

# Introduction

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# What is Mobile Computing?

- Mobile Computing (Ubiquitous Computing / Nomadic Computing) is described as the ability to compute remotely while on the move.
- Fast and new emerging technology.
- People can access information from anywhere and anytime.
- Mobile Computing( 2 distinct concepts)
  - Mobile Communication
    - The capability to **change the location while communicating to invoke computing services** at some remote computers.
  - Mobile Computing
    - The capability to **automatically carry out certain processing related service** invocations on a remote computer
- Provides flexibility to the user

# Mobile Computing vs Wireless Networking

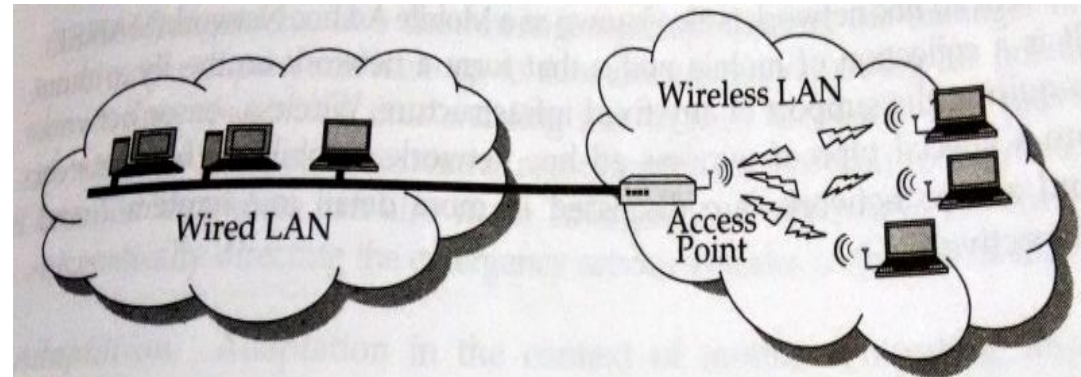
- MC and WN are not same.
- Mobile Computing
  - Computing environment is mobile → sender or receiver is on the move while transmitting or receiving information.
  - Accessing Information and remote computational services on the move.
- Wireless Networks
  - Basic communication infrastructure necessary to make mobile computing possible.
- Therefore mobile computing is based on wireless networks

# Cont...

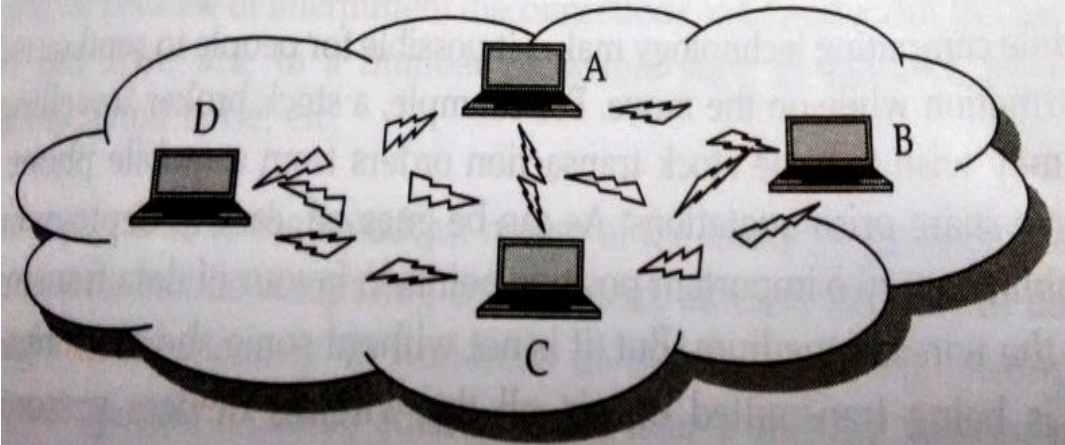
- Mobile computing requires the applications, the design, development, the hardware at client and server side.
- In general MC subsumes the area of WN.
- Therefore knowledge of WN is needed.
- WN 2 types
  - Infrastructure Based Network
  - Ad-hoc Network (No infrastructure)

# Cont...

- IEEE 802.11 (WLAN)
- Ad-Hoc(MANET)
- Bluetooth
  - Eliminate wires
  - PAN (Piconet)
  - Scatternet



**Figure 2.1** Wireless network based on fixed infrastructures.



**Figure 2.2** Wireless network having no fixed infrastructures.

# Mobile Computing Applications

- Send or extract information on the move.
- Stock broker – stock transaction
- Data transmission on wireless medium.
- Security issue.

# Characteristics of Mobile Computing

- Ubiquity
  - Present everywhere.
  - The user can perform computations from anywhere at anytime.
  - Ex. Business Notifications.
- Location Awareness
  - Device with GPS (Global Positioning System) Provides information about the current location.
  - Ex. Travel – Car maintenance service.
  - Fleet management, Traffic control, Emergency Services.

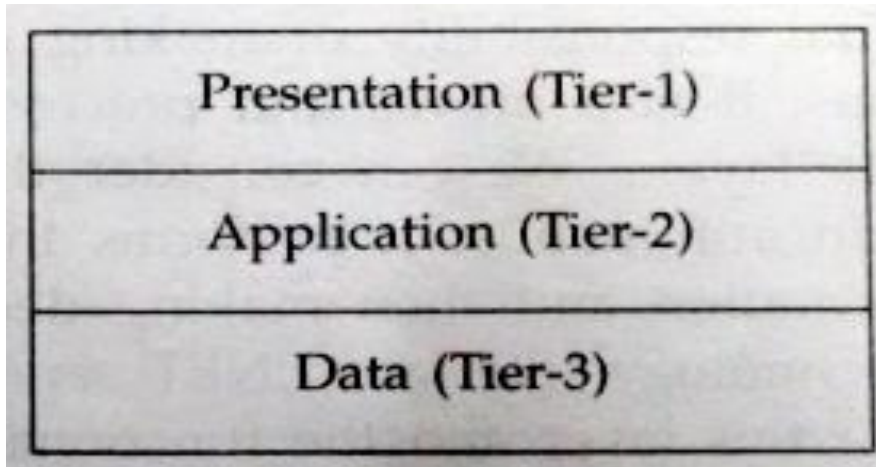
# Cont...

- Adaptation
  - Adjust with bandwidth fluctuation without disconnection
- Broadcast
  - Information to all mobile users in a particular area.
  - Ex. Taxi services.
- Personalization
  - Services and be personalized.
  - Certain type of information from specific sources.

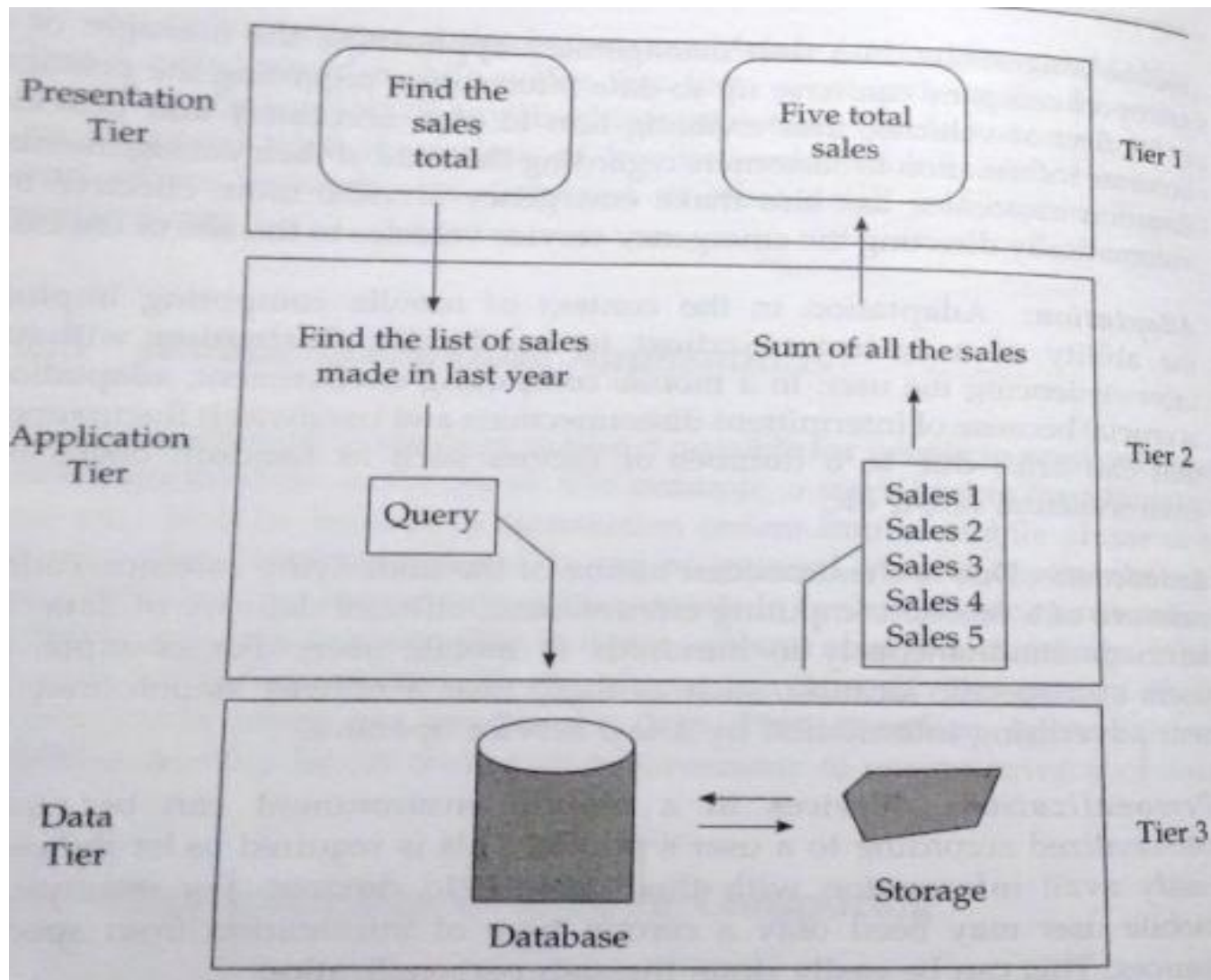


# Structure of MC Application

- 3 tier structure



# Structure of MC Application



# Structure of MC Application

- Presentation tier
  - Good User interface.
  - Provides way to issue request and responds in a meaningful way.
  - Program runs on the client side.
  - Needs web browsers, client programs.
- Application Tier
  - Logical Decisions and calculations
  - Process data between presentation and data layers.
  - Implemented on fixed server.

# Structure of MC Application

- Data Tier
  - Data, Storage, access manipulation.
  - Contains a database.
  - Information stored and retrieved from the database.
  - Small data → File system
  - Implemented on fixed server.

# Summary

- Mobile Computing
- Wireless Networks vs Mobile computing
- Characteristics and Applications of Mobile Computing
- Structure of MC Application

# Test Your Knowledge

How SHAREit app works???

# References

- Prasant Kumar Pattnaik, Rajib Mall, “Fundamentals of Mobile Computing”, PHI Learning Pvt. Ltd, New Delhi – 2012.