## Lecture 1-What is an Operating System?

1. What is one of the primary roles of an operating system?

- A) To directly execute all user applications

- B) To provide clean abstractions of hardware resources

- C) To replace hardware functionality

- D) To design hardware components

- Answer: B

2. Which of the following is NOT typically managed by an operating system?

- A) Memory management

- B) CPU scheduling

- C) Email communication

- D) I/O management

- Answer: C

3. What is the "kernel" in an operating system?

- A) The hardware component managing memory

- B) The one program running at all times on a computer

- C) A user interface for applications

- D) A type of application program

- Answer: B

4. Which of these is an example of virtualization provided by an OS?

- A) Infinite memory abstraction

- B) Direct access to hardware by applications

- C) Hardware error correction

- D) Physical resource duplication

- Answer: A

5. What is dual-mode operation in an operating system?

- A) Running two operating systems simultaneously

- B) Providing two modes: kernel mode and user mode

- C) Allowing two users to access the same process

- D) Switching between two CPUs dynamically

- Answer: B

6. What does a process consist of in an operating system?

- A) Only threads of control

- B) Address space, threads, and additional system state (e.g., open files, sockets)

- C) Only memory and CPU time allocation

- D) Only compiled code and libraries

- Answer: B

7. Which of the following is NOT considered a core abstraction provided by an OS?

- A) Threads for processors

- B) Files for storage devices

- C) Sockets for networks

- D) Physical hardware duplication for processes

- Answer: D

8. What is one key challenge faced by modern operating systems?

- A) Designing new hardware components

- B) Managing applications with diverse software modules on various devices and architectures

- C) Eliminating all bugs in software programs before deployment

- D) Preventing any form of multitasking or concurrency in applications

- Answer: B

9. What does "protection" in an operating system ensure?

- A) That processes cannot interfere with each other or the OS itself

- B) That all applications run in kernel mode for efficiency

- C) That users have unrestricted access to hardware resources

- D) That only one application can run at a time on the machine

- Answer: A

10. Why is Moore's Law important in the context of operating systems?

- A) It predicts improvements in software complexity management.

- B) It refers to the doubling of transistors on chips, enabling more powerful OS functionalities.

- C) It eliminates the need for virtualization techniques in modern OS designs.

- D) It ensures that all processes run at equal priority levels.

- Answer: B