Memory

1. Which type of memory is volatile, meaning it loses its data when the computer is turned off?
   (a) ROM
   (b) RAM
   (c) Hard Disk Drive
   (d) Cache

2. What is the main purpose of ROM in a computer?
   (a) To store frequently used programs and data
   (b) To store the bootup instructions for the computer
   (c) To store large amounts of user data
   (d) To hold temporary data during program execution

3. Virtual memory allows a computer to:
   (a) Run more programs than can be held in RAM
   (b) Permanently store deleted files
   (c) Increase the processing speed of the CPU
   (d) Reduce the amount of physical RAM needed

4. A variable in a program is used to:
   (a) Store a fixed value that cannot change
   (b) Store a value that can be changed during program execution
   (c) Represent the computer's operating system
   (d) Hold data used by the graphics card

5. Which of the following is NOT a common way to measure memory capacity?
   (a) Mebibytes (MiB)
   (b) Gibibytes (GiB)
   (c) Kilobits (Kb)
   (d) Tebibytes (TiB)

6. A program uses a constant value of 3.14 to represent pi. What type of memory does this value reside in while the program is running?
   (a) ROM
   (b) Cache
   (c) Hard Disk Drive
   (d) RAM

7. Which of the following statements about cache memory is TRUE?
   (a) It is the slowest type of memory in a computer.
   (b) It stores frequently accessed data for faster retrieval.
   (c) It is used for permanent storage of user files.
   (d) Its size has no impact on the computer's overall performance.

8. Flash memory, like that used in USB drives, uses what type of storage media?
   (a) Solid state
   (b) Magnetic
   (c) Optical
   (d) Virtual

9. What is the Stored Program concept?

   a) Storing data permanently on a hard disk drive.
   (b) Keeping the operating system separate from application programs.
   (c) The ability of a computer to execute different instructions based on user input.
   (d) Both instructions and data being stored in the same memory

10. What is a key benefit of the stored-program concept?

    (a) It increases the processing speed of the CPU.
    (b) It allows for faster internet browsing.
    (c) It enables the computer to run different programs without physically modifying the hardware
    (d) It improves the quality of graphics displayed on the screen.

11. The invention of the stored-program concept is credited to which computer scientist?

    (a) Alan Turing
    (b) Steve Jobs
    (c) John von Neumann
    (d) Bill Gates

12. In a computer with the stored-program concept, which type of memory typically holds both program instructions and data during program execution?

    (a) Hard Disk Drive
    (b) RAM
    (c) Cache
    (d) Read-Only Memory (ROM)

13. What 2 items did John Von Neumann propose would be held in RAM?

14. Virtual memory allows a computer to run programs that are larger than the available physical RAM. This is achieved by:
    (a) Increasing the processing speed of the CPU
    (b) Transferring inactive portions of the program to secondary storage (like a hard drive)
    (c) Deleting unused files to free up RAM space
    (d) Disabling background processes

15. When multiple programs are running simultaneously, the operating system uses algorithms called:
    (a) Scheduling
    (b) Formatting
    (c) Defragmentation
    (d) Paging

16. Memory fragmentation occurs when:
    (a) The operating system is overloaded with tasks.
    (b) The computer's internet connection is slow.
    (c) Free memory is scattered in small chunks throughout memory/storage
    (d) A program crashes and corrupts memory.

17. Defragmentation is a process used to:
    (a) Increase the overall amount of physical RAM
    (b) Reorganise free memory space into larger contiguous blocks for improved efficiency
    (c) Permanently delete unused files from the hard drive.
    (d) Update the drivers for hardware components.

18. Which types of algorithms are used by the operating system to manage memory?
    (a) Scheduling algorithms
    (b) Search algorithms
    (c) Paging algorithms
    (d) Sorting algorithms

19. Which type of structure is used in a program to store a single piece of data that won't change during the running of a program?
    (a) Constant
    (b) Array
    (c) Record
    (d) Variable

20. Which type of structure is used in a program to store a mulitple pieces of data of different data types?
    (a) Constant
    (b) Array
    (c) Variable
    (d) Record

ANSWERS

1. (b) RAM is volatile
2. (b) ROM stores the bootup instructions for the computer
3. (a) Run more programs than can be held in RAM
4. (b) Store a value that can be changed during program execution
5. (c) Kilobits (Kb)
6. (d) RAM because RAM holds all the data and instructions for currently running programs
7. (b) It stores frequently accessed data for faster retrieval.
8. (a) Solid state
9. (d) Both instructions and data being stored in the same memory
10. (c) It enables the computer to run different programs without physically modifying the hardware
11. (c) John von Neumann
12. (b) RAM
13. Data and instructions
14. (b) Transferring inactive portions of the program to secondary storage (like a hard drive)
15. (a) Scheduling
16. (c) Free memory is scattered in small chunks throughout memory/storage
17. (b) Reorganise free memory space into larger contiguous blocks for improved efficiency
18. (c) Paging algorithms
19. (a) Constant
20. (d) Records hold data of different data types. Arrays hold multiple pieces of data of the same type.