

What are different addressing modes? Explain them.

There are several addressing modes, including:

1. Immediate addressing
2. Direct addressing
3. Indirect addressing
4. Indexed addressing
5. Relative addressing
6. Register addressing
7. Stack addressing

1. Immediate addressing

In immediate addressing mode, the operand value is specified directly in the instruction itself. This mode is typically used for constants and small values that can fit within the instruction format.

2. Direct addressing

In direct addressing mode, the operand address is specified in the instruction. The processor fetches the operand value from memory at the specified address. This mode is simple to implement, but it requires two memory accesses for each instruction, one for fetching the instruction and the other for fetching the operand.

3. Indirect addressing

In indirect addressing mode, the instruction specifies a memory location that contains the address of the operand. The processor fetches the operand value from the memory location pointed to by the address. This mode requires an extra memory access to fetch the operand

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address, but it can reduce the number of instructions needed to access the operand.

4. Indexed addressing

In indexed addressing mode, the instruction specifies an index register that is added to the base address of the operand to calculate the effective address. This mode is useful for accessing elements of an array or a data structure that is stored in memory.

5. Relative addressing

In relative addressing mode, the instruction specifies a relative offset from the current program counter (PC) to calculate the effective address. This mode is useful for implementing branches and jumps in the program flow.

6. Register addressing

In register addressing mode, the operand is specified in a processor register rather than in memory. This mode is used for operations that involve small values or intermediate results that do not need to be stored in memory.

7. Stack addressing

In stack addressing mode, the operand is specified relative to the top of the stack. This mode is useful for implementing subroutine calls and returns, as well as for storing and retrieving local variables.

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19. Write a short note on design of arithmetic unit ?
20. Write a short note on Array processors ?
21. Write a short note on LRU algorithm ?
22. What is the format of Micro Instruction in Computer Architecture explain ?
23. What is the layout of pipelined instruction in Computer Architecture ?
24. Explain the following interfaces in Detail:PCI Bus, SCSI Bus, USB Bus
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28. What is Multiprocessor ? Explain inter process communication in detail ?
29. Briefly explain the concept of pipelining in detail ?
30. Discuss the following in detail: RISC architecture, Vector processing ?
31. Define the instruction format ? Explain I/O System in detail ?
32. Explain the design of arithmetic and logic unit by taking on example ?
33. Explain how addition and subtraction are performed in fixed point number ?
34. Explain different modes of data transfer between the central computer and I/O device ?
35. Differentiate between Serial and parallel data transfer ?
36. Explain signed magnitude, signed 1's complement and signed 2's complement representation of numbers. Find the range of numbers in all three representations for 8 bit register.
37. If cache access time is 100ns, main memory access time is 1000 ns and the hit ratio is 0.9. Find the average access time and also define hit ratio.
38. Explain hardwired microprogrammed control unit ? What is address sequencer circuit ?
39. Explain how a stack organized computer executes instructions? What is Stack?
40. Draw and explain the memory hierarchy in a digital computer. What are advantages of cache memory over main memory?
41. What is Associative memory? Explain the concept of address space and memory space in Virtual memory.
42. What is Paging? Explain how paging can be implemented in CPU to access virtual memory.
43. Explain SIMD array processor along with its architectural diagram ?
44. Write short notes on
45. Draw the functional and structural views of a computer system and explain in detail ?
46. Explain general register organization.
47. Compare and contrast DMA and I/O processors ?

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48. Define the following: a) Flynn's taxonomy b) Replacement algorithm
49. Explain the various pipeline vector processing methods ?
50. Describe the language features for parallelism ?
51. Explain any page replacement algorithm with the help of example ?
52. What is mapping? Name all the types of cache mapping and explain anyone in detail.
53. Explain arithmetic pipeline ?
54. Write short notes on, a) SIMD, b) Matrix multiplication c) Instruction format
55. Differentiate: a) Maskable and non-maskable interrupt b) RISC and CISC
56. Computer Organization Previous Years Solved Questions
57. Booths algorithm to multiply +5 and -15