Mobile Communication – An overview

Lesson 08

Mobile Computing Architecture

Mobile computing Architecture

- Programming languages used for mobile system software
- Operating system functions to run the software components onto the hardware
- Middleware components deployment

Mobile computing Architecture

- Layered structure arrangement of mobile computing components
- Protocols and layers used for transmission and reception

Programming Languages

- Java— J2SE.
- J2ME (Java2 Micro edition)
- JavaCard (Java for smart card
- The Java enterprise edition (J2EE) used for web and enterprise server based applications of mobile services

Programming Languages

- C and C++
- Visual C++
- Visual Basic.

Operating System

- Symbian OS, Window CE, Mac OS…
- Offers the user to run an application without considering the hardware specifications and functionalities
- Provides functions which are used for scheduling the multiple tasks in a system

Operating System

- Provides the functions required for the synchronization of multiple tasks in the system
- Multiple threads synchronization and priority allocation
- Management functions (such as creation, activation, deletion, suspension, and delay) for tasks and memory

Operating System

- Provides Interfaces for communication between software components at the application layer, middleware layers, and hardware devices
- Facilitates execution of software components on diversified hardware.
- Provides Configurable libraries for the GUI (graphic user interface) in the device.

Operating System

- Provides User application's GUIs, VUI (voice user interface) components, and phone API
- Provides the device drivers for the keyboard, display, USB, and other devices

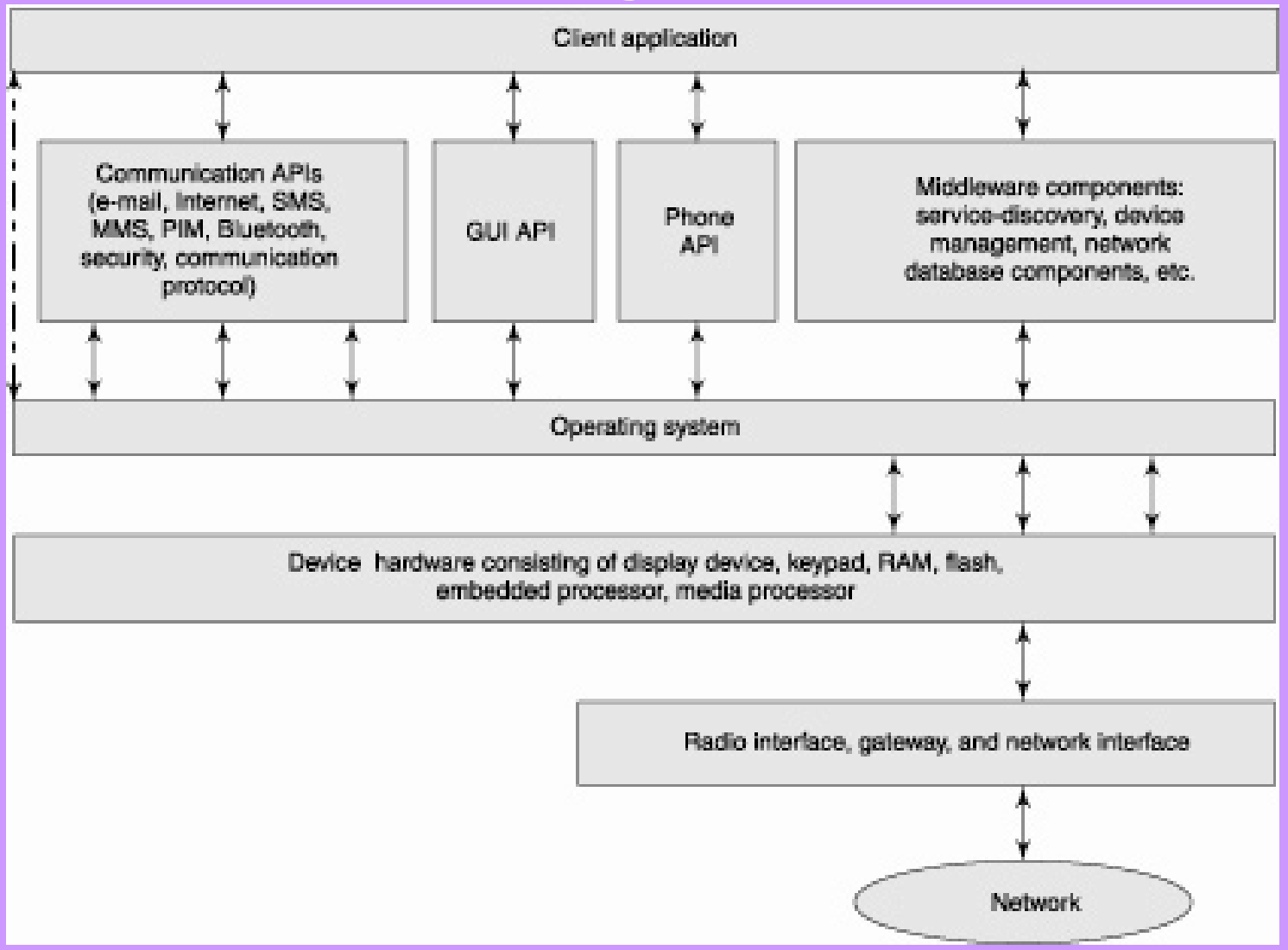
Middleware for Mobile Systems

- Software components that link the application components with the network-distributed components
- To discover the nearby device such as Bluetooth
- To discover the nearby hot spot

Middleware for Mobile Systems

- For achieving device synchronization with the server or an enterprise server
- For retrieving data (which may be in Oracle or DB2) from a network database
- For service discovery at network
- For adaptation of the application to the platform and service availability

Mobile Computing Architectural Layers



Mobile computing services Protocols

- Such as GSM 900, GSM900/1800/1900, UMTS, and I-Mode
- WPAN protocols– Bluetooth, IrDA, and Zigbee)
- WLAN protocols –for example, 802.11a and 802.11b)
- WAP

Mobile Computing system Layers

1. Physical for sending and receiving signals (for example, TDMA or CDMA coding)
2. Data-link (for example, multiplexing)
3. Networking (for linking to the destination)

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…Mobile Computing system Layers

4. Wireless transport layer security (for establishing end-to-end connectivity)
5. Wireless transaction protocol
6. Wireless session protocol
7. Wireless application environment (for running a web application, for example, mobile e-business)

Summary

- Mobile Computing Programming languages– Java, J2ME, C/C++, Visual Basic, visual C++
- OS– Symbian OS, Window CE, Mac OS
- Middleware components
- Architecture software layers
- Protocols layers
- Network Layers

End of Lesson 08

Mobile Computing Architecture