Multiple Choice Questions and Answers

1. What is the purpose of a data type in computer programming?

   A. Storage optimization

   B. Code execution speed

   C. Logical operations

   D. User interface

   Answer: A

   Explanation: Data types help optimize storage space by defining the type and size of data.

2. Which complement is used for representing negative numbers in binary?

   A. 1's complement

   B. 2's complement

   C. 9's complement

   D. 10's complement

   Answer: B

   Explanation: 2's complement is widely used for binary representation of negative numbers.

3. In fixed-point representation, what does the term 'fixed-point' refer to?

   A. Constant values

   B. Decimal point position

   C. Integer values only

D. Floating-point precision

Answer: B

Explanation: Fixed-point representation involves a fixed position for the decimal point.

4. What is the key advantage of floating-point representation over fixed-point representation?

   A. Higher precision

   B. Lower storage requirements

   C. Faster calculations

   D. Simplicity

   Answer: A

   Explanation: Floating-point allows representation of a wider range of values with higher precision.

5. Which algorithm is commonly used for addition and subtraction in computer arithmetic?

   A. Booth's algorithm

   B. Newton's method

   C. Euclidean algorithm

   D. Ripple carry adder

   Answer: D

   Explanation: Ripple carry adder is often used for addition in computer arithmetic.

6. What is the primary purpose of a multiplication algorithm in computer arithmetic?

   A. Minimizing storage space

   B. Accelerating division operations

C. Enhancing addition speed

D. Efficiently multiplying large numbers

Answer: D

Explanation: Multiplication algorithms are designed for efficient multiplication of numbers.

7. Which decimal arithmetic unit is commonly used for handling decimal numbers in computer systems?

A. Binary-coded decimal (BCD)

B. Floating-point unit (FPU)

C. Hexadecimal arithmetic unit

D. Octal arithmetic unit

Answer: A

Explanation: BCD is designed for efficient decimal arithmetic operations.

8. In division algorithms, what is the role of the divisor?

A. Dividend identification

B. Quotient determination

C. Remainder calculation

D. Denominator in fractions

Answer: B

Explanation: The divisor is used to determine the quotient in division operations.

9. What characterizes a floating-point arithmetic operation?

A. Fixed precision

B. Variable precision

C. Integer-only operations

D. Constant precision

Answer: B

Explanation: Floating-point operations allow variable precision for a wide range of values.

10. Which operation is a common use case for a decimal arithmetic unit in computer systems?

A. Graphics rendering

B. Financial calculations

C. Sorting algorithms

D. Network protocols

Answer: B

Explanation: Decimal arithmetic units are often employed in financial calculations involving decimal numbers.

11. What is the purpose of using 1's complement in binary representation?

A. Enhanced precision

B. Easy arithmetic operations

C. Sign-magnitude representation

D. Avoiding overflow

Answer: C

Explanation: 1's complement is used for sign-magnitude representation of binary numbers.

12. In computer arithmetic, what is the significance of Booth's algorithm?

    A. Division optimization

    B. Multiplication optimization

    C. Floating-point precision

    D. Fixed-point representation

    Answer: B

    Explanation: Booth's algorithm is widely used for optimizing multiplication operations.

13. Which representation is most suitable for fractional numbers in binary?

    A. 1's complement

    B. 2's complement

    C. Floating-point

    D. Fixed-point

    Answer: C

    Explanation: Floating-point representation is suitable for handling both integer and fractional numbers.

14. What is the primary advantage of using 2's complement for negative numbers?

    A. Simplifies addition

    B. Reduces storage space

    C. Improves division efficiency

    D. Avoids overflow

    Answer: A

Explanation: 2's complement simplifies the addition of positive and negative binary numbers.

15. Which arithmetic operation is generally more complex in terms of algorithm design?

    A. Addition

    B. Subtraction

    C. Multiplication

    D. Division

    Answer: D

    Explanation: Division algorithms are typically more complex than addition, subtraction, or multiplication.

16. In floating-point arithmetic, what does the exponent part represent?

    A. Integer part of the number

    B. Fractional part of the number

    C. Sign of the number

    D. Scale factor

    Answer: D

    Explanation: The exponent part in floating-point representation represents the scale factor.

17. Which arithmetic operation is often used in financial calculations involving interest rates?

    A. Addition

    B. Multiplication

    C. Division

D. Exponentiation

Answer: B

Explanation: Multiplication is frequently used in financial calculations to compute interest rates.

18. What is the primary purpose of a decimal arithmetic unit in a computer system?

A. Enhancing graphics processing

B. Improving sorting algorithms

C. Efficient handling of decimal numbers

D. Accelerating network protocols

Answer: C

Explanation: Decimal arithmetic units are designed for efficient handling of decimal numbers.

19. Which number system uses base 16?

A. Binary

B. Octal

C. Decimal

D. Hexadecimal

Answer: D

Explanation: Hexadecimal uses base 16 and is often used in computer science for convenience.

20. What is the primary advantage of fixed-point representation over floating-point representation?

A. Higher precision

B. Simplicity

C. Lower storage requirements

D. Faster calculations

Answer: B

Explanation: Fixed-point representation is simpler compared to floating-point representation.

21. Which complement is commonly used in digital computers for subtraction?

A. 1's complement

B. 2's complement

C. 9's complement

D. Excess-3 code

Answer: B

Explanation: 2's complement is widely used for efficient subtraction in digital computers.

22. What does the term "endian" refer to in computer architecture?

A. Memory organization

B. Data representation

C. CPU architecture

D. Input/Output devices

Answer: B

Explanation: Endian refers to the order in which bytes are stored in memory, affecting data representation.

23. Which operation is associated with Booth's algorithm in computer arithmetic?

A. Addition

B. Subtraction

C. Multiplication

D. Division

Answer: C

Explanation: Booth's algorithm is primarily used for optimizing multiplication operations.

24. What is the primary function of a floating-point unit (FPU) in a computer system?

A. Handling integer operations

B. Executing control instructions

C. Accelerating floating-point arithmetic

D. Managing I/O operations

Answer: C

Explanation: FPU is designed to accelerate floating-point arithmetic operations in a computer system.

25. Which representation is suitable for minimizing rounding errors in numerical calculations?

A. Fixed-point

B. Floating-point

C. 1's complement

D. 2's complement

Answer: B

Explanation: Floating-point representation is designed to minimize rounding errors in numerical calculations.

26. In decimal arithmetic, what is the role of the Decimal Adjust Instruction (DAI)?

    A. Handling floating-point numbers

    B. Correcting errors in decimal operations

    C. Adjusting the result of addition or subtraction

    D. Optimizing multiplication algorithms

    Answer: C

    Explanation: DAI is used to adjust the result of addition or subtraction in decimal arithmetic.

27. Which algorithm is commonly used for division in computer arithmetic?

    A. Booth's algorithm

    B. Euclidean algorithm

    C. Division by repeated subtraction

    D. Newton's method

    Answer: C

    Explanation: Division algorithms often involve techniques like repeated subtraction.

28. What is the primary disadvantage of using fixed-point representation for a wide range of numbers?

    A. Increased precision

    B. Complexity of arithmetic operations

    C. Limited range

    D. High storage requirements

    Answer: C

Explanation: Fixed-point representation has a limited range compared to floating-point.

29. In computer arithmetic, what does the term "overflow" refer to?

    A. Exceeding storage capacity

    B. Rounding errors

    C. Incorrect algorithm design

    D. Data representation errors

    Answer: A

    Explanation: Overflow occurs when the result of an operation exceeds the storage capacity.

30. Which arithmetic operation is most affected by rounding errors in floating-point representation?

    A. Addition

    B. Subtraction

    C. Multiplication

    D. Division

    Answer: D

    Explanation: Division is often more affected by rounding errors in floating-point representation.

31. Which of the following is true about the IEEE 754 standard for floating-point representation?

    A. It uses 1's complement

    B. It defines both single and double precision

    C. It is designed for fixed-point representation

    D. It is primarily used for integers

Answer: B

Explanation: IEEE 754 standard defines both single and double precision formats for floating-point representation.

32. What is the purpose of a carry-save adder in computer arithmetic?

    A. Minimizing rounding errors

    B. Improving division efficiency

    C. Accelerating addition operations

    D. Reducing storage requirements

    Answer: C

    Explanation: Carry-save adders are used to accelerate addition operations in computer arithmetic.

33. Which type of complement is used to represent negative numbers in binary without a sign bit?

    A. 1's complement

    B. 2's complement

    C. 9's complement

    D. Excess-3 code

    Answer: A

    Explanation: 1's complement is used for representing negative numbers without a separate sign bit.

34. What does the term "Little Endian" mean in computer architecture?

    A. Lower order byte stored at the lower memory address

    B. Lower order byte stored at the higher memory address

C. Big-endian and little-endian are the same

D. No significance in computer architecture

Answer: A

Explanation: In Little Endian, the lower order byte is stored at the lower memory address.

35. Which of the following is an advantage of using signed-magnitude representation for integers?

A. Simplified arithmetic operations

B. Easy conversion to binary

C. Direct implementation of Booth's algorithm

D. Simple detection of positive or negative numbers

Answer: D

Explanation: Signed-magnitude allows easy detection of positive or negative numbers by inspecting the sign bit.

36. What is the purpose of the normalization process in floating-point representation?

A. Minimizing rounding errors

B. Ensuring the exponent is within a specified range

C. Reducing storage requirements

D. Accelerating arithmetic operations

Answer: B

Explanation: Normalization ensures the exponent of a floating-point number is within a specified range for precision.

37. Which of the following is a common approach to perform integer division in computer architecture?

A. Repeated subtraction

B. Newton's method

C. Booth's algorithm

D. Euclidean algorithm

Answer: A

Explanation: Repeated subtraction is a common approach for performing integer division in computer architecture.

38. In decimal arithmetic, what is the significance of the term "packed decimal"?

A. Optimizing multiplication algorithms

B. Handling floating-point numbers

C. Compact storage of decimal digits

D. Improving division efficiency

Answer: C

Explanation: Packed decimal is used for compact storage of decimal digits in decimal arithmetic.

39. What is the primary function of the Round Robin scheduling algorithm in computer systems?

A. Memory management

B. Task scheduling

C. Data representation

D. File system organization

Answer: B

Explanation: Round Robin is a task scheduling algorithm used in computer systems.

40. Which arithmetic operation is generally more complex in terms of algorithm design?

    A. Addition

    B. Subtraction

    C. Multiplication

    D. Division

    Answer: D

    Explanation: Division algorithms are typically more complex compared to addition, subtraction, or multiplication in terms of algorithm design.

41. What is the primary purpose of the Two's Complement Representation in computer arithmetic?

    A. Simplifying multiplication

    B. Efficient subtraction operations

    C. Accelerating division algorithms

    D. Handling floating-point numbers

    Answer: B

    Explanation: Two's complement is commonly used for efficient representation and subtraction of signed integers.

42. Which of the following is a characteristic of the Radix-4 Booth's Algorithm?

    A. Optimized for multiplication

    B. Suited for division operations

    C. Handles floating-point representation

    D. Applies to fixed-point representation

Answer: A

Explanation: Radix-4 Booth's Algorithm is optimized for multiplication operations.

43. In computer arithmetic, what is the purpose of the Excess-N code?

    A. Representing negative numbers

    B. Floating-point representation

    C. Simplifying division operations

    D. Reducing storage requirements

    Answer: B

    Explanation: Excess-N code is used for floating-point representation, particularly in exponent representation.

44. Which type of memory is typically used for storing temporary data in a computer system?

    A. Cache memory

    B. ROM (Read-Only Memory)

    C. Hard Disk Drive (HDD)

    D. Optical Discs

    Answer: A

    Explanation: Cache memory is used for storing temporary data to speed up access times in a computer system.

45. What is the primary advantage of using Gray Code in digital systems?

    A. Improved error detection

    B. Faster multiplication operations

    C. Minimized power consumption

D. Reduced chances of misreading

Answer: D

Explanation: Gray Code minimizes the chances of misreading due to only one bit changing at a time.

46. Which of the following is an essential property of a Von Neumann architecture?

A. Separate memory for data and instructions

B. Use of RISC instruction set

C. Multiple pipelines for parallel processing

D. Decentralized control unit

Answer: A

Explanation: Von Neumann architecture uses a single memory unit for both data and instructions.

47. What is the primary purpose of a carry-select adder in computer arithmetic?

A. Minimizing rounding errors

B. Improving multiplication efficiency

C. Accelerating addition operations

D. Reducing storage requirements

Answer: C

Explanation: Carry-select adders are designed to accelerate addition operations in computer arithmetic.

48. Which representation is commonly used for character encoding in computers?

A. ASCII (American Standard Code for Information Interchange)

B. EBCDIC (Extended Binary Coded Decimal Interchange Code)

C. Gray Code

D. BCD (Binary-Coded Decimal)

Answer: A

Explanation: ASCII is widely used for character encoding in computers.

49. What is the role of the Memory Management Unit (MMU) in a computer system?

A. Handling arithmetic operations

B. Managing I/O operations

C. Managing memory access and protection

D. Accelerating sorting algorithms

Answer: C

Explanation: MMU is responsible for managing memory access and protection in a computer system.

50. In decimal arithmetic, what is the purpose of the BCD (Binary-Coded Decimal) representation?

A. Enhancing multiplication

B. Improving division efficiency

C. Efficiently handling decimal digits

D. Reducing rounding errors

Answer: C

Explanation: BCD representation is designed for efficient handling of decimal digits in decimal arithmetic.

51. What is the role of an Input-Output Interface in a computer system?

A. To execute instructions

B. To manage memory

C. To facilitate communication between CPU and external devices

D. To perform arithmetic operations

Ans: C

Explanation: An Input-Output Interface enables communication between the CPU and external devices, allowing data transfer.

52. Which type of data transfer occurs without any predefined timing between the sender and receiver?

A. Synchronous data transfer

B. Asynchronous data transfer

C. Parallel data transfer

D. Serial data transfer

Ans: B

Explanation: Asynchronous data transfer does not rely on predefined timing, making it suitable for devices with different speeds.

53. In the Modes of Transfer, what characterizes the Burst Transfer mode?

A. Single data transfer at a time

B. Continuous block transfer

C. Data transfer in both directions simultaneously

D. Data transfer only during interrupts

Ans: B

Explanation: Burst Transfer mode involves the continuous transfer of blocks of data, improving overall efficiency.

54. What is the primary purpose of Priority Interrupt in a computer system?

    A. To manage input devices

    B. To prioritize CPU tasks

    C. To control output devices

    D. To handle arithmetic operations

    Ans: B

    Explanation: Priority Interrupt ensures that the CPU addresses higher-priority tasks first, enhancing system responsiveness.

55. What does DMA stand for in computer architecture?

    A. Direct Memory Access

    B. Data Memory Allocation

    C. Dual Mode Architecture

    D. Dynamic Memory Allocation

    Ans: A

    Explanation: DMA (Direct Memory Access) allows peripherals to transfer data directly to and from memory without CPU intervention.

56. Which level of the Memory Hierarchy is closest to the CPU and fastest?

    A. Main Memory

    B. Cache Memory

    C. Auxiliary Memory

D. Associate Memory

Ans: B

Explanation: Cache Memory is located closest to the CPU and provides the fastest access to frequently used data.

57. What is the purpose of Auxiliary Memory in a computer system?

A. Fast data access

B. Temporary storage

C. Permanent data storage

D. Quick data retrieval

Ans: C

Explanation: Auxiliary Memory, such as hard drives, is used for permanent storage of data and programs.

58. What type of memory is non-volatile and retains data even when the power is off?

A. Main Memory

B. Cache Memory

C. Auxiliary Memory

D. Associate Memory

Ans: C

Explanation: Auxiliary Memory (e.g., hard drives) is non-volatile and retains data when the power is off.

59. In Cache Memory, what is the purpose of the cache miss?

A. To slow down data access

B. To indicate a cache hit

C. To miss important data

D. To retrieve data from the cache

Ans: A

Explanation: A cache miss occurs when the required data is not found in the cache, resulting in slower access times.

60. What is the term for associating a memory address with the content present in the memory?

A. Main Memory

B. Cache Memory

C. Auxiliary Memory

D. Associate Memory

Ans: D

Explanation: Associate Memory involves associating a memory address with the content present in that memory location.

61. Which organization is responsible for facilitating communication between the CPU and external devices?

A. ALU

B. Control Unit

C. Input-Output Interface

D. Memory Unit

Ans: C

Explanation: The Input-Output Interface is responsible for communication between the CPU and external devices.

62. In asynchronous data transfer, how is timing synchronized between sender and receiver?

A. Via a clock signal

B. There is no synchronization

C. Through parallel data transfer

D. Using priority interrupt

Ans: B

Explanation: Asynchronous data transfer does not rely on predefined timing, making it asynchronous or unsynchronized.

63. What characterizes the Burst Transfer mode in data transfer?

A. Single data transfer at a time

B. Continuous block transfer

C. Data transfer in both directions simultaneously

D. Data transfer only during interrupts

Ans: B

Explanation: Burst Transfer mode involves the continuous transfer of blocks of data, enhancing efficiency.

64. In Priority Interrupt, which device typically gets the highest priority?

A. Input Device

B. Output Device

C. CPU

D. Memory

Ans: C

Explanation: Priority Interrupt gives the highest priority to the CPU, ensuring prompt handling of critical tasks.

65. What does DMA stand for in the context of computer architecture?

    A. Direct Memory Access

    B. Data Memory Allocation

    C. Dual Mode Architecture

    D. Dynamic Memory Allocation

    Ans: A

    Explanation: DMA (Direct Memory Access) allows peripherals to transfer data directly to and from memory without CPU intervention.

66. Which level of the Memory Hierarchy provides the largest storage capacity?

    A. Cache Memory

    B. Main Memory

    C. Auxiliary Memory

    D. Associate Memory

    Ans: C

    Explanation: Auxiliary Memory, such as hard drives, provides the largest storage capacity in the Memory Hierarchy.

67. What is the primary function of Main Memory in a computer system?

    A. Permanent data storage

    B. Fast data access

    C. Quick data retrieval

D. Temporary storage

Ans: D

Explanation: Main Memory is used for temporary storage, providing fast access to data for the CPU.

68. What is the term for the process of transferring data between the CPU and external devices without CPU intervention?

A. Direct Memory Access

B. Priority Interrupt

C. Asynchronous data transfer

D. Synchronous data transfer

Ans: A

Explanation: Direct Memory Access (DMA) enables data transfer between memory and peripherals without CPU involvement.

69. Which type of memory is the fastest but also the smallest in size?

A. Main Memory

B. Cache Memory

C. Auxiliary Memory

D. Associate Memory

Ans: B

Explanation: Cache Memory is the fastest but limited in size, providing quick access to frequently used data.

70. What is the purpose of Associate Memory in computer architecture?

A. To store frequently accessed data

B. To provide temporary storage

C. To facilitate communication with external devices

D. To associate memory addresses with content

Ans: D

Explanation: Associate Memory involves associating memory addresses with the content present in those memory locations.

71. What is the primary function of Cache Memory in a computer system?

A. Permanent data storage

B. Fast data access

C. Quick data retrieval

D. Temporary storage

Ans: B

Explanation: Cache Memory is designed for fast access to frequently used instructions and data, improving overall system performance.

72. In Priority Interrupt, how are multiple devices assigned priority levels?

A. Based on their size

B. Randomly

C. Sequentially

D. Based on their criticality

Ans: D

Explanation: Priority Interrupt assigns priority levels based on the criticality of devices to ensure prompt handling of important tasks.

73. Which memory is also known as RAM (Random Access Memory)?

A. Main Memory

B. Cache Memory

C. Auxiliary Memory

D. Associate Memory

Ans: A

Explanation: Main Memory, commonly referred to as RAM, is used for temporary storage and quick access by the CPU.

74. What is the primary purpose of Auxiliary Memory in a computer system?

A. Fast data access

B. Permanent data storage

C. Temporary data storage

D. Quick data retrieval

Ans: B

Explanation: Auxiliary Memory, such as hard drives, is used for permanent storage of data and programs.

75. What type of data transfer occurs with a predetermined timing signal?

A. Synchronous data transfer

B. Asynchronous data transfer

C. Parallel data transfer

D. Serial data transfer

Ans: A

Explanation: Synchronous data transfer is synchronized with a predetermined timing signal, ensuring data integrity.

76. In the Modes of Transfer, what characterizes the Cycle Stealing mode?

    A. Single data transfer at a time

    B. Continuous block transfer

    C. Data transfer in both directions simultaneously

    D. Data transfer only during interrupts

    Ans: D

    Explanation: Cycle Stealing mode allows the DMA controller to interrupt the CPU briefly during each data transfer cycle.

77. What is the purpose of Priority Interrupt in a computer system?

    A. To manage input devices

    B. To prioritize CPU tasks

    C. To control output devices

    D. To handle arithmetic operations

    Ans: B

    Explanation: Priority Interrupt ensures that the CPU addresses higher-priority tasks first, enhancing system responsiveness.

78. Which organization is responsible for facilitating communication between the CPU and external devices?

    A. ALU

    B. Control Unit

    C. Input-Output Interface

D. Memory Unit

Ans: C

Explanation: The Input-Output Interface is responsible for communication between the CPU and external devices.

79. In asynchronous data transfer, how is timing synchronized between sender and receiver?

A. Via a clock signal

B. There is no synchronization

C. Through parallel data transfer

D. Using priority interrupt

Ans: B

Explanation: Asynchronous data transfer does not rely on predefined timing, making it asynchronous or unsynchronized.

80. What characterizes the Burst Transfer mode in data transfer?

A. Single data transfer at a time

B. Continuous block transfer

C. Data transfer in both directions simultaneously

D. Data transfer only during interrupts

Ans: B

Explanation: Burst Transfer mode involves the continuous transfer of blocks of data, enhancing efficiency.

81. In Priority Interrupt, which device typically gets the highest priority?

A. Input Device

B. Output Device

C. CPU

D. Memory

Ans: C

Explanation: Priority Interrupt gives the highest priority to the CPU, ensuring prompt handling of critical tasks.

82. What does DMA stand for in the context of computer architecture?

A. Direct Memory Access

B. Data Memory Allocation

C. Dual Mode Architecture

D. Dynamic Memory Allocation

Ans: A

Explanation: DMA (Direct Memory Access) allows peripherals to transfer data directly to and from memory without CPU intervention.

83. Which level of the Memory Hierarchy provides the largest storage capacity?

A. Cache Memory

B. Main Memory

C. Auxiliary Memory

D. Associate Memory

Ans: C

Explanation: Auxiliary Memory, such as hard drives, provides the largest storage capacity in the Memory Hierarchy.

84. What is the primary function of Main Memory in a computer system?

A. Permanent data storage

B. Fast data access

C. Quick data retrieval

D. Temporary storage

Ans: D

Explanation: Main Memory is used for temporary storage, providing fast access to data for the CPU.

85. What is the term for the process of transferring data between the CPU and external devices without CPU intervention?

A. Direct Memory Access

B. Priority Interrupt

C. Asynchronous data transfer

D. Synchronous data transfer

Ans: A

Explanation: Direct Memory Access (DMA) enables data transfer between memory and peripherals without CPU involvement.

86. Which type of memory is the fastest but also the smallest in size?

A. Main Memory

B. Cache Memory

C. Auxiliary Memory

D. Associate Memory

Ans: B

Explanation: Cache Memory is the fastest but limited in size, providing quick access to frequently used data.

87. What is the purpose of Associate Memory in computer architecture?

A. To store frequently accessed data

B. To provide temporary storage

C. To facilitate communication with external devices

D. To associate memory addresses with content

Ans: D

Explanation: Associate Memory involves associating memory addresses with the content present in those memory locations.

88. What is the primary function of Cache Memory in a computer system?

A. Permanent data storage

B. Fast data access

C. Quick data retrieval

D. Temporary storage

Ans: B

Explanation: Cache Memory is designed for fast access to frequently used instructions and data, improving overall system performance.

89. In Priority Interrupt, how are multiple devices assigned priority levels?

A. Based on their size

B. Randomly

C. Sequentially

D. Based on their criticality

Ans: D

Explanation: Priority Interrupt assigns priority levels based on the criticality of devices to ensure prompt handling of important tasks.

90. Which memory is also known as RAM (Random Access Memory)?

A. Main Memory

B. Cache Memory

C. Auxiliary Memory

D. Associate Memory

Ans: A

Explanation: Main Memory, commonly referred to as RAM, is used for temporary storage and quick access by the CPU.

91. What is an essential component of the Input-Output Organization?

A. Input Device

B. Output Device

C. Input-Output Interface

D. Control Unit

Ans: C

Explanation: The Input-Output Organization includes the Input-Output Interface, which facilitates communication between the CPU and external devices.

92. Which type of data transfer is not synchronized with the system clock?

A. Synchronous data transfer

B. Asynchronous data transfer

C. Parallel data transfer

D. Serial data transfer

Ans: B

Explanation: Asynchronous data transfer does not rely on the system clock, making it suitable for devices with varying speeds.

93. In Priority Interrupt, which device gets the highest priority?

A. Input Device

B. Output Device

C. CPU

D. Memory

Ans: C

Explanation: Priority Interrupt grants the highest priority to the CPU, allowing it to handle critical tasks promptly.

94. What is the function of Direct Memory Access (DMA) in computer architecture?

A. To control input devices

B. To manage output devices

C. To transfer data between memory and peripheral devices without CPU intervention

D. To execute arithmetic operations

Ans: C

Explanation: DMA enables data transfer between memory and peripherals directly, freeing up the CPU for other tasks.

95. Which memory type is the fastest but also the smallest in size?

    A. Main Memory

    B. Cache Memory

    C. Auxiliary Memory

    D. Associate Memory

    Ans: B

    Explanation: Cache Memory is faster but limited in size, providing quick access to frequently used data.

96. What is the purpose of the Memory Hierarchy in computer systems?

    A. To provide fast access to data

    B. To store temporary data

    C. To facilitate communication between devices

    D. To perform arithmetic operations

    Ans: A

    Explanation: Memory Hierarchy is designed to provide fast access to data by organizing different types of memory based on speed and capacity.

97. Which memory is also known as RAM (Random Access Memory)?

    A. Main Memory

    B. Cache Memory

    C. Auxiliary Memory

D. Associate Memory

Ans: A

Explanation: Main Memory, commonly referred to as RAM, is used for temporary storage and quick access by the CPU.

98. What is the primary purpose of Auxiliary Memory?

A. Fast data access

B. Permanent data storage

C. Temporary data storage

D. Quick data retrieval

Ans: B

Explanation: Auxiliary Memory, such as hard drives, is used for permanent storage of data and programs.

99. In Cache Memory, what is the purpose of the cache hit?

A. To slow down data access

B. To indicate a cache miss

C. To speed up data access by retrieving data from the cache

D. To store data permanently

Ans: C

Explanation: A cache hit occurs when the required data is found in the cache, resulting in faster access times.

100. What type of memory is used to store frequently accessed instructions and data?

A. Main Memory

B. Cache Memory

C. Auxiliary Memory

D. Associate Memory

Ans: B

Explanation: Cache Memory is designed to store frequently accessed instructions and data, improving overall system performance.

101. What does CISC stand for?

A. Complex Instruction Set Computer

B. Reduced Instruction Set Computer

C. Computer Instruction Set Code

D. Centralized Instruction Set Computing

Ans: a

102. Which architecture emphasizes a smaller set of simple instructions?

A. CISC

B. RISC

C. Pipeline

D. Vector Processing

Ans:b.

103. What is a key characteristic of Pipeline Processing?

A. Sequential execution of instructions

B. Parallel execution of instructions

C. Single instruction at a time

D. No instruction execution

Ans: b

104. What does SIMD stand for in Vector Processing?

A. Single Instruction, Multiple Data

B. Single Data, Multiple Instruction

C. Sequential Instruction, Multiple Data

D. Simple Instruction, Multiple Data

Ans: a

105. What is the primary advantage of pipelining in processors?

A. Reduced clock speed

B. Increased throughput

C. Reduced instruction set

D. Increased instruction complexity

Ans: b

106. Which processor type is specifically designed for handling arrays of data?

A. Scalar Processor

B. Vector Processor

C. Array Processor

D. Multiprocessor

Ans: b

107. What defines the characteristics of Multiprocessors?

A. Single processor system

B. Multiple processors working independently

C. Multiple processors sharing memory

D. Single instruction set

Ans: c

108. What is an essential aspect of Cache Coherence in multiprocessor systems?

A. Independent cache for each processor

B. Inconsistent data across caches

C. Synchronized cache updates

D. No need for cache management

Ans: c

109. What handles the allocation of resources in Multiprocessors?

A. Interconnection Structures

B. Interprocessor arbitration

C. Cache Coherence

D. Interprocessor communication

Ans: b .

110. Which structure is responsible for connecting processors in Multiprocessors?

A. Cache Coherence

B. Interprocessor communication

C. Interconnection Structures

D. Pipelining

Ans: c

111. In CISC architecture, what is a common feature regarding addressing modes?

A. Limited addressing modes

B. Large and diverse addressing modes

C. No addressing modes

D. Fixed addressing modes

Ans: b

112. Which characteristic is associated with RISC processors?

A. Fewer registers

B. Variable-length instructions

C. Emphasis on microprogramming

D. Complex instruction set

Ans: b

113. What is the purpose of the instruction pipeline in processors?

A. Reducing clock frequency

B. Enhancing parallelism

C. Increasing instruction complexity

D. Eliminating pipeline stages

Ans: b

114. In Vector Processing, what does the term "SIMD" indicate?

A. Single Input, Multiple Data

B. Sequential Input, Multiple Data

C. Single Instruction, Multiple Data

D. Simple Input, Multiple Data

Ans: c

115. What is a potential drawback of pipelining in processors?

A. Reduced throughput

B. Increased latency

C. Simplified instruction execution

D. Reduced clock cycles

Ans: b

116. Which processing unit is specialized for scientific and engineering applications?

A. Scalar Processor

B. Vector Processor

C. Array Processor

D. Multiprocessor

Ans: b

117. What interconnection structure provides a direct link between every pair of processors in a Multiprocessor system?

A. Bus-based interconnection

B. Crossbar switch

C. Ring interconnection

D. Star interconnection

Ans: b

118. In cache coherence, what does the term "write propagation" refer to?

A. Writing to cache memory

B. Propagating updates to other caches

C. Invalidating cache contents

D. Reading from cache memory

Ans: b

119. What is the role of an arbiter in interprocessor arbitration?

A. Managing cache coherence

B. Allocating resources fairly

C. Handling interprocessor communication

D. Managing instruction pipelines

Ans: b

120. Which type of interprocessor communication is more efficient in a Multiprocessor system?

A. Shared memory

B. Message Passing

C. Cache coherence

D. Instruction pipelines

Ans: a

121. What is a characteristic of CISC instructions?

A. Simple and concise

B. Limited addressing modes

C. Variable-length instructions

D. Few instruction formats

Ans: c

122. What is the benefit of RISC instruction sets?

A. Large and diverse set of instructions

B. Reduced program size

C. Emphasis on microprogramming

D. Complex instruction encoding

Ans: b

123. In pipeline processing, what is the term used for the delay introduced by dependencies between instructions?

A. Clock cycle delay

B. Pipeline stall

C. Execution latency

D. Instruction complexity

Ans: b

124. What is a key advantage of Vector Processors in array manipulation?

A. Limited parallelism

B. Efficient handling of scalar operations

C. Sequential data processing

D. Parallelism in array operations

Ans: d

125. Which stage in an instruction pipeline is responsible for fetching instructions from memory?

A. Decode

B. Execute

C. Fetch

D. Write-back

Ans: c