Operating System Concepts 2108 1st semester Quiz

**name:** 박상범 **Student ID:** 20182110117

12

**Fill in the blank.**

From the computer's point of view, the operating system is the program most intimately involved with the hardware. In this context, we can view an operating system as a (A: System View ). A slightly different view of an operating system emphasizes the need to control the various I/O devices and user programs. An operating system is a control program. A (B: Operating System )manages the execution of user programs to prevent errors and improper use of the computer. It is especially concerned with the operation and control of I/O devices. (C: )

A more common definition, and the one that we usually follow, is that the operating system is the one program running at all times on the computer—usually called the (A: System Program). (Along with the (A: ), there are two other types of programs: (B: System Program ), which are associated with the operating system but are not necessarily part of the (A: kernel ), and application programs, which include all programs not associated with the operation of the system.)

This form of interrupt-driven I/O is fine for moving small amounts of data but can produce high overhead when used for bulk data movement such as disk I/O. To solve this problem, (A: DMA ) is used. After setting up buffers, pointers, and counters for the I/O device, the device controller transfers an entire block of data directly to or from its own buffer storage to memory, with no intervention by the CPU. Only one interrupt is generated per block, to tell the device driver that the operation has completed, rather than the one interrupt per byte generated for low-speed devices. While the device controller is performing these operations, the CPU is available to accomplish other work.

Within the past several years, (A: Multiprocessor system ) (also known as **parallel systems** or **multicore** systems) have begun to dominate the landscape of computing. Such systems have two or more processors in close communication, sharing the computer bus and sometimes the clock, memory, and peripheral devices. Multiprocessor systems first appeared prominently appeared in servers and have since migrated to desktop and laptop systems. Recently, multiple processors have appeared on mobile devices such as smartphones and tablet computers.
(A: ) have three main advantages:
1. **Increased throughput**. 2. **Economy of scale**. 3. **Increased reliability**.

One of the most important aspects of operating systems is the ability to (A: Multiprogram ). A single program cannot, in general, keep either the CPU or the I/O devices busy at all times. Single users frequently have (A: ) running. (A: ) increases CPU utilization by organizing jobs (code and data) so that the CPU always has one to execute.
(B: Time-Sharing ), the CPU executes multiple jobs by switching among them, but the switches occur so frequently that the users can interact with each program while it is running.

The dual mode of operation provides us with the means for protecting the operating system from errant users—and errant users from one another. We accomplish this protection by designating some of the machine instructions that may cause harm as (A: Security ). → Privileged operation

The operating system abstracts from the physical properties of its storage devices to define a logical storage unit, the (A: Virtual memory ). The operating system maps files onto physical media and accesses these files via the storage devices. → file

(A: Locality ) is an important principle of computer systems. Here's how it works. Information is normally kept in some storage system (such as main memory). As it is used, it is copied into a faster storage system—the cache—on a temporary basis. When we need a particular piece of information, we first check whether it is in the cache. If it is, we use the information directly from the cache. If it is not, we use the information from the source, putting a copy in the cache under the assumption that we will need it again soon.

(A: Mobile device ) refers to computing on handheld smartphones and tablet computers. These devices share the distinguishing physical features of being portable and lightweight. Historically, compared with desktop and laptop computers, mobile systems gave up screen size, memory capacity, and overall functionality in return for handheld mobile access to services such as e-mail and web browsing.

(A: Cloud computing ) is a type of computing that delivers computing, storage, and even applications as a service across a network. In some ways, it's a logical extension of virtualization, because it uses virtualization as a base for its functionality. For example, the Amazon Elastic Compute Cloud (EC2) facility has thousands of servers, millions of virtual machines, and petabytes of storage available for use by anyone on the Internet. Users pay per month based on how much of those resources they use.

(A: System Calls ) provide an interface to the services made available by an operating system. These calls are generally available as routines written in C and C++, although certain low-level tasks (for example, tasks where hardware must be accessed directly) may have to be written using assembly-language instructions.

We have already seen that as UNIX expanded, the kernel became large and difficult to manage. In the mid-1980s, researchers at Carnegie Mellon University developed an operating system called Mach that modularized the kernel using the (A: microkernel ) approach.

Perhaps the best current methodology for operating-system design involves (A: kernel module ) Here, the kernel has a set of core components and links in additional services via modules, either at boot time or during run time. This type of design is common in modern implementations of UNIX, such as Solaris, Linux, and Mac OS X, as well as Windows.