KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY

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DEPARTMENT OF INFORMATION TECHNOLOGY

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DIGITIMES

Mobile technology

KSR INSTITUTE FOR ENGINEERING AND TECHNOLOGY

Vision

To become a globally recognized Institution in Engineering Education, Research and Entrepreneurship.

Mission

M1	Accomplish quality education through improved teaching learning process
M2	Enrich technical skills with state of the art laboratories and facilities
M3	Enhance research and entrepreneurship activities to meet the industrial and societal needs

DEPARTMENT OF INFORMATION TECHNOLOGY

Vision

To produce competent Information Technology Professionals and Entrepreneurs with ethical values to meet the global challenges.

Mission

MD1	Impart quality education with ethical values in Information Technology through improved teaching learning process
MD2	Provide an ambient learning environment using state of the art laboratories and facilities
MD3	Encourage research and entrepreneurship activities to meet the dynamic needs of Information Technology industry and society

Program Educational Objectives (PEOs)

PEO	Key Words	Description
PEO 1	**Core Competency**	Graduates will be successful professionals in career by applying the knowledge of mathematics, science and engineering with appropriate techniques and modern tools.
PEO 2	**Professionalism**	Graduate will exhibit soft skills, professional and ethical values and thrust for continuous learning to maintain professionalism in the IT industries.
PEO 3	**Higher Studies and Entrepreneurship**	Graduates will engage in higher studies and outshine as entrepreneurs through life-long learning which leads to societal benefits.

DIGITIMES

Editorial

We would like to wholeheartedly thank our honorable Chairman, **Lion.Dr.K.S.Rangasamy** and vice chairman **Mr.R.Srinivasan**, and Principal **Dr.M.Venkatesan** for their continuous encouragement and constant support for bringing out the magazine. We profoundly thank our Head of the Department **Dr.P.MeenakshiDevi** for encouraging and motivating us to lead the magazine a successful one right from the beginning. DIGITIMES serves as a platform for updating and enhancing upcoming technologies in Information Technology. We are also grateful to all the contributors and faculty coordinator to bring this magazine.

By,

Editorial Board

CONTENTS

MOBILE TECHNOLOGY

What is mobile technology?

Mobile technology is the technology used for cellular communication. Mobile code-division multiple access (CDMA) technology has evolved rapidly over the past few years. Since the start of this millennium, a standard mobile device has gone from being no more than a simple two-way pager to being a mobile phone, GPS navigation device, an embedded web browser and instant messaging client, and a handheld game console. Many experts believe that the future of computer technology rests in mobile computing with wireless networking. Mobile computing by way of tablet computers are becoming more popular. Tablets are available on the 3G and 4G networks.

Types of mobile devices

There are many types of mobile computing devices that allow you to connect to the internet while you are away from home or traveling. Laptops, personal digital assistant, smartphones, tablets, and e-readers, are some of the devices being used right now to connect to the Internet and communicate with others. The smaller devices are also known as handheld devices, or simply handhelds.

These are just a few examples

Laptops

Tablets

P.D.A

Smart Phones

Wearable Computers

Mobile Gaming Consoled

Barcode Readers/Scanners

BY

GNANASEKAR III Year/IT

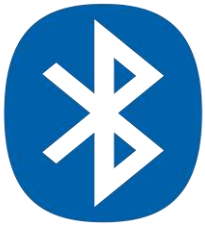
COMMUNICATIONS TECHNOLOGIES

Communications Technologies used by portable devices

Wireless fidelity (Wi-Fi) - a type of wireless local area network technology

WiFi is a technology that uses radio waves to provide network connectivity. A **WiFi connection** is established using a wireless adapter to create **hotspots** - areas in the vicinity of a wireless router that are connected to the network and allow users to access internet services. Once configured, WiFi provides wireless connectivity to your devices by emitting frequencies between 2.4GHz - 5GHz, based on the amount of data on the network.

Bluetooth - connects mobile devices wirelessly



• Bluetooth is, with the infrared, one of the major wireless technologies developed to achieve WPAN. Bluetooth is a wireless LAN technology used to connect devices of different functions such as telephones, computers (laptop or desktop), notebooks, cameras, printers and so on.

BY

PAVITHRA S III Year/IT

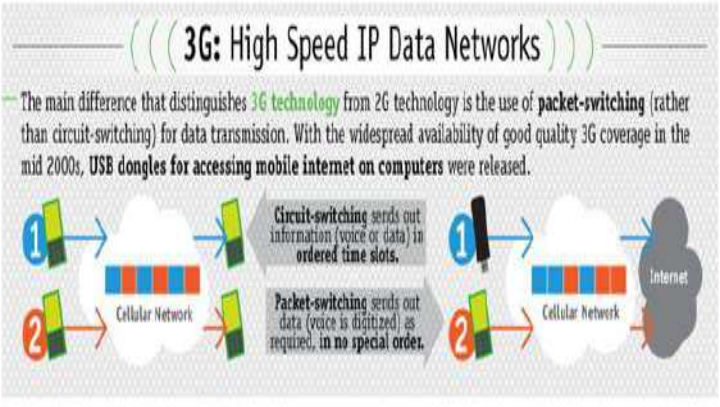
"Your mobile device has quickly become the easiest portal into your digital self."

- Phil Nickinson, Editor of Android Central

3G and 4G Technologies

3G: HIGH SPEED IP DATA NETWORKS

As the use of 2G phones became more widespread and people began to use mobile phones in their daily lives, it became clear that demand for data services (such as access to the internet) was growing. Furthermore, if the experience from fixed broadband services was anything to go by, there would also be a demand for ever greater data speeds. The 2G technology was nowhere near up to the job, so the industry began to work on the next generation of technology known as 3G. The main technological difference that distinguishes 3G technology from 2G technology is the use of packet switching rather than circuit switching for data transmission.



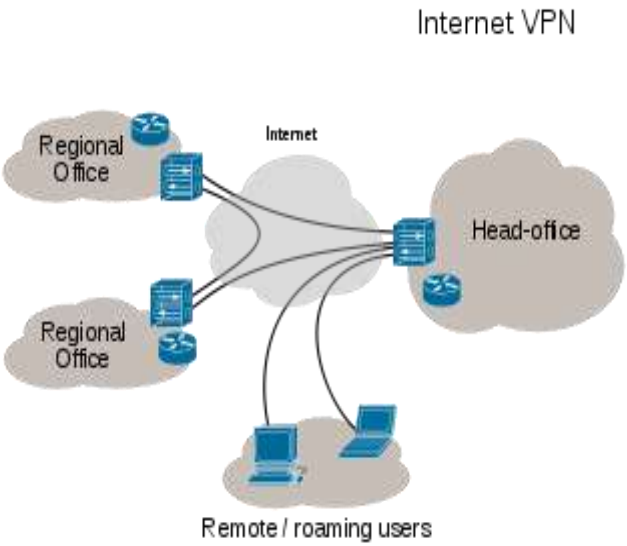
4G: Growth of mobile broadband

Consequently, the industry began looking to data-optimized 4th-generation technologies, with the promise of speed improvements up to 10-fold over existing 3G technologies. It is basically the extension in the 3G technology with more bandwidth and services offers in the 3G. The expectation for the 4G technology is basically the high quality audio/video streaming over end to end Internet Protocol.The first two commercially available technologies billed as 4G were the WiMAX standard and the LTE standard, first offered in Scandinavia by TeliaSonera.

BY

KARTHIK S G IV Year/IT

VIRTUAL PRIVATE NETWORKS



Virtual private network (VPN) is a technology that creates a safe and encrypted connection over a less secure network, such as the internet. VPN technology was developed as a way to allow remote users and branch offices to securely access corporate applications and other resources. To ensure safety, data travels through secure tunnels and VPN users must use authentication methods -- including passwords, tokens and other unique identification methods -- to gain access to the VPN.

Dial-up services - data networking services using modems and telephone lines

Dial-up Internet access is a form of Internet access that uses the facilities of the public switched telephone network (PSTN) to establish a connection to an Internet service provider (ISP) by dialing a telephone number on a conventional telephone line.

God could not be everywhere, and therefore he made mothers.

— Rudyard Kipling

BY

GOKUL KUMAR B III Year/IT

GPS

GPS Navigation everywhere

GPS Navigation stands forthe determining of position and direction onor near the surface of theEarth with the help of theGlobal Positioning System(GPS).

A GPS chip is a small radio-receiver that can capturethe signals of several GPSsatellites simultaneously.

It can compute its Position,Velocity and the exact Time.These information are givenout in encoded form.

BY

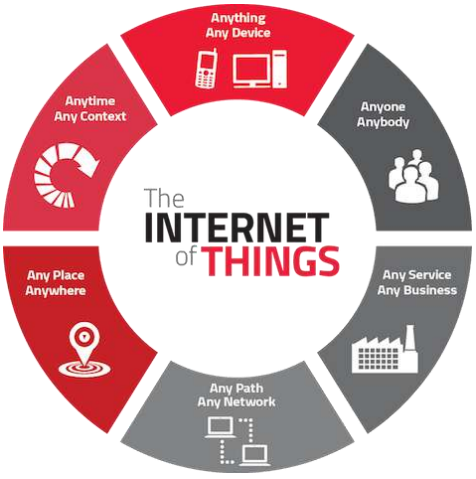
GOKUL III Year/IT

MOBILE TECHNOLOGY TRENDS

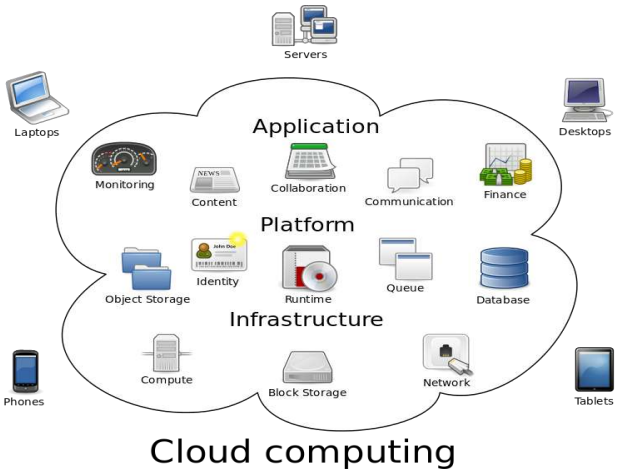
Internet of Things (IoT)

The internet of things (IoT) is a computing concept that describes the idea of everyday physical objects being connected to the internet and being able to identify themselves to other devices. The term is closely identified with RFID as the method of communication, although it also may include other sensor technologies, wireless technologies or QR codes.

The IoT is significant because an object that can represent itself digitally becomes something greater than the object by itself. No longer does the object relate just to its user, but it is now connected to surrounding objects and database data. When many objects act in unison, they are known as having "ambient intelligence."



Cloud Computing



Cloud computing, often referred to as simply “the cloud,” is the delivery of on-demand computing resources — everything from applications to data centers — over the internet on a pay-for-use basis.

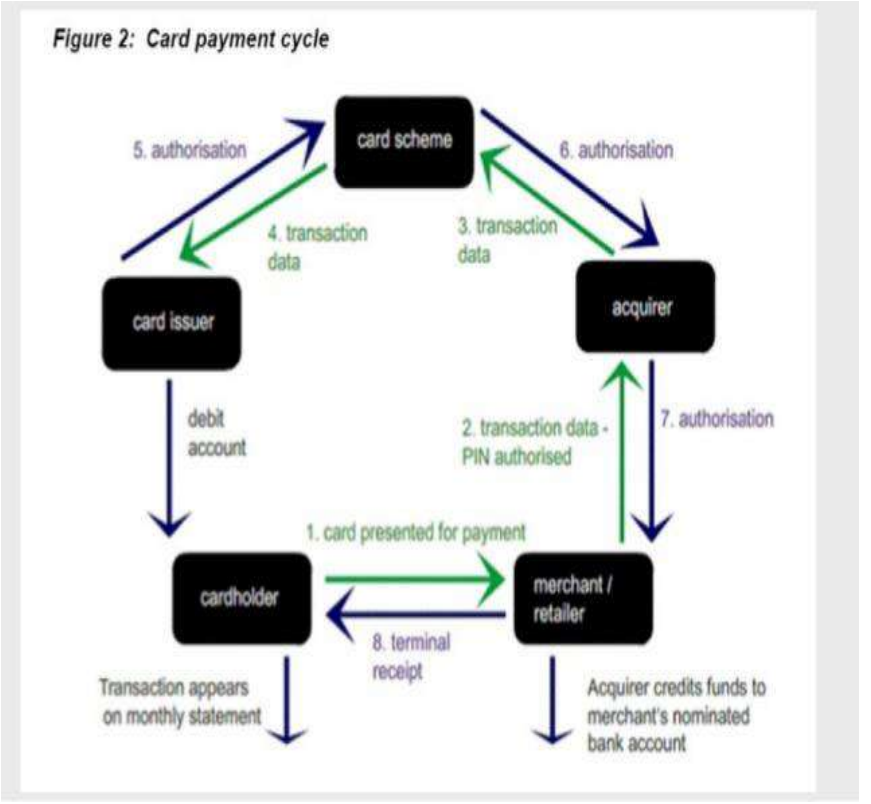
Elastic resources — Scale up or down quickly and easily to meet demand

Metered service so you only pay for what you use

Self service — All the IT resources you need with self-service access

Cyber Cash Model :

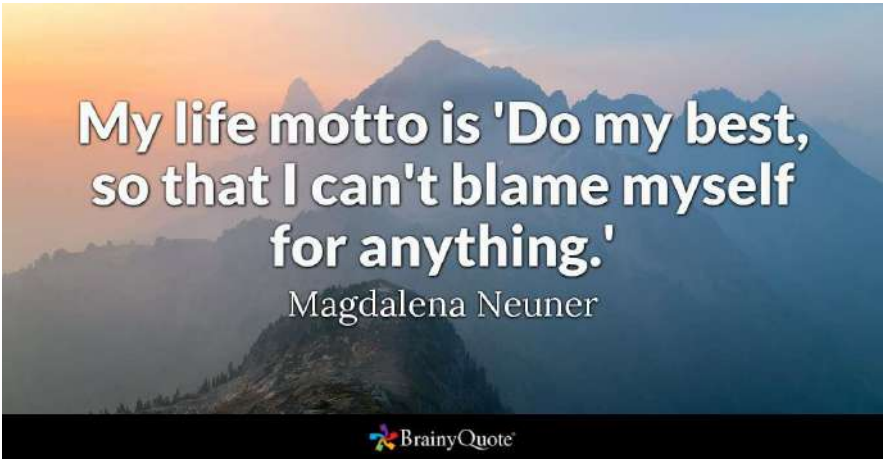
Basic:- To take advantage of the Internet with a complete E-Commerce solution, a merchant's website must be able to accept and process secure online payments. In order to take credit card payments online, merchants need to have an Internet Payment Service and a



Merchant Credit Card Account.

1. The Internet Payment Service, such as CyberCash, enables the merchant to accept online payments from their customers and securely processes these payments from a Merchant's Web storefront through the existing system of financial institutions and credit card processors

2. The Merchant's financial institution provides the merchant with a bank account that enables them to accept, process, and deposit payments from their customers, and delivers regular reporting based on these transactions.



BY

DHANUSYADEVI.S II Year/IT

MOBILE APP DEVELOPMENT

Mobile app development is the act or process by which a mobile app is developed for mobile devices, such as personal digital assistants, enterprise digital assistants or mobile phones. These applications can be pre-installed on phones during manufacturing platforms, or delivered as web applications using server-side or client-side processing (e.g., JavaScript) to provide an "application-like" experience within a Web browser. Application software developers also must consider a long array of screen sizes, hardware specifications, and configurations because of intense competition in mobile software and changes within each of the platforms.

Current state of Mobile Application Development

Native Application framework

Native mobile apps are the most common type of app. They are built for specific platforms and are written in languages that the platform accepts, for example, Swift and Objective-C for iOS apps and Java for native Android apps. Native apps are also built using the specific Integrated Development Environment (IDE) for the given operating systems.

- Android
- iOS
- Blackberry 10

Non Native Framework

It is of course possible to sidestep the issues that come along with developing native apps by instead developing web apps for use on mobile devices

- Apache Cordova (Phone Gap)
- Titanium mobile

Native Application framework

1.Android

Android is a mobile operating system developed by Google, based on a modified version of the Linux kernel and other open source software and designed primarily for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further developed Android TV for televisions, Android Auto for cars, and Wear OS for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics.

Android has been the best-selling OS worldwide on smartphones since 2011 and on tablets since 2013.

iOS

iOS (formerly **iPhone OS**) is a mobile operating system created and developed by Apple Inc. exclusively for its hardware. It is the operating system that presently powers many of the company's mobile devices, including the iPhone, iPad, and iPod Touch. It is the second most popular mobile operating system globally after Android.

Blackberry10

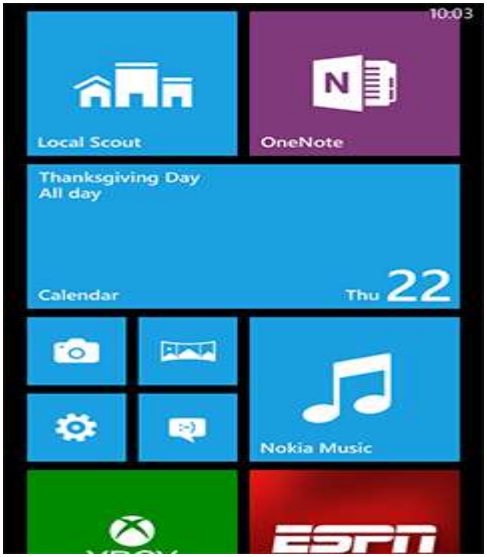
BlackBerry 10 is a proprietary mobile operating system for the BlackBerry line of smartphones, both developed by BlackBerry Limited (formerly Research In Motion). BlackBerry 10 is based on QNX, a Unix-like operating system that was originally developed by QNX Software Systems until the company was acquired by BlackBerry in April 2010.

Windows Phone 8

Windows Phone 8 is the second generation of the Windows Phone mobile operating system from Microsoft. It was released on October 29, 2012, and like its predecessor, it features a flat user interface based on Metro design language. It was succeeded by Windows Phone 8.1, which was unveiled on April 2, 2014.

Windows Phone 8 replaces the Windows CE-based architecture used in Windows Phone 7 with the Windows NT kernel found in Windows 8. Current Windows Phone 7 devices cannot run or update to Windows Phone 8 and new applications compiled specifically for Windows Phone 8 are not made available for Windows Phone 7 devices. Developers can make their apps available on both Windows

Phone 7 and Windows Phone 8 devices by targeting both platforms via the proper SDKs in Visual Studio.



Non Native Framework

Apache Cordova (formerly **PhoneGap**) is a mobile application development framework originally created by Nitobi. Adobe Systems purchased Nitobi in 2011, rebranded it as PhoneGap, and later released an open source version of the software called Apache Cordova.[8] Apache Cordova enables software programmers to build applications for mobile devices using CSS3, HTML5, and JavaScript instead of relying on platform-specific APIs like those in Android,

iOS, or Windows Phone.[9] It enables wrapping up of CSS, HTML, and JavaScript code depending upon the platform of the device. It extends the features of HTML and JavaScript to work with the device. The resulting applications are hybrid, meaning that they are neither truly native mobile application (because all layout rendering is done via Web views instead of the platform's native UI framework) nor purely Web-based (because they are not just Web apps, but are packaged as apps for distribution and have access to native device APIs).

Titanium mobile

Titanium SDK is an open-source framework that allows the creation of native mobile apps on platforms including iOS, Android and Windows UWP from a single JavaScript codebase, developed by Appcelerator.

In February 2013, *Business Insider* estimated that 10% of all smartphones worldwide ran Titanium-built apps. As of 2017, Titanium had amassed over 950,000 developer registrations.

The core component of Titanium is the Apache-licensed software development kit, Titanium SDK. Appcelerator also makes Alloy, an Apache-licensed, Titanium-based model–view–controller framework, and Appcelerator Studio a proprietary integrated development environment starting for free.

Some frameworks allow you to build hybrid apps that are not truly native or web based ,the main disadvantage of them is limited access to native functionality of phone hence they are slower than the native apps.

BY

ELANGOVAN.S II Year/IT

MOBILE TECHNOLGY IN EDUCATION

5 Ways To Use Mobile technology In The Classroom

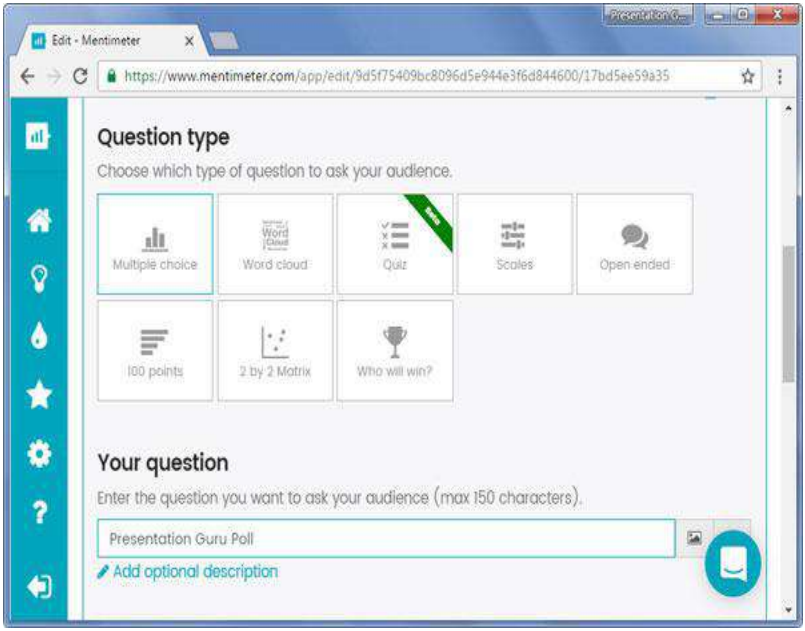
Technology is powerful and it can be used in several great ways to make teaching and learning powerful. What can be done and what cannot be done is limited, basically by the creativity of the user. So, the more creative and innovative we get, the more results we'll see with using technology in class. However, I will provide a few examples just to help you get an idea of what an effective use will look like.

1. Use Of Audio Recording Feature

Students often require personal and quality feedback on the work they turn in. Lecturers can make use of the audio recording feature built into most smartphones to provide these personal and yet quality feedback to all students. Research has proven that students not just liked feedback given this way, but even preferred it.

2. Live Polling Tools

Live digital polling/quizzing tools can be used both as welcome and exit tickets in the classroom for formative assessment. Lecturers can use these tools (many of which are free) to determine what students already know and what should be concentrated upon. This can also provide insight into individual student strength and weakness and help give personalized instruction when needed.

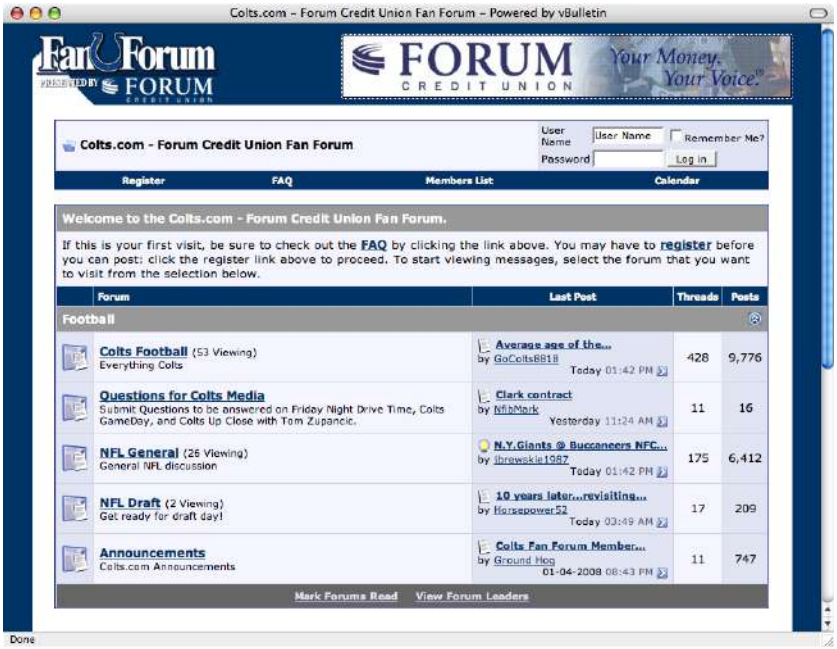


3. Creating Of Videos

Rather than have students write a 2000 word essay after researching on a topic, where several of them would simply copy and paste paragraphs without necessarily understanding the content, lecturers could ask students to research and create a 5 minutes or less video or audio recording of what they had researched about.

4. Chat And Online Discussion Forums

Lecturers can exploit the group chat features of mobile devices to create an online discussion forum to encourage class participation on content topics, even outside the classroom. Students can chat and



discuss (with or without the lecturer) while at home or over the weekend on a subject in class to increase understanding of concepts.

5. Use Of QR Codes

Quick response (QR) codes are another great way to use mobile technology in the classroom. Links to further resources, complex diagrams and images, solutions to tasks could be coded and made available to students.

There are several more ways by which both students and lecturers can creatively use mobile technology in the classroom. Again, technology is powerful and its benefits go beyond just making our work efficient. It can increase productivity and help us achieve greater results in our work, thereby making us effective.

BY

ROSHAN A III Year/IT

MOBILE TECHNOLOGY IN BUSINESS COMMUNICATION

Mobile technology has been one of those trends that have taken the business world by storm. Mobile device penetration has been rapid and monumental. In fact, the number of mobile phone users is estimated to rise to 4.77 billion by 2017. The shift towards mobile has been transforming the economic landscape over the years. Mobile communication and connectivity have been changing the way business communicators create, plan and distribute messages.

Recent developments in the mobile communication technology have generated massive improvements in numerous business domains. Let's take a look at how mobile technology has been driving business communication.

Improved Customer Experience

With the rising importance of mobile devices in customers' lives, businesses are constantly seeking new and improved ways to leverage this trend. A large percentage of consumers perform their searches on mobile devices. Therefore, businesses have started investing in making their websites responsive.

Apart from that, mobile apps have turned out to be the norm nowadays. For example, mobile apps have spawned an entirely new market for retailers. In addition to that, the real estate industry has also implemented this trend by introducing 3D mobile apps. These apps help in conveying the concept and the layout of a property to prospective buyers way before the construction process has even started.

Additionally, customers can convey their concerns and feedback about the products and services easily with the help of mobile technology and expect quick responses to their doubts and queries. Such interactive methods help in maintaining a clear communication channel with the users, thus improving productivity.

Enhanced Collaboration With Colleagues

Smart mobile devices coupled with Internet facilities have made it possible to conduct teleconferences, online meetings, video calls and so on. Mobile users can join group meetings and conference calls and

contribute to the discussion as if they were physically present. This can help in eliminating any lag in work and would also help in meeting deadlines, thus improving workplace productivity.

Such improved scope of flexibility can help in motivating the employees to put in more effort and collaborate well with their colleagues.

Optimised Operations

The mobile trend has turned business operations smoother and swifter than before. With the evolution of technology, business processes have been streamlined. Cloud computing has been one of those technologies that have helped in this.

Mobile technology has helped immensely in accessibility. For example, an important file stored in the cloud can be accessed from anywhere. Customer care executives can also access this data at any time and stay updated about the customer requirements. As a result, they can provide accurate and relevant services to clients. This helps in speeding up processes considerably and increases accuracy, thus making the communication process even more efficient.

Better Marketing Strategies

Mobile marketing has gained momentum recently with more and more customers turning to their mobile devices for their requirements. For example, beacons are increasingly being deployed in stores for this purpose. These devices use Bluetooth to deliver personalised discounts and offers to customers' mobile phones.

According to Lauren Foye, research author at Juniper, "For retailers one of the major tools is knowing their customers. Tracking user movements in store via beacons allows for targeted marketing and offers. This can also aid in providing invaluable data and statistics to a company. This then drives sales."

Additionally, offering free WiFi to customers can help in collecting valuable customer data which can then be utilised to provide personalised services to them. When customers are satisfied with the

services, it is highly likely that they would recommend your business to others.

Mobile technology transforming healthcare

1. Enhanced patient safety

One of the best things about digital applications is that they can give patients tools to manage their own health. Today, no one can remember each and every thing discussed during a doctor visit, but people can add details from these conversations in their personal app and gain a huge advance regarding patient safety.

2. New business models

The explosion of inbound data from sensors and devices offers healthcare professionals new possibilities for patient care. However, healthcare business models are not well suited for systems that bring in an influx of patient data. Managing all of this inbound data could be done by new companies that focus on data management.

There are many call centers staffed with nurses, pharmacists, and other healthcare professionals who can manage and respond to all of this inbound data. Additionally, digital health apps allow providers to handle and coordinate patient care in difficult environments.

3. Superior access to care

In this digital era, patients and doctors no longer need to always be in the same location. Patients with chronic diseases, living in rural areas, or with limited local access to doctors can get treatment on time with ease thanks to mobile health technology.

4. Minimize Medicare fraud

Medicare is concerned about the potential for an explosion of costs from digital interactions because of the increased patient access to care. Medical applications can reduce about 60% of fraud and increase profit to healthcare centers. The reason is because digital applications enable healthcare professionals to track people and transactions in effective time. Medicare can acquire location and time data from these digital health apps in order to check for fraud.

5. Better patient engagement

Long lines, poor service quality, complexity, and other factors discourage patients from engaging more with the healthcare system. Many of these factors are unnecessary. Why should you wait for doctors in their clinic? Applications can notify patients in real time via text if a physician is running late, or remind them that it's time to take their pills. Apps can help people reduce difficulty.

BY

MEPHYMONY D III Year/IT

ADVANTAGES AND DISADVANTAGES OF MOBILE TECHNOLOGY

Benefits of using mobile technology for business can manifest in:

- higher efficiency and productivity of staff
- the quality and flexibility of service you offer your customers
- the ability to accept payments wirelessly
- increased ability to communicate in and out of the workplace
- greater access to modern apps and services
- improved networking capabilities
- Mobile devices can link you directly into the office network while working off site. For example, you could remotely:
- set up a new customer's account
- access existing customer records
- check prices and stock availability
- place an order online
- Rapid developments in cloud technologies are boosting the use of mobile devices in business, supporting more flexible working practices and accessing services over the internet. For more information, see cloud computing.

Disadvantages of mobile technology

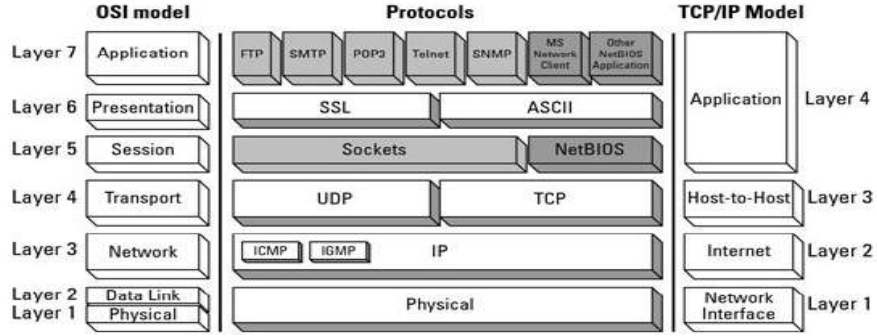
- Main disadvantages that come with the use of mobile technology in business include:
- Costs - new technologies and devices are often costly to purchase and require ongoing maintenance and upkeep.
- Workplace distractions - as the range of technologies and devices increases, so does the potential for them to disrupt productivity and workflow in the business.
- Additional training needs - staff may need instructions and training on how to use new technology.
- Increased IT security needs - portable devices are vulnerable to security risks, especially if they contain sensitive or critical business data.

If you are using mobile devices for business, you should take proper precautions to ensure that the devices, and the data they can access, remain safe. See more on cyber security for business and securing your wireless systems.

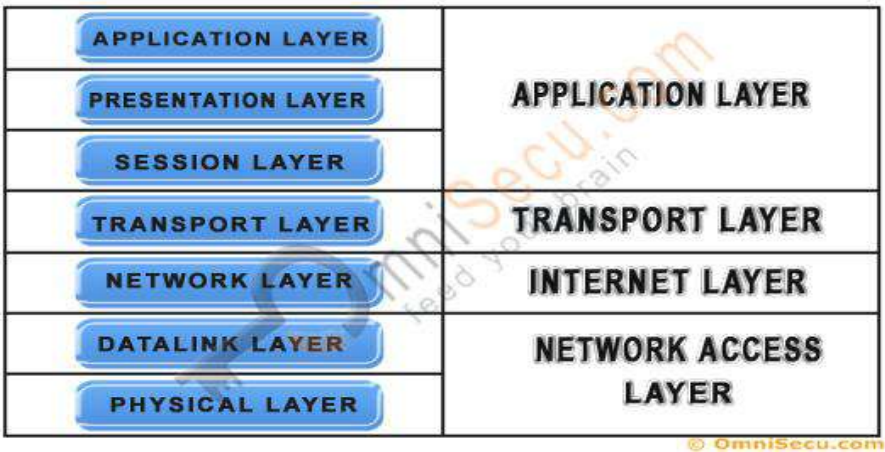
BY

ABHITH JOHN, II Year/IT

Comparison of TCP/IP and OSI network models



Comparison of TCP/IP and OSI network models



Mobile TCP(M-TCP)

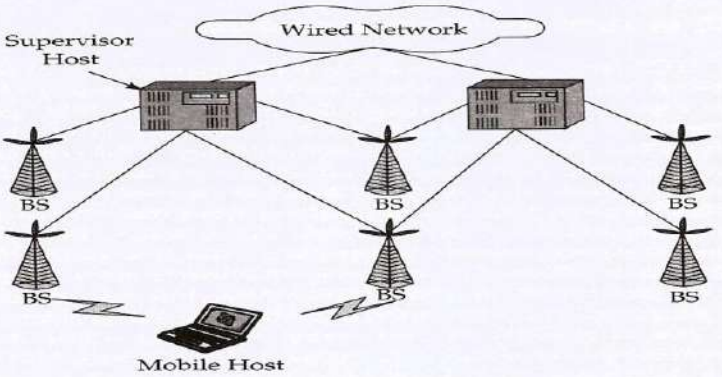
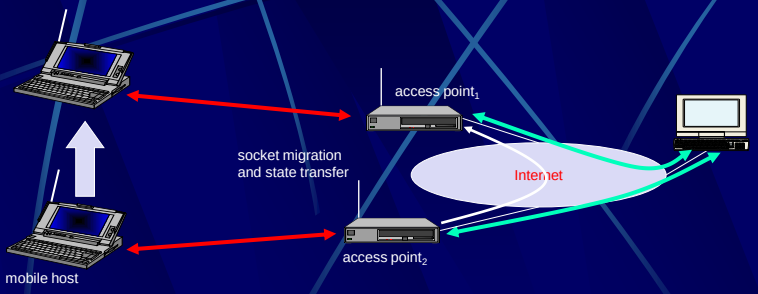


Figure 5.8 *A schematic of operation of the M-TCP protocol.*

I-TCP socket and state migration



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BY

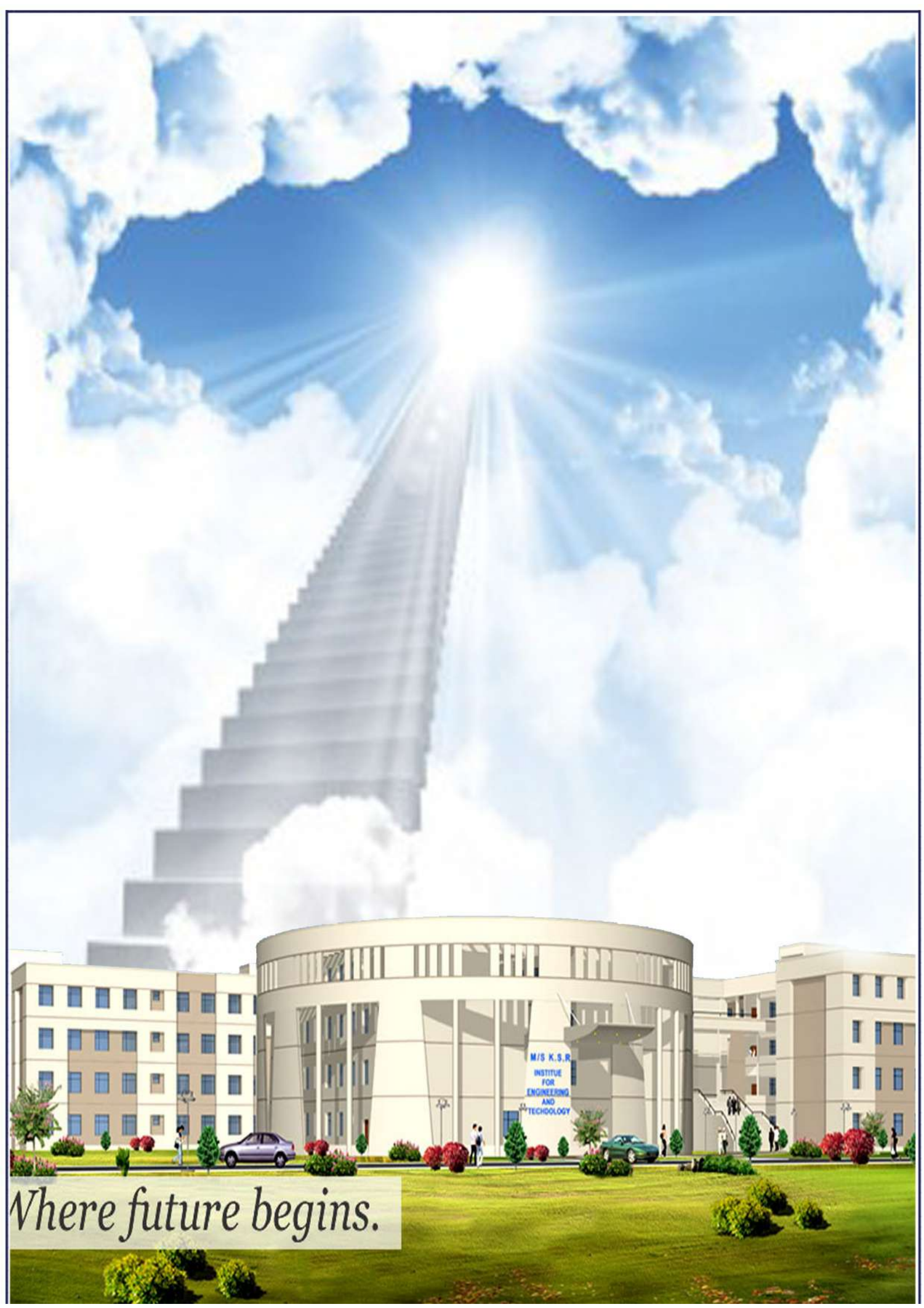
KOUSIK, II Year/IT

Program Outcomes (POs)

PO1	**Engineering Knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the IT enabled solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, analyze and provide solutions to the problems reaching substantiated IT enabled conclusions.
PO3	**Design/Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet the desired needs within realistic constraints.
PO4	**Conduct Investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
PO5	**Modern Tool Usage**: Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
PO6	**The Engineer and Society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
PO7	**Environment and Sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
PO9	**Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on engineering activities with the engineering community and with society.
PO11	**Project Management and Finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life Long Learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes(PSOs)

PSO1	**Programming Skill**	Work as Software Engineers for providing solutions to real world problems using programming languages and open source software.
PSO2	**Web Designing Skill**	Ability to use the web designing skill to establish new solutions for the societal needs.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