Chapter 2: Memory Management: Simple Systems

TRUE/FALSE

1. Single-user systems in a non-networked environment allocate, to each user, access to all available main memory for each job, and jobs are processed sequentially, one after the other.

   ANS: T PTS: 1 REF: 30-31

2. A single-user system supports multiprogramming.

   ANS: F PTS: 1 REF: 31

3. The first attempt to allow for multiprogramming used fixed partitions.

   ANS: T PTS: 1 REF: 31

4. Single-user contiguous allocation schemes have the problem of partition intrusion..

   ANS: F PTS: 1 REF: 31

5. The algorithm used to store jobs into memory in a fixed partition system requires a few more steps than the one used for a single-user system because the size of the job must be matched with the size of the partition to make sure it fits completely.

   ANS: T PTS: 1 REF: 32

6. The fixed partition scheme does not require that the entire program be stored contiguously and in memory from the beginning to the end of its execution.

   ANS: F PTS: 1 REF: 32

7. The fixed partition scheme works well if all of the jobs run on the system are of the same size or if the sizes are known ahead of time and don't vary between reconfigurations.

   ANS: T PTS: 1 REF: 33

8. In a fixed partition scheme, large jobs will need to wait if the large partitions are already booked, and they will be rejected if they're too big to fit into the largest partition.

   ANS: T PTS: 1 REF: 33

9. The best-fit allocation method keeps the free/busy lists organized by memory locations, low-order memory to high-order memory.

   ANS: F PTS: 1 REF: 36

10. A large job can have problems with a first-fit memory allocation scheme.

    ANS: T PTS: 1 REF: 38

11. The first-fit algorithm assumes that the Memory Manager keeps only one list containing free memory blocks.

    ANS: F PTS: 1 REF: 38

12. One of the problems with the best-fit algorithm is that the entire table must be searched before the allocation can be made because the memory blocks are physically stored in sequence according to their location in memory.

    ANS: T PTS: 1 REF: 39

13. Research continues to focus on finding the optimum allocation scheme.

    ANS: T PTS: 1 REF: 40

14. For a fixed partition system, memory deallocation is relatively complex.

    ANS: F PTS: 1 REF: 41

15. In a dynamic partition system, a null entry in the busy list occurs when a memory block between two other busy memory blocks is returned to the free list.

    ANS: T PTS: 1 REF: 44

16. In the relocatable dynamic partitions scheme, the Memory Manager relocates programs to gather together all of the empty blocks and compact them to make one block of memory large enough to accommodate some or all of the jobs waiting to get in.

    ANS: T PTS: 1 REF: 45

17. Memory defragmentation is performed by the operating system to reclaim fragmented space.

    ANS: T PTS: 1 REF: 45

18. After relocation and compaction, both the free list and the busy list are updated.

    ANS: T PTS: 1 REF: 46

19. The bounds register is used to store the highest (or lowest, depending on the specific system) location in memory accessible by each program.

    ANS: T PTS: 1 REF: 48

20. Compaction should always be performed only when there are jobs waiting to get in.

    ANS: F PTS: 1 REF: 50

MULTIPLE CHOICE

1. Main memory is also known as ____.
   a. single-user memory
   b. random access memory
   c. finite memory
   d. virtual memory

ANS: B PTS: 1 REF: 30

2. In a single-user system, jobs are processed ____.
   a. sequentially
   b. intermittently
   c. randomly
   d. in order of longest job to shortest job

   ANS: A PTS: 1 REF: 30

3. Fixed partitions are also called ____ partitions.
   a. complete
   b. static
   c. direct
   d. sized

   ANS: B PTS: 1 REF: 31

4. In the fixed-partition memory management scheme, the table that the Memory Manager uses to keep track of jobs is composed of the ____.
   a. partition size, memory address, and status
   b. status, access, and memory address
   c. partition size, status, and access
   d. partition size, memory address, access, and status

   ANS: D PTS: 1 REF: 32

5. The fixed partition scheme works well when ____.
   a. all jobs are of similar size
   b. jobs have different sizes
   c. job sizes are not known in advance
   d. all jobs are under 100K

   ANS: A PTS: 1 REF: 33

6. The phenomenon of less-than-complete use of memory space in a fixed partition is called ____.
   a. dynamic fragmentation
   b. internal fragmentation
   c. external fragmentation
   d. fixed fragmentation

   ANS: B PTS: 1 REF: 33

7. ____ consists of fragments of free memory between blocks of allocated memory.
   a. An inefficient fit
   b. Indirect partitioning
   c. External fragmentation
   d. Internal fragmentation

   ANS: C PTS: 1 REF: 34

8. The ____ method keeps the free/busy lists organized by memory locations, from low-order memory to high-order memory.
   a. fixed partition allocation
   b. first-fit memory allocation
   c. dynamic fit memory allocation
   d. best-fit memory allocation

   ANS: B PTS: 1 REF: 36

9. The goal of the ____ memory allocation algorithm is to find the smallest memory block into which a job will fit.
   a. smallest-fit
   b. first-fit
   c. dynamic-fit
   d. best-fit

   ANS: D PTS: 1 REF: 39

10. The release of memory space by the Memory Manager is called ____.
    a. fragmentation
    b. relocation
    c. free memory
    d. deallocation

    ANS: D PTS: 1 REF: 41

11. A(n) ____ in the busy list occurs when a memory block between two other busy memory blocks is returned to the free list.
    a. blank line
    b. null entry
    c. joined entry
    d. empty entry

    ANS: B PTS: 1 REF: 44

12. ____ of memory is performed by the operating system to reclaim fragmented sections of the memory space.
    a. Deallocation
    b. Redirection
    c. Compaction
    d. Reallocation

    ANS: C PTS: 1 REF: 45

13. Memory compaction is also referred to as ____.
    a. defragmentation
    b. collection
    c. reallocation
    d. dynamic allocation

    ANS: A PTS: 1 REF: 45

14. Single-user, fixed partition, and dynamic partition memory schemes share unacceptable fragmentation characteristics that were resolved with the development of ____.
    a. deallocation
    b. best-fit algorithms
    c. relocatable dynamic partitions
    d. null entry accounting

    ANS: C PTS: 1 REF: 45

15. When reading an instruction, the operating system can tell the ____ of each group of digits by its location in the line and the operation code.
    a. function
    b. value
    c. order
    d. assignment

    ANS: A PTS: 1 REF: 46

16. In a relocatable dynamic partition scheme, the ____ ensures that, during execution, a program won't try to access memory locations that don't belong to it.
    a. relocation register
    b. load register
    c. compaction register
    d. bounds register

    ANS: D PTS: 1 REF: 48

17. In a relocatable dynamic partition scheme, the ____ contains a value that must be added to each address referenced in a program so that the system will be able to access the correct memory addresses after relocation.
    a. bounds register
    b. load register
    c. relocation register
    d. compaction register

    ANS: C PTS: 1 REF: 48

18. By compacting and relocating, the Memory Manager optimizes the use of memory and thus improves throughput. However, it also requires more ____ than the other memory allocation schemes discussed in this chapter.
    a. null entries
    b. segmentation
    c. main memory
    d. overhead

    ANS: D PTS: 1 REF: 50

19. One approach to performing compaction is to do it when a certain ____ of memory becomes busy.
    a. byte
    b. percentage
    c. bit
    d. area

    ANS: B PTS: 1 REF: 50

20. The four memory management techniques presented in this chapter share the requirement that the entire program being executed must be ____.
    a. loaded into memory
    b. stored on disk
    c. written in a single language
    d. relocatable

    ANS: A PTS: 1 REF: 50