
Chapter 1 MC

What is Computing?

The utilization of computers to complete a task, involving both hardware and software functions.

- **Examples:** Swiping a debit card, sending an email, or using a cell phone.

What is Mobility?

The capability to change location while communicating to invoke computing services at remote computers.

What is Mobile Computing?

The ability to compute remotely while on the move, allowing access to information from anywhere and at any time.

- **Features:**

Transmission of data, voice, and video via a computer or any other wireless-enabled device without a fixed physical link.

- **Applications:**

Facilitates numerous applications on a single device.


Mobile Computing Structure: مهم

1. **Mobile Communication:**

- Infrastructure for seamless and reliable communication (e.g., protocols, services, bandwidth, portals).
- Ensures no collision with other existing systems offering the same service.

- **Wired Networks vs. Mobile Networks:** اهم حاجه في

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Wired Networks	Mobile Networks 
high bandwidth	low bandwidth
low bandwidth variability	high bandwidth variability
can listen on wire	hidden terminal problem
high power machines	low power machines
high resource machines	low resource machines
need physical access (security)	need proximity
low delay	higher delay
connected operation	disconnected operation

2. **Mobile Hardware:**

- Includes mobile devices or components that receive/access mobility services (e.g., laptops, smartphones, tablets, PDAs).
- Configured for full-duplex operation (sending and receiving signals simultaneously).
- Operate on wireless networks.

3. **Mobile Software:**

- Programs running on mobile hardware, dealing with characteristics and requirements of mobile applications.
- The operating system or essential component that operates the mobile device, ensuring portability and wireless communication.

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1) **Resource Constraints:**

- Battery needs and recharge requirements are significant constraints.

2) **Interference:**

- Wireless signals may be affected by interference, impacting the quality of service.

3) **Bandwidth:**

- Limited available spectrum can cause connection latency and delays in data transmission.
- Mobile internet access is generally slower than direct cable connections.

4) **Dynamic Changes in Communication Environment:**

- Variations in signal power can cause link delays or connection loss.

5) **Network Issues:**

- Issues include connection discovery, service to destination, and connection stability.

6) **Interoperability:**

- Variations in protocol standards between regions can lead to interoperability issues.

7) **Security Constraints:**

- protocols conserving privacy communication may be violated يتم
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8) **Potential Health Risks:**

- Exposure to device radiation and eye strain from prolonged screen use.

9) **Human Interface with Device:**

- Small screens and keyboards may be challenging to use.

Advantages of Mobile Computing

1. **No Location Constraint:**

- Frees users from being tied to a specific location.

2. **Time-saving and Productivity Enhancement:**

- Enhances productivity with a better return on investment (ROI).

3. **Access to Information on the Move:**

- Provides news and information with streaming data and videos.

4. **New Job Opportunities:**

- Creates newer job opportunities for IT professionals.

Evolution of Mobile Computing (7 Waves)

1. **Portability:**

- Reducing hardware size to enable the creation of easily movable computers.

2. **Miniaturization:**

- Creating smaller mobile form factors for personal mobile device usage on the move.

3. **Connectivity:**

- Developing devices and apps for online communication via wireless data networks while on the move.

4. **Convergence:** تجميع

- Integrating various types of digital mobile devices (e.g., PDA, camera, music player) into a single hybrid device.

5. **Divergence:** تفريق

- Promoting specialized information apps instead of integrating all functionalities into one.

6. **Apps:**

- Developing substantial content for use and consumption on mobile devices.

7. **Digital Ecosystem:** تعاون عشان نوصل لحاجه متكامله

- Interconnected networks of technologies, services, and platforms working together to create a cohesive whole.

Thank you
