**MCQs**

1. In a computer system with 4GB of RAM, a process requires 2GB of contiguous memory. What is the maximum amount of memory that can be allocated to this process using a single contiguous memory allocation technique?
   1. 1GB
   2. 2GB
   3. 4GB
   4. 3GB
2. A computer system uses a fixed partitioning memory allocation technique with three partitions of sizes 256KB, 512KB, and 1MB. If a process requests 768KB of memory, which partition(s) can be allocated to the process?
   1. 256KB
   2. 512KB
   3. 1MB
   4. 256KB and 512KB
3. A computer system employs dynamic partitioning for memory allocation. The available memory is 8GB, and there are four processes with memory requirements of 2GB, 1GB, 3GB, and 1.5GB, respectively. If the first-fit allocation strategy is used, which process will be allocated memory first?
   1. 2GB
   2. 1GB
   3. 3GB
   4. 1.5GB
4. In a paging memory management scheme, the page size is 4KB, and the virtual address space is 64GB. How many bits are needed for the page number in the virtual address?
   1. 16 bits
   2. 14 bits
   3. 12 bits
   4. 10 bits
5. In a multi-threaded application, each thread typically has its own:
   1. Separate code segment
   2. Separate data segment
   3. Separate stack
   4. Separate heap
6. In a multi-threaded program, the code segment is usually shared among all threads because:
   1. It simplifies memory management
   2. It improves thread synchronization
   3. Code is read-only and doesn't change during program execution
   4. Threads can execute their code independently
7. What is the primary purpose of memory management in an operating system?
   1. To store and manage user data
   2. To allocate and deallocate memory resources for processes
   3. To provide virtual memory for users
   4. To enhance CPU performance
8. Which memory allocation method allocates the entire memory to a single process until it releases it?
   1. Contiguous memory allocation
   2. Paging
   3. Segmentation
   4. Demand paging
9. What is a page fault in the context of memory management?
   1. A process requesting more memory than available
   2. An error that occurs when accessing invalid memory locations
   3. A situation when a page is not found in main memory
   4. A situation when a page is released from main memory
10. In a paged memory management scheme, what is the size of a page typically determined by?
    1. The size of the CPU cache
    2. The size of the secondary storage device
    3. The size of physical memory
    4. The size of the process being executed
11. Which memory protection mechanism prevents one process from accessing the memory of another process?
    1. Segmentation
    2. Paging
    3. Demand paging
    4. Contiguous memory allocation
12. What is the role of the Memory Management Unit (MMU) in memory management?
    1. It manages the allocation of virtual memory.
    2. It controls CPU cache operations.
    3. It translates virtual addresses to physical addresses.
    4. It ensures data integrity in main memory.
13. In a demand paging system, what is the purpose of the page table?
    1. It contains information about the location of pages in secondary storage.
    2. It tracks the order of page replacements.
    3. It maps virtual page numbers to physical page frame numbers.
    4. It manages the allocation of pages to processes.
14. What is the term for the situation where a process is larger than the available contiguous block of memory?
    1. Internal fragmentation
    2. External fragmentation
    3. Page fault
    4. Segmentation fault
15. What is the purpose of the "swapping" technique in memory management?
    1. To increase the size of virtual memory
    2. To optimize CPU scheduling
    3. To move an entire process in and out of main memory
    4. To improve disk-I/O performance