TECHNOLOGICAL UNIVERSITY OF TIJUANA

App designs

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Mobile Device Architecture

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Mobile Device Architecture

Mobile device architecture refers to the design and organization of hardware and software that allows mobile devices, such as smartphones and tablets, to perform their functions. This architecture can be divided into several main levels.

1. Hardware Level

a. Processor (CPU)

Similar to computers, mobile devices use processors to perform calculations and operations.

Common processors include ARM (most mobile devices) and some x86-based (such as certain Intel devices).

The processors can be:

- Monocore: Used in older devices.
- Multi-core: Optimize performance and energy efficiency.

b. GPU (Graphic Processing Unit)

Handles tasks related to graphics and rendering, such as animations and games.

Example: Mali, Adreno, PowerVR.

c. Memory (RAM and Storage)

RAM: Allows you to run applications in real time.

Internal storage: Used to store the operating system, applications and user data.

d. Sensors

Accelerometer, gyroscope, GPS, magnetometer, barometer, among others, for specific functionalities.

and. Communication modules

Wi-Fi, Bluetooth, NFC, 4G/5G, and other wireless technologies.

F. Battery

Provides energy, optimized for a balance between duration and size.

2. Software Level

a. Operating System (OS)

Coordinates the interaction between hardware and applications. Examples:

- Android: Based on Linux.
- iOS: Based on Unix.
- Others: HarmonyOS, Windows Phone (discontinued).

b. Device Drivers

They are programs that allow the operating system to communicate with the hardware.

c. Middleware

Software that facilitates communication between the operating system and applications. Example: APIs, graphic libraries, frameworks.

d. Applications

Software designed for the end user, such as social networks, web browsers, games, etc.

3. Network and Connectivity Level

It includes the infrastructure that allows connectivity to the Internet and other networks.

- Cellular networks: 3G, 4G, 5G.
- Wi-Fi: Wireless connection to local networks.
- Location services: GPS and similar technologies.

4. User Interface Level (UI/UX)

Designed for direct interaction with the user.

Includes touch screens, gestures, virtual keyboards and voice commands.