

ASSIGNMENT-1

ITA0302

MOBILE COMPUTING

- Samiksha Dhanya. G

192321014.

1. Apply the special constraints and requirements in Mobile OS vs conventional OS.

(i) Memory Management:

Mobile OS:

* **Limited Resources**: Mobile devices have limited RAM and storage compared to desktop systems. Mobile OS are designed to efficiently manage resources.

* **Garbage Collection**: Mobile OS often employ aggressive garbage collection to free up memory.

* **App Lifecycle Management**: Mobile OS's manage the lifecycle of apps, suspending or terminating background apps.

Conventional OS:

* **Abundant resources**: Desktop and server systems typically have more RAM and storage.

* **Virtual Memory**: Conventional OS use virtual memory to extend physical RAM, allowing for multitasking.

* **Swapping**: OS's like Windows and Linux use swapping to move inactive processes to disk, freeing up RAM.

(ii) Processor Management / Scheduling:

Mobile OS:

* **Power Efficiency**: Mobile processors are optimized for power efficiency rather than raw performance.

* **Task Scheduling**: Mobile OS's prioritize tasks to ensure smooth user experience while conserving battery life.

* **Background Processes**: Mobile OS's limit background processes to save CPU cycles and battery.

Conventional OS:

* **Performance Focused**: Desktop and server processors are designed for high performance.

* **Multitasking**: Conventional OS's support extensive multitasking, allowing multiple applications to run concurrently.

* **Scheduling Algorithms**: OS's use sophisticated

Scheduling algorithms to manage CPU time among processes.

(iii) Device Management:

Mobile OS:

* **Integrated hardware:** Mobile devices have integrated hardware components like GPS, cameras & sensors.

* **Power Management:** Mobile OS includes advanced power management features to extend battery life.

* **Driver support:** Mobile OS come with built-in drivers for common hardware components.

Conventional OS:

* **Diverse Hardware:** Desktop systems can have a wide variety of hardware configurations.

* **Driver Installation:** Conventional OS users required to install drivers for hardware components.

* **Resource Management:** OS manages hardware resources like printers, scanners and external storage devices.

in File Management:

Mobile OS:

* **Sandboxing:** Mobile OS uses sandboxing to isolate app.

data, enhancing security.

* **Limited File Access:** users have limited access to the file system, reducing the risk of data corruption.

* **Cloud Integration:** Mobile OS integrate with cloud services for Backup and Syncing.

Conventional OS:

* **Full File Access:** users have full access to the file system, allowing for extensive customization.

* **File permissions:** Conventional OS's use file permissions to control access to files and directories.

* **File system types:** OS's support various file system

types like NTFS, ext4 and FAT32.

(V) Security:

Mobile OS:

* **APP permissions**: Mobile OS's require apps to request permissions for accessing sensitive data.

* **Regular updates**: Mobile OS's receive regular security updates to patch vulnerabilities.

* **Biometric Authentication**: Mobile devices often include biometric authentication methods like fingerprints.

Conventional OS:

* **Antivirus software**: conventional OS rely on antivirus software to protect against malware.

* **Firewalls**: OS's include firewalls to protect against network threats.

* **User accounts**: OS supports multiple user accounts with different permission levels.

(vi) other functions:

mobile OS:

* **connectivity**: mobile os's manage various connectivity

options like wi-fi, Bluetooth and cellular networks.

* **Notifications**: Mobile os provide a centralized

notification system for apps.

* **location services**: mobile os's include location services

for navigation and location based apps.

conventional OS:

* **Network Management**: conventional os's manage network connections and configurations.

* **System Utilities**: os's include system utilities for maintenance and troubleshooting.

* **Software installations**: os supports the installation of software from various sources.

2. Justify the Mobile operating system functions and its features in Android OS, iPhone OS and Windows OS with respect to given terms.

(i) Easy to use (ii) Good App store (iii) Good battery life,

in Data usage and organization.

Android OS:

Easy to use:

* **Intuitive Interface:** Android's user interface is designed to be intuitive and customizable.

* **Widgets:** Android supports widgets for quick access to information and functions.

* **Voice assistants:** Google Assistant provides voice-activated controls.

Good App store:

Google Play Store: Android's official app store offers a vast collection of apps and games.

Good Battery life:

* Doze mode: Android's doze mode saves battery by limiting background activities when device is idle.

* Adaptive Battery: Android uses ML to optimise battery life and enable battery saver mode.

Data Usage and organisation:

* Data Saver: It helps reduce data usage by restricting background data.

* Storage Management: Android provides tools for managing storage, including clean up unused files.

* File Manager: Android includes a built-in manager for organising files and folders.

Iphone iOS:

Easy to use:

* Consistent Interface: iOS offers a consistent and user-friendly interface across all devices.

* Siri: Apple's voice assistant, Siri, provides hands-free control and information retrieval.

* Accessibility features: iOS includes a range of accessibility features for users with disabilities.

Good App store:

App store: Apple's App store offers a curated selection of high-quality apps and games.

Good Battery life:

* Low power mode: iOS includes a low power mode that extends battery life by reducing power consumption.

* Battery health: iOS provides information about battery health and performance.

Data usage and organization:

* Low Data Mode: iOS includes a low data mode that reduces data usage by limiting background activities.

* **iCloud storage:** iOS integrates with iCloud for backing up and syncing data across devices.

* **Files app:** iOS includes a Files app for managing and organizing files and folders.

Windows OS for PC:

Easy to use:

* **Accessibility features:** Built-in tools like Narrator, Magnifier, High contrast mode, which improve usability for all users.

* **Intuitive Interface:** Start menu, taskbar and virtual desktops make navigation and workspace organization simple.

* **Cortana Integration:** voice-controlled assistant helps with tasks, reminders, app integration and web searches.

Good App Store:

- * Microsoft Store: offers a curated selection of apps, games, automatic updates and community reviews.
- * universal windows platform (UWP): Enables users platform apps with consistent experience across devices.
- * Enterprise solutions: Access to Microsoft 365 and a range of business productivity and collaboration apps.

Good Battery Life:

- * power management: Features like battery saver mode, custom power plans and usage monitoring extend battery life.
- * sleep and hibernation: Sleep mode and hibernation help preserve system state while saving power. It automatically adjusts screen brightness to conserve battery based on ambient light.

Data usage and organisation:

* Storage management: Tools like storage sense and disk cleanup help manage and free up storage space.

* File explorer: quick access, OneDrive integration and powerful file search make file management efficient.

* Data Backup and recovery: File history and system restore make it easier to protect and recover data efficiently.

Additional features:

* Security: Windows defender, windows hello and bitlocker provide strong security and privacy protections.

* Gaming: Xbox integration and Gamebar supports seamless pc gaming and streaming experiences.

* Multitasking: snap assist and task view enhance productivity with better window and desktop Management.