Emerging Technology: Mobile Computing

Course: Master of Arts (Hindi)
Course Name: Computer and Information Technology
Course Code: HIND4014
Semester: II
Session: 2019-20

Mr. Joynath Mishra
Assistant Professor (Guest)
Department of Computer Science and Information Technology

Mahatma Gandhi Central University
Bihar, INDIA

May 26, 2020

Outline

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

1 Objectives
2 Introduction
3 Devices
4 Mobility Function
5 Communication
6 Applications
7 Challenges
8 Advantages
9 Disadvantages
10 Conclusion
11 Exercise
12 References

Objectives

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Objectives

- Context of mobile computing
- Communication of mobile computing
- Importance and applications of mobile computing

Introduction

Introduction

- Mobile computing referes to movement of computing devices connected with internet
- Capable to transmit and receive text, voice, video in variable wireless method
- Involves with mobile communication, hardware snd software sharing
- Large number of devices has been connected during this decay
- Cellular network is the basic idea of communication
- Most demanded technology

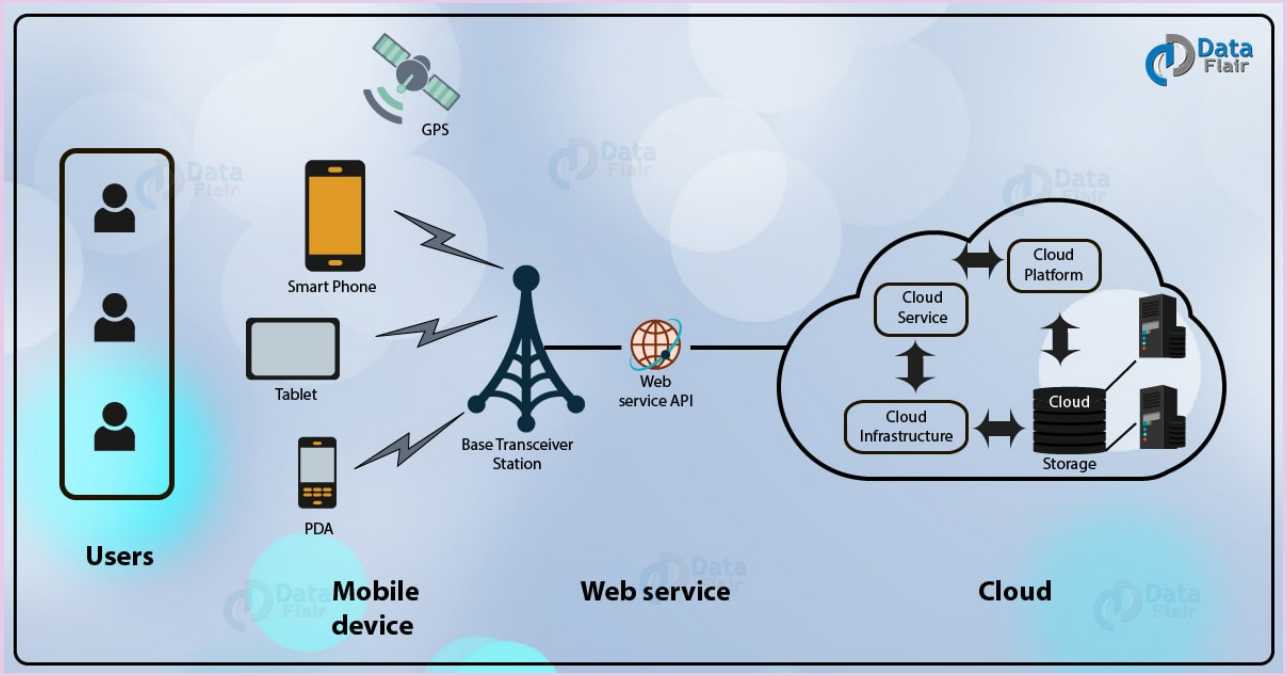


Figure 1: Mobile cloud computing architechture[1]

Introduction (Contd...)

History

- Cellular technology is the basic point of mobile computing
- Initially, it was analog in nature, but popularity is increased after development of digital form i.e. Global System Mobile(GSM)
- Nowadays, mobile computing is popular due to its facilities in variety of application areas

Evolution

- 1894 - Developed first wireless telegraph company
- 1980 - Developed first consumer Laptop.
- 1981 - Developed portable Computer by Epson.
- 1984 - First touch screen laptop was developed.
- 1990 - New portable laptop released by Apple with 640*640 display screen.
- 1992 - Released standard Windows 3.1.1 Operating System.
- 1993 - Developed first PDA by Apple.
- 2007 - Launched first I Phone along with touch screen.
- 2009 - Launched first smart phone with Android.
- 2011 - Start evolution of Mobile Computing.

Soft computing defines the statistical calculation and analysis of large amount of data to achieve the computational solutioon of any real time problems and predictions.

Devices[2]

Basic Elements

- Mobile communication
- Mobile hardware
- Mobile software

Devices (Contd...)

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Classification

- Personal Digital Assistant (PDA): extension of the PC, not a replacement
- Smartphones: Google's Android, Apple's iOS, Nokia's Symbian, RIM's BlackBerry OS, Samsung's Bada, Microsoft's Windows Phone, and embedded Linux distributions such as Maemo and MeeGo installed over different devices
- Tablet PC and iPads: ipads, Galaxy Tabs, Blackberry Playbooks etc

Mobility Function

Mobility

- Mobility referes to movement between different geographical locations, networks and platforms
- A MOdulation and DEModulation device (MODEM) is responsible to make mobile communication

User Mobility

- Change of geographical location of user (two or more devices build a mobile computing unit)
- Similar telecommunication service will follow the device within cellular network

Network Mobility

- Change of mobile network due to weak signal
- Mobile device will achieve fastest network followed by its policies

Device Mobility

- Change of geographical location of devices
- Dynamically reconfigure and obtaing IP address

Communication

A computer network is a collection of computers through different communication channel and allows sharing of resources and information.

Communication Type

- Simplex: eg. keyboard, TV signal
- Half-duplex: eg. telephonic conversation
- Full-duplex / duplex: video conferencing

Communication Way

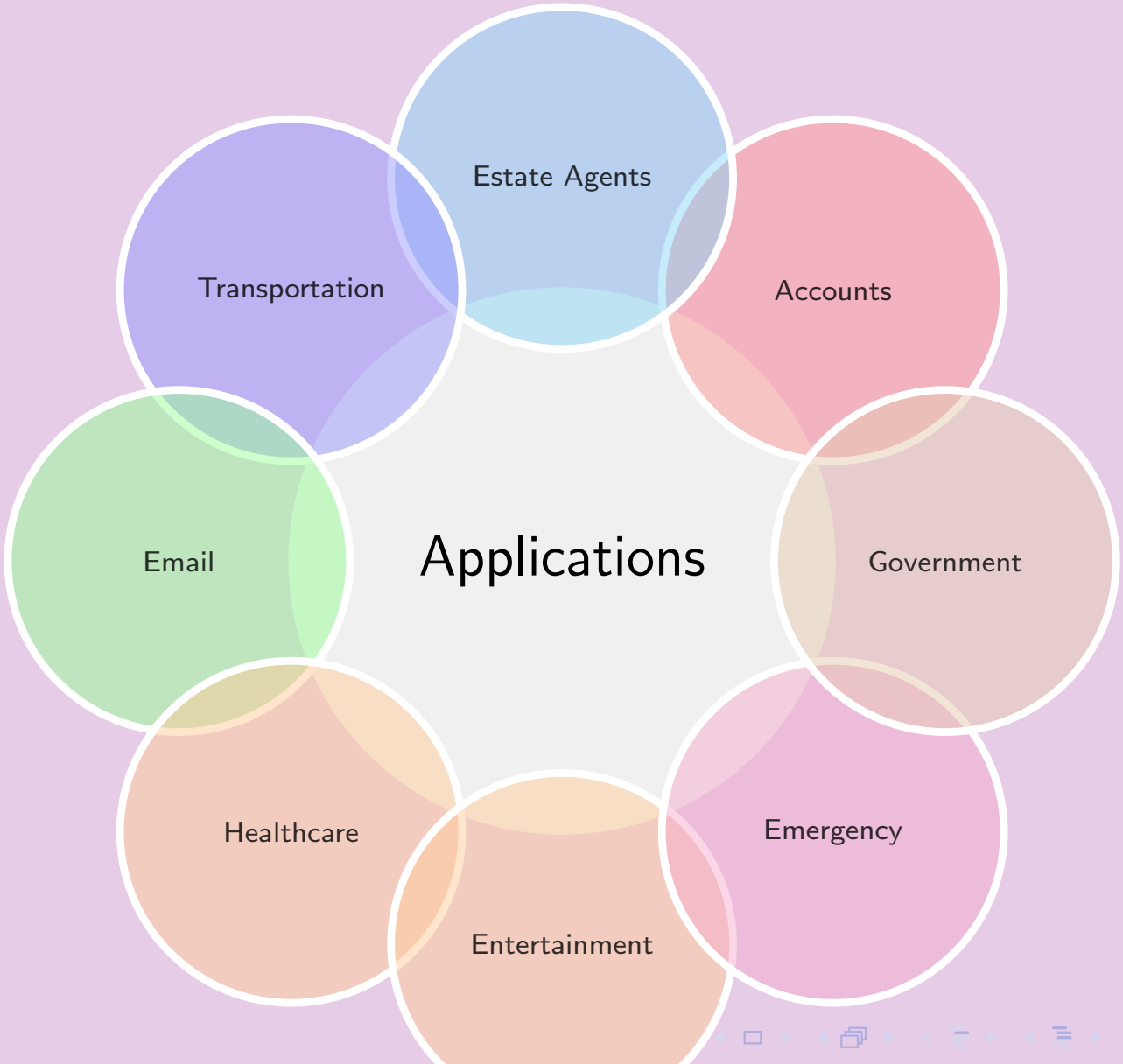
- One-to-One
- One-to-Many
- Many-to-Many

Type of Wireless Networks

- Wireless LAN: Personal Area Network (Eg. Bluetooth)
- Wireless MAN: Wireless Local Loops (Eg. LMPS, FSO)
- Wireless WAN: Cellular Networks (Eg. GSM, 3G, 4G)

Applications

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References



Challenges

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Challenges

- Access cloud computing
- Mobility means changes
- Hardware: Lighter, smaller, energy management, user interface
- Low to high bandwidth variability: kbps to mbps bandwidth fluctuation
- Security risk: Devices more vulnerable, endpoint authentication harder
- Geographical locality adaptation
- Higher loss-rates, higher delays, more jitter
- Restrictive regulations of frequencies

Advantages

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Advantages

- Location Flexibility
- Saves Time
- Enhanced Productivity
- Ease of Research
- Entertainment
- Streamlining of Business Processes

Disadvantages

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Limitations

- Short battery lifetime (max 5 hours)
- Sometimes unreliable
- Limited capability (display, memory, input devices, and disk space)
- Lack of architecture: hand-helds, communicators, laptops, and other devices
- Transmission interferences: weather situation dependent

Conclusion

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Conclusion

- Mobile computing has severe limitations
- Good solutions are proposed and technology is going to be developed
- Cloud computing helps to rid of resource limitations

Future Aspect

- Use of Artificial Intelligence
- Smaller size
- Increases in Computer Processor speeds
- Paper phone: paper like thin mobile

Exercise

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Exercise

- What do you mean by mobile coputing?
- What are the basic characteristics of mobile computing?
- Which type of networks are used for communication of mobile devices?
- Describe about applications of mobile computing.
- What are the challenges and limitations of mobile computing?

References I

Data flair tutorial: Mobile cloud computing. [Online]. Available: https://data-flair.training/blogs/mobile-cloud-computing-tutorial/

Tutorial point: Mobile computing. [Online]. Available: https://www.tutorialspoint.com/mobile_computing/index.htm

Objectives
Introduction
Devices
Mobility Function
Communication
Applications
Challenges
Advantages
Disadvantages
Conclusion
Exercise
References

Get in touch via...

+91 9046174189

jaynath4025@gmail.com

Thank You...