

Mobile Computing

For 5G

Technology

- ITA0302

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Assignment 1

APPLY the special constraints and requirements

mobile OS vs conventional OS

memory management:

mobile OS: operates with limited RAM;
uses aggressive memory optimization techniques
like memory compression and task killing
memory allocation is dynamic to handle
multitasking with minimal footprint

conventional OS: has access to abundant
RAM; memory management focuses on performance
enhancement rather than conserving memory
and swapping are heavily used

processor management / scheduling:

mobile OS: uses energy-aware scheduling
to maximize battery life prioritizes background
tasks and real time responsiveness. Multicore
scheduling is optimized for power consumption

conventional OS: focuses on performance
and scheduling tasks like gaming desiring
or computational applications without energy
constraints

device management:

mobile OS: manages a wide variety
of built-in sensors accelerometer, gyroscope,
proximity sensors and battery operated

Peripherals: Efficient management to optimize power usage is crucial.

conventional OS: Handles more external devices like printers hardware without the severe energy limitations of most devices.

File management:

nebula OS: file system like YAFFS2/F2FS are optimized for flash storage and are sandboxed to prevent unauthorized file access ensuring data privacy. Cloud synchronization is integrated.

conventional OS: Standard file systems (NTFS, FAT) are used with no stringent energy or storage constraints. users have greater control over file structures and permissions.

Security:

nebula OS: extremely security sensitive. Sandboxing applications, permission management, biometric authentication remote with natively

conventional OS:

Security mechanisms like user account
firewalls and antivirus are common
but less focused on physical theft and
mobile data protection compared to mobile
systems

summary: mobile OS design is driven
by resource constraints, power efficiency
and mobility, whereas conventional
OS design emphasizes performance, security
and user control.

Justify the mobile operating system
functions and features in Android OS
Phone, iOS, windows OS with respect
to the given terms

Fair to all:

Android: Highly customizable others
in built-in navigation and google absent
support. Extensive OEM variations ensure
user freedom

iPhone: based on simplicity and legal
consistent user interface across device
elements integration

windows: clean, till bare metal to be
designed for early migration, specially
borders familiar with desktop window
systems

cross APP store:

Android: Google Play Store offers millions
of apps, with stringent approval
processes ensuring fast availability
but more security concerns

iPhone: APP store is strictly curated
for quality, security and performance
better apps compared to Android

windows: Microsoft store had limited
app availability struggled to attract
developers leading to a smaller
ecosystem compared to Android
and iOS

cross battery life:

Android: Android devices with stock
or new ROMS offer excellent battery
optimizations

iPhone: iOS is highly optimized for
Apple hardware, providing superb battery life

even with smaller buttons

windows: windows phone was known
for efficient resource utilization, enduring
long battery life, user on mid range hardware

data usage and organization.

data usage and power modes.

android: offers data saver mode,
granular app data usage control, background
data restrictions and local synchronization

[phone (ios)]: automatic data backup
to ideal optimized data usage
intelligent sync setting to minimize
network consumption

windows: provides basic data
monitoring features but lacks
basic granular controls available
on android or ios based more
on syncing with one drive