

1、 (C) is the method of binding instructions and data to memory performed by most general-purpose operating systems.

- A) Interrupt binding B) Compile time binding
- C) Execution time binding D) Load-time binding

2、 An address generated by a CPU is referred to as a (B).

- A) physical address B) logical address
- C) post relocation register address
- D) Memory-Management Unit (MMU) generated address

3、 Suppose a program is operating with execution-time binding and the physical address generated is 300. The relocation register is set to 100.

What is the corresponding logical address? (C)

- A) 199 B) 201 C) 200 D) 300

4、 The mapping of a logical address to a physical address is done in hardware by the (A).

- A) memory-management-unit (MMU)
- B) memory address register
- C) relocation register D) dynamic loading register

5、 (B) is the dynamic storage-allocation algorithm which results in the smallest leftover hole in memory.

A) First fit B) Best fit C) Worst fit D) None of the above

6、 A(n) (A) page table has one page entry for each real page (or frame) of memory.

A) inverted B) clustered C) forward-mapped D) virtual

7、 Consider a logical address with a page size of 8 KB. How many bits must be used to represent the page offset in the logical address? (C)

A) 10 B) 8 C) 13 D) 12

8、 Given the logical address 0xAEF9 (in hexadecimal) with a page size of 256 bytes, what is the page number? (A)

A) 0xAE B) 0xF9 C) 0xA D) 0x00F9

9、 Consider a 32-bit address for a two-level paging system with an 8 KB page size. The outer page table has 1024 entries. How many bits are used to represent the second-level page table? (D)

A) 10 B) 8 C) 12 D) 9

10、 When does external fragmentation occur?

11、 Distinguish between internal and external fragmentation.

12、 Explain the basic method for implementing paging.

10: As processes are loaded and removed from memory, the free memory space is broken into little pieces. External fragmentation exists when there is enough total memory space to satisfy a request, but the available spaces are not contiguous; storage is fragmented into a large number of small holes. Both the first-fit and best-fit strategies for memory allocation suffer from external fragmentation.

11: Fragmentation occurs when memory is allocated and returned to the system. As this occurs, free memory is broken up into small chunks, often too small to be useful. External fragmentation occurs when there is sufficient total free memory to satisfy a memory request, yet the memory is not contiguous, so it cannot be assigned. Some contiguous allocation schemes may assign a process more memory than it actually requested (i.e. they may assign memory in fixed-block sizes). Internal fragmentation occurs when a process is assigned more memory than it has requested and the wasted memory fragment is internal to a process.

12: Physical memory is broken up into fixed-sized blocks called frames while logical memory is broken up into equal-sized blocks called pages. Whenever the CPU generates a logical address, the page number and offset into that page is used, in conjunction with a page table, to map the request to a location in physical memory.