

1.2 SOFTWARE & SOFTWARE DEVELOPMENT · 1.2.1

Types of OS, BIOS, drivers & virtual machines

The five OS types, plus **BIOS**, **device drivers** and **virtual machines**. Spec 1.2.1(e)(f)(g)(h).

01 Types of OS

Distributed Load shared across networked computers.

Embedded Single fixed purpose, in ROM (e.g. microwave).

Multi-tasking One user, many programs at once.

Multi-user Many users share one machine (time-sharing).

Real-time Guaranteed response time; safety-critical.

02 BIOS

What Basic Input Output System, stored in ROM.

POST Power-on self-test: initialise & test hardware.

Then Loads the bootloader, which loads the OS into RAM.

Corrupt? No boot — hardware never initialised, OS never loads.

03 Device drivers & virtual machines

Device driver Lets the OS communicate with a specific hardware device (printer, GPU, scanner).

VM — bytecode Runs platform-independent intermediate code (e.g. JVM) → portability across hardware.

VM — emulation Runs one OS inside another → testing, sandboxing, running incompatible software (slower).

FINAL PASS BEFORE THE EXAM

Rapid exam tips

Seven slips on OS types, BIOS, drivers and VMs.

01

Multi-tasking = one user, many programs. **Multi-user** = many users sharing one machine.

02

Real-time is about a **guaranteed response time**, not just speed — vital for safety-critical systems.

03

Embedded = single fixed purpose, limited resources, usually in ROM.

04

BIOS does **POST** then loads the OS into RAM. It is **not** the OS itself.

05

A **driver** lets the OS talk to a specific device — name a device when asked for an example.

06

A **VM** is software acting as a machine: bytecode (portability) or an OS within an OS (testing).

07

"Name three types of OS and state the purpose of each" is common — learn one crisp purpose line for all five.