Lesson 07
Introduction to Mobile Computing
Mobile computing—A Definition

• The process of computation on a mobile-device
• In mobile computing, a set of distributed computing systems or service provider servers participate, connect, and synchronise through mobile communication protocols
Mobile computing as a generic term describing ability to use the technology to wirelessly connect to and use centrally located information and/or application software through the application of small, portable, and wireless computing and communication devices.
Mobile computing

- Provides decentralized (distributed) computations on diversified devices, systems, and networks, which are mobile, synchronized, and interconnected via mobile communication standards and protocols.
- Mobile device does not restrict itself to just one application, such as, voice communication.
Mobile computing

- Offers mobility with computing power
- Facilitates a large number of applications on a single device
Ubiquitous computing

- Refers to the blending of computing devices with environmental objects
- A term that describes integration of computers into practically all objects in our everyday environment, endowing them with computing abilities
- Based on pervasive computing
Pervasive means ‘existing in all parts of a place or thing’.

Pervasive computing— The next generation of computing which takes into account the environment in which information and communication technology is used everywhere, by everyone, and at all times.
Pervasive computing

- Assumes information and communication technology to be an integrated part of all facets of our environment, such as toys, computers, cars, homes, factories, and work-areas
Pervasive computing

- Takes into account the use of the integrated processors, sensors, and actuators connected through high-speed networks and combined with new devices for viewing and display
Mobile computing

- Also called *pervasive computing* when a set of computing devices, systems, or networks have the characteristics of *transparency*, application-aware *adaptation*, and have an *environment* sensing ability.
Pervasive computing devices

- Are not PCs
- Are handheld, very tiny, or even invisible devices which are either mobile or embedded in almost any type of object
Mobile Computing

- Novel applications
- A large number of applications
- Very recently made mobile TV realizable
SmartPhone Feature Example

- A mobile phone with additional computing functions so as to enable multiple applications
- SMS (short message service), MMS (multimedia messaging service), phone, e-mail, address book, web browsing, calendar, task-to-do list, pad for memos.
- Compatibility with popular Personal Information Management (PIM) software
SmartPhone Example

- Integrated attachment viewing.
- SureType keyboard technology with QWERTY-style layout.
- Dedicated Send and End keys.
- Bluetooth® capability for hands-free talking via headset, ear buds, and car kits.
SmartPhone Example

- EvDO* support enabling the device as a wireless modem use for laptop or PC.
- Speaker phone
- Polyphonic ring tones
- 64 MB memory
- Bright, high-resolution display, supporting over 65,000 colors
Enterprise Solutions

- Enterprises or large business networks
- Huge database and documentation requirements
- Business solutions for corporations or enterprises
An enterprise solution architecture for a BlackBerry device
Mobile Computing application to Music and Video

- Example—Apple iPods enables listening to one’s favourite tunes anytime and anywhere
- View photo albums
- Slide shows
- Video clips
Mobile Commerce

- Stock quotes in real time or on demand.
- The stock purchases or selling
- Bank transactions
- Retail purchases
- Supply chain management
- e-Ticketing— booking cinema, train, flight, and bus tickets

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Limitations to mobile computing

- Resource constraints: Battery
- Interference: the quality of service (QoS)
- Bandwidth: connection latency
- Dynamic changes in communication environment: variations in signal power within a region, thus link delays and connection losses

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Limitations to mobile computing

- Network Issues: discovery of the connection-service to destination and connection stability
- Interoperability issues: the varying protocol standards
- Security constraints: Protocols conserving privacy of communication
Summary

- Mobile computing — ability to use the technology to wirelessly connect to and use centrally located information and/or application software through the application of small, portable, and wireless computing and communication devices voice, data and multimedia communication standards …
Summary

- Ubiquitous and pervasive computing
- SmartPhone
- Enterprise solutions
- Music and video
- M-commerce
- Constraints of Mobile Computing
End of Lesson 07
Introduction to Mobile Computing