

## Subject : OPERATING SYSTEMS

## Topic : Memory Management



DPP 01

## [MCQ]

1. The runtime mapping from virtual to physical address is done by a hardware device called the \_\_\_\_\_.  
 (a) Disk management unit  
 (b) Memory management unit  
 (c) File management unit  
 (d) None of the above.

## [MCQ]

2. If the process is moved from one memory block to another block while execution period then binding must be \_\_\_\_\_.  
 (a) Preponed to load time  
 (b) Preponed to compile time  
 (c) Delayed until run time  
 (d) None of the above

## [MSQ]

3. Choose the correct statement from the following:  
 (a) The set of all logical addresses generated by a program is called logical address space.  
 (b) The user program never accesses the real physical addresses.  
 (c) Dynamically linked libraries (DLLS) are system libraries that are linked to user programs when the programs are executed.  
 (d) None of the above

## [MCQ]

4. Consider a system which has 256k words in main memory and each word has size of 64 bits, then the capacity is?  
 (a) 2MB  
 (b) 4MB  
 (c) 6MB  
 (d) None of the above

## [MCQ]

5. Which one among the following is a non – contiguous allocation?  
 (a) Segmented paging  
 (b) Paging  
 (c) Segmentation  
 (d) All of the above

## [MCQ]

6. Consider the following statements:  
 S<sub>1</sub>: The basic method for implementing paging involves breaking physical memory into variable sized blocks called frames and breaking logical memory into blocks of same size called pages.  
 S<sub>2</sub>: Page table is kept in main memory.  
 (a) S<sub>1</sub> is true and S<sub>2</sub> is false.  
 (b) S<sub>2</sub> is true, S<sub>1</sub> is false.  
 (c) both S<sub>1</sub> and S<sub>2</sub> are true.  
 (d) None of the above

## [MCQ]

7. Thrashing will occur if:  
 (a) Processes on system frequently perform page replacement.  
 (b) Processes on system are in waiting state.  
 (c) Process on system is in running state.  
 (d) None of the above.

## Answer Key

- |              |        |
|--------------|--------|
| 1. (b)       | 5. (d) |
| 2. (c)       | 6. (b) |
| 3. (a, b, c) | 7. (a) |
| 4. (a)       |        |



## Hints and solutions

1. (b)

The memory management unit (MMU) is responsible for the translation of virtual addresses used by software to physical address used in the main memory.

2. (c)

In a RAM location, if a program is presenting an association of data and instruction then it is referred as the address binding. If a process is moved from one memory block to another physical address with all the instruction and the data, then the binding should be delayed until the runtime.

3. (a, b, c)

- Logical address space is set of all logical addresses generated by CPU in reference to a program.
- Generally, program uses logical addresses. MMU maps these logical addresses to physical address.

4. (a)

Memory Capacity =  
 Number of words  $\times$  Number of bits per words  
 $= 256 \times 2^{10} \times 64 \text{ bits}$   
 $= 2^{24} \text{ bits} / 2^3$   
 $= 2^{21} \text{ B}$   
 $= 2 \text{ MB}$

5. (d)

The non-contiguous memory allocation techniques include:

1. Paging
2. Segmentation
3. Segmented Paging

Distinct components of a processes are assigned to different location in main memory.

6. (b)

The implementation of paging involves breaking physical memory into fixed sized block called frames but not variable sized blocks.

7. (a)

If a process is in thrashing, it means process is spending more time in paging than executing and also thrashing results in severe performance problems.



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