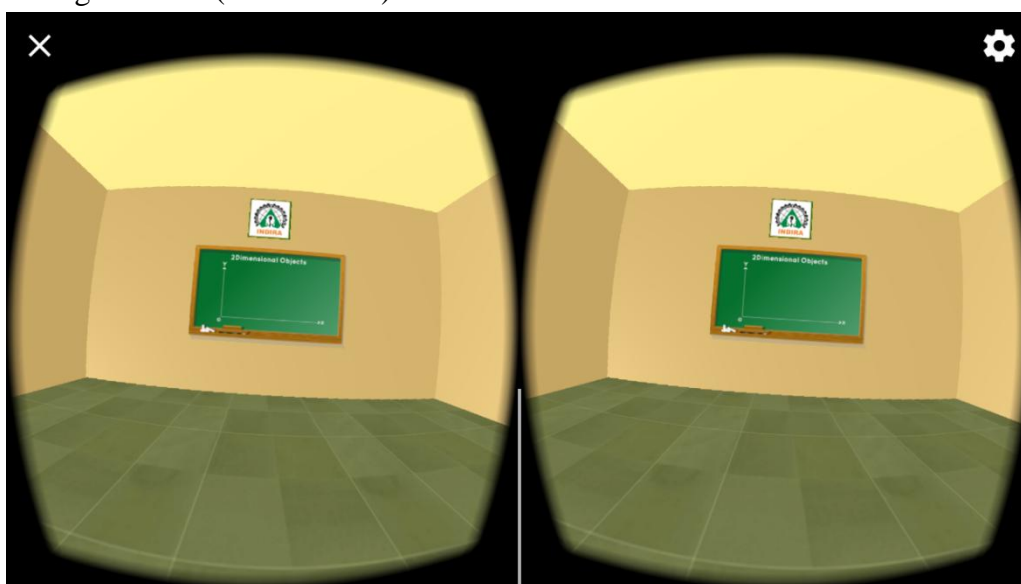
Abstract

Technology plays a large role in education system. And virtual reality is the new big thing in technology now a days. Virtual Reality simply means that you can experience computer generated 3D content like you are actually experience it in real world. But when we talk about virtual reality in education, Let me give you an example. Remember when our teachers were trying hard to explain us how Z – axis forms between X and Y Axis? As a normal student, I felt hard to understand this topic. But using virtual reality we can understand this quickly and easily. That’s where the impact of technology comes in to place in education stream. Not just maths concepts, Just imagine you can actually see and walk through the Eiffel tower instead of just watching a 2D video or Image in you history class. Epic right? So we have developed a VR Mobile Application For 8th Standard Maths Chapter Visualising Solid Shapes.

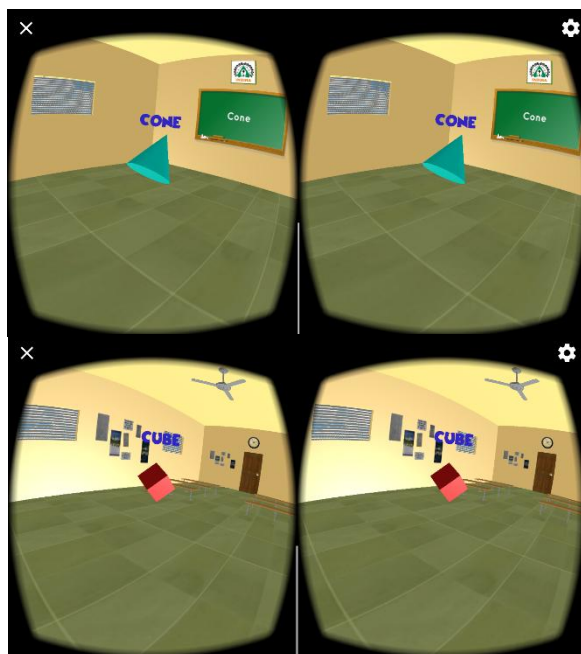
Introduction

This VR mobile application follows the textbook content to visualise them in Virtual Reality environment. The app also has an audio narration which we recorded and added to the app. The app starts with explaining 2D and 3D axes. After that students can see basic 3D shape like Cube, Sphere, Cone and Cylinder.

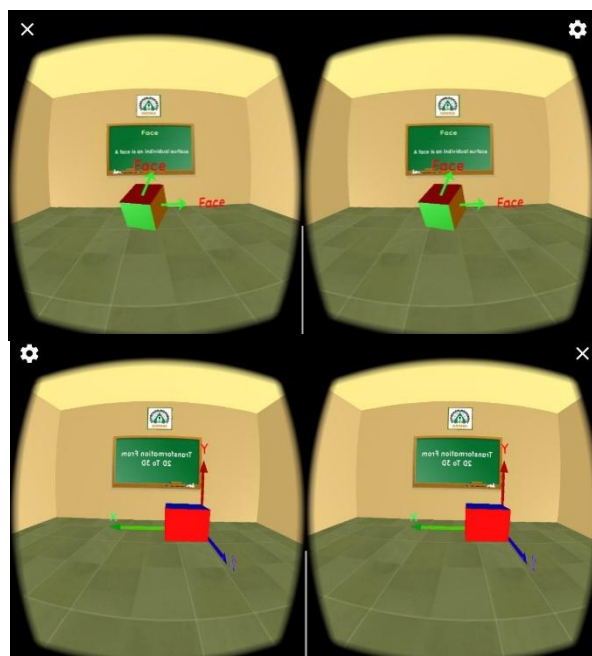
Explaining 2D Axis (Screenshot)



Explaining 3D Axes by showing students basic 3D shapes



After explaining the students about 3D axis then we explains how 2D objects are converted to 3D objects and also explains Faces and other properties of a 3 Dimensional Object.



After that we wrap up the session by showing students some real life examples and Multiple Choice Questions (Screenshots are given below)

Objectives

- Cutting Edge Technology
- Next Level Of Visualising Things
- Better Understanding Of Things Through 360 Degree Rotation

Conclusion

We have developed this Interactive Virtual Reality Experience using Unity Game Engine and C#. It was an awesome experience to use what we learn in college to actually create some useful product. Till 2014 we only had Videos to explain kids how things work. But Oculus introduced Virtual Reality for consumers and it picked up fast in all corners of the world. We developed this Interactive Virtual Reality Experience for Google Cardboard Platform. In coming years Virtual Reality will play a good role in education because of its usefulness and simplicity.

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COMPUTER FORENSICS: RESTORING LOST TRACES

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Abstract:

Today computer has wedged virtually in each face of our lives and has become a significant means of communication. One among these areas that has seen the foremost impacted is how we tend to maintain and store information. This information has been hold on in the form of logs, files, spreadsheets, or email are to call a couple of. And along with the means that to store this information, we've developed several techniques to retrieve this information. Once retrieve, this information may be used to restore info, show a history, or used as proof to gain a conclusion – even though the conclusion is at intervals our courts. For a number of years law enforcement agencies have been seizing computers and other electronic devices. In some cases machines and associated storage media have been seized for evidentiary purposes. Seizing the media is but the first step in being able to use what is contained in them. For this discussion, we will refer to the process by which this “raw data” becomes evidence in criminal prosecution is known as “computer forensics”.

Keywords- forensic, methodology, offender, retrieve

Introduction

Computers became a crucial a part of our lives and intrinsically are concerned in nearly everything. However, pc systems have conjointly become the mainstay of criminal activity. And when the people concerned are brought before the courts, innocence or guilt is essentially set by testimonies and proof. Of the 2 areas, evidence is the world most important key. And when it involves “evidence” it's the accuracy of that evidence which can be the distinction in determining the result of the path. Relying a lot of on the proof extracted from laptop systems to induce convictions has solid a replacement means that of scientific investigation. The term to coin this space of investigation is “computer forensics”. It's a neighborhood of science that has come back beneath the scrutiny of law enforcement, federal, state, and native government officials. And therefore the reason for the scrutiny revolves around the “cleanliness” of the information being presented. A standard methodology must be followed for extracting evidence form machines or media.

Why use a standard methodology?

Following a regular methodology is crucial to prospering and effective laptop forensics. Even as skilled programmers use an intensive programming methodology, laptop rhetorical professionals ought to use an intensive investigative methodology.

Computer style and software package implementation is similar from one system to next one. With this in mind, similar concepts are often applied from one

system to a different one. Laptop proof will exist in several forms, and sometimes in several different versions. The investigator who has information of many storage techniques and ways to quickly establishing places to appear for signs of proof. Repeatedly proof won't escape the case by being unnoted. Later on, due to the various sorts of hardware and software package obtainable for storing info, the investigator should be able to access to a wide variety of kit. A standard methodology can give for cover of proof and a few common steps that ought to be followed within the investigation method.

Computer Forensics Defined

Definition of computer forensics is as follows: “Computer forensics is solely the application of pc investigation and analysis techniques within the interests of determinative potential legal proof. Proof could be wanted during a wide range of pc crime or misuse and also to thievery of trade secrets, thievery of or destruction of property and fraud. Computer forensics can be further defined as “Since forensic science is that the application of a branch of knowledge to the law, the essence of all forensic disciplines considerations the principles applied to the detection, collection, preservation, and analysis of proof to make sure its admissibility in legal proceedings. Computer forensics refers to the tools and techniques to recover, preserve, and examine information hold on or transmitted in binary kind.”

The Legal Methods of Computer Forensics

Let's assume that rather than attempting to preserve data on a machine, the quality might have been compromised by an unknown offender. The tactic of resolution of the attack would be to use computer forensics, but now we are using the data for legal problems. Computer Forensics will further be outlined because the application of Computer investigation and analysis techniques are in the interest of crucial potential proof, which could be wanted in an exceedingly big selection of computer crime, or misuse, but are restricted to thievery of trade secrets, theft or destruction of property, and fraud. This section can describe the legal aspects of the new definition and justify the rights that employers and investigators have once done it pertains to forensics on a quality like the computer. When Associate in nursing investigation develops to some extent wherever info may have to be retrieved from Associate in nursing quality like a laptop there area unit lots of problems to require into thought. The evidence needs to stay valid through the course of the investigation to be admitted into a court of law. The investigators should additionally certify that search and seizure of the quality is allowed, otherwise the investigation will be corrupted.



Preserving of data

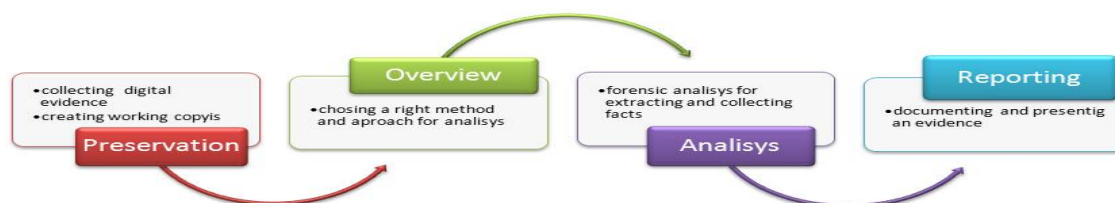
When the proof has been confiscated, the next step is information preservation. The information ought to be placed on a write protected medium. Hash functions ought to be manifest the integrity of the information. There square measure programs available which will be used to take a hash price of the whole drive. If the information isn't properly preserved and the case makes it to court, a conviction is going to be unlikely if the information is contaminated, even if the device still contains a substantial proof. It's common to repeat information to a read-only medium like a ROM to stop the information from being altered. Another solution is to form a duplicate of a tough drive to a different disc drive. For additional examination, drive ought to then be mounted browse solely to stop contamination of the information on it drive. Associate degree investigator ought to ne'er use the first data-storage medium once investigation. These square measure the most steps that ought to be taken once protective information in associate degree investigation.

Recovering of data

After the information has been preserved, successive step is recovering and examining the information. Here several techniques that a suspect will use to cover info, looking on the level of talent of these in question. Data are often settled in odd places or have misnamed files. As an example, it's common to give files names that seem like they'd be utilized by common programs or the operative system. Most of the people wouldn't question such files. It's additionally doable to place files where few individuals would look. A typical technique is to place files in folders utilized by the OS and provide them names that are detailed to those utilized by the OS. One of the technique to search out these files is to go looking for key words that these files are possible to contain. Files could also be protected by passwords. Whereas passwords could deter several users, the investigator ought to be ready to recover these files. Word cracking programs are often used to gain access to word protected files. There area unit few passwords that can't be cracked. Most of the people use weak passwords that makes ill these files fairly simple with the correct software package.

System logs

While an excellent deal of knowledge may be gained from the host pc, info additionally can be obtained from a server. The bulk of events that happen in an exceedingly pc system area unit recorded in log files on servers. By failing to gather the system logs, valuable information may be unnoted. Logs will contain info like user name, password, time interval, device used, functions performed, and different info depending on the kind of log. By examining the logs, it can be tried that user account really performed the questionable act. Also, Firewalls and intrusion Detection Systems have logs that may be evaluated for suspicious activities. Many network routers even have logs that the investigator will examine to reconstruct evidence. By examining the logs in associate in nursing system it should be attainable to piece together against the law that occurred.



Conclusion:

As the courts gain additional and additional expertise regarding the definition of laptop records and their submission as “evidence”, it's obvious the forensic specialist incorporates a major responsibility. He or she must be careful in extracting and consolidating all of the information he or she thinks are pertinent to the lawyers and people they're working with. E-evidence, its preservation, and retrieval are problems that desperately have to be compelled to be researched by those in data Systems. IS researches could have avoided these difficult problems as a result of they need legal data. Notwithstanding reason, these analysis challenges cannot be unnoticed as long as e-mail and alternative e-records are the first supply of proof in several controversies and legal matters. Once corporations fail to manage their e-records, they face severe sanctions by the courts, disruption of computer operations, and extended costs.

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