OS Overview; kinds of operating systems

TRUE/FALSE QUESTIONS:

T F 1) The processor controls the operation of the computer and performs its data processing functions.

T F 2) Cache memory is invisible to the OS.

T F 3) The interrupt can occur at any time and therefore at any point in the execution of a user program.

T F 4) An example of a multicore system is the Intel Core i7.

T F 5) The operating system acts as an interface between the computer hardware and the human user.

MULTIPLE CHOICE QUESTIONS:

1) The four main structural elements of a computer system are:

A) Processor, Main Memory, I/O Modules and System Bus

B) Processor, I/O Modules, System Bus and Secondary Memory

C) Processor, Registers, Main Memory and System Bus

D) Processor, Registers, I/O Modules and Main Memory

2) The _____ holds the address of the next instruction to be fetched.

A) Accumulator (AC)

B) Instruction Register (IR)

C) Instruction Counter (IC)

D) Program Counter (PC)

3) Instruction processing consists of two steps:

A) fetch and execute

B) instruction and execute

C) instruction and halt D) fetch and instruction

4) The _____ routine determines the nature of the interrupt and performs whatever actions are needed.

A) interrupt handler B) instruction signal

C) program handler D) interrupt signal

5) Small, fast memory located between the processor and main memory is called:

A) Block memory B) Cache memory

C) Direct memory D) WORM memory

6) When an external device becomes ready to be serviced by the processor the device sends a(n) _____ signal to the processor.

A) access B) halt

C) handler D) interrupt

SHORT ANSWER QUESTIONS:

1) The invention of the _____ was the hardware revolution that brought about desktop and handheld computing.
2) External, nonvolatile memory is also referred to as _____ or auxiliary memory.
3) A _____ computer combines two or more processors on a single piece of silicon.
4) A Control/Status register that contains the address of the next instruction to be fetched is called the _____.
5) The concept of multiple programs taking turns in execution is known as _____.

Memory Management and Virtual Memory

TRUE/FALSE QUESTIONS:

T F 1) If a system does not employ virtual memory each process to be executed must be fully

loaded into main memory.

T F 2) A process that is not in main memory is immediately available for execution, regardless of whether or not it is awaiting an event.

T F 3) The use of unequal size partitions provides a degree of flexibility to fixed partitioning.

T F 4) The memory protection requirement must be satisfied by the operating system rather than the processor.

T F 5) A hardware mechanism is needed for translating relative addresses to physical main memory addresses at the time of execution of the instruction that contains the reference.

T F 6) The size of virtual storage is limited by the actual number of main storage locations.

T F 7) Segmentation is not visible to the programmer.

T F 8) Virtual memory allows for very effective multiprogramming and relieves the user of the unnecessarily tight constraints of main memory.

T F 9) The principle of locality states that program and data references within a process do not tend to cluster.

T F 10) The addresses a program may use to reference memory are distinguished from the addresses the memory system uses to identify physical storage sites.

MULTIPLE CHOICE QUESTIONS:

1) Main memory divided into a number of equal size frames is the _____ technique.

A) simple paging B) dynamic partitioning

C) fixed partitioning D) virtual memory segmentation

2) With _____ a process is loaded by loading all of its segments into dynamic partitions that need not be contiguous.

A) simple paging B) virtual memory segmentation

C) virtual memory paging D) simple segmentations

3) One technique for overcoming external fragmentation is _____ .

A) loading B) compaction

C) relocation D) partitioning

4) The chunks of a process are known as _____ .

A) pages B) addresses

C) frames D) segments

5) Available chunks of memory are known as _____ .

A) frames B) segments

C) addresses D) pages

6) In the Dynamic Partitioning technique of memory management, the placement algorithm that chooses the block that is closest in size to the request is called _____ .

A) first-fit B) best-fit

C) last-fit D) next-fit

7) The _____ structure indexes page table entries by frame number rather than by virtual page number.

A) hash table B) segment table

C) page table D) inverted page table

8) A _____ is issued if a desired page is not in main memory.

A) paging error B) page replacement policy

C) page fault D) page placement policy

9) _____ is transparent to the programmer and eliminates external fragmentation providing efficient use of main memory.

A) Hashing B) Paging

C) Segmentation D) Thrashing

10) The _____ determines when a page should be brought into main memory.

A) page fault B) fetch policy

C) working set D) resident set management

SHORT ANSWER QUESTIONS:

1) When there is wasted space internal to a partition due to the fact that the block of data loaded is smaller than the partition is referred to as _____.

2) As time goes on, memory becomes more and more fragmented and memory utilization declines, creating a phenomenon referred to as _____ .

3) _____ is a storage allocation scheme in which secondary memory can be addressed as though it were part of main memory.

4) To overcome the problem of doubling the memory access time, most virtual memory schemes make use of a special high-speed cache for page table entries called a _____ .

5) With _____ , a page is brought into main memory only when a reference is made to a location on that page.

Processes, Threads, and Scheduling

TRUE/FALSE QUESTIONS:

T F 1) A computer platform consists of a collection of hardware resources, such as the processor, main memory, I/O modules, timers, and disk drives.

T F 2) The process control block is the key tool that enables the OS to support multiple processes and to provide for multiprocessing.

T F 3) It is not the responsibility of the operating system to control the execution of processes.

T F 4) The OS may create a process on behalf of an application.

T F 5) The OS may suspend a process if it detects or suspects a problem.

MULTIPLE CHOICE QUESTIONS:

1) The processor itself provides only limited support for multiprogramming, and _____ is needed to manage the sharing of the processor and other resources by multiple applications at the same time.

A) memory B) data

C) software D) hardware

2) It is the principal responsibility of the _____ to control the execution of processes.

A) OS B) process control block

C) memory D) dispatcher

3) When one process spawns another, the spawned process is referred to as the _____ .

A) zombie process B) child process

C) stack process D) parent process

4) _____ involves moving part or all of a process from main memory to disk.

A) Swapping B) Relocating

C) Suspending D) Blocking

5) A process is in the _____ state when it is in main memory and awaiting an event.

A) Suspended B) Blocked

C) Zombie D) Ready

SHORT ANSWER QUESTIONS:

1) The principal function of the OS is to create, manage, and _____ processes.
2) A process in the _____ state is in main memory and available for execution.
3) The _____ is a layer of software between the applications and the computer hardware that supports applications and utilities.
4) A process is in the _____ state when it is in secondary memory and awaiting an event.
5) The process control block information can be grouped into three general categories: process identification, _____ and process control information.