# CS 330 Chapter 13

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| 1. | **The value of the mode field determines which addressing mode is to be used.** | T |
| 2. | **In a system without virtual memory, the effective address is a virtual address or a register.** | F |
| 3. | **The disadvantage of immediate addressing is that the size of the number is restricted to the size of the address field.** | T |
| 4. | **With direct addressing, the length of the address field is usually less than the word length, thus limiting the address range.** | T |
| 5. | **Register addressing is similar to direct addressing with the only difference being that the address field refers to a register rather than a main memory address.** | T |
| 6. | **Register indirect addressing uses the same number of memory references as indirect addressing.** | F |
| 7. | **Three of the most common uses of stack addressing are relative addressing, base-register addressing, and indexing.** | F |
| 8. | **The method of calculating the EA is the same for both base-register addressing and indexing.** | T |
| 9. | **Typically an instruction set will include both preindexing and postindexing.** | F |
| 10. | **The x86 is equipped with a variety of addressing modes intended to allow the efficient execution of high-level languages.** | T |
| 11. | **The base with index and displacement mode sums the contents of the base register, the index register, and a displacement to form the effective address.** | T |

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| 12. | **The memory transfer rate has not kept up with increases in processor speed.** | T |
| 13. | **For addresses that reference memory the range of addresses that can be referenced is not related to the number of address bits.** | F |
| 14. | **The principal price to pay for variable-length instructions is an increase in the complexity of the processor.** | T |
| 15. | **One advantage of linking the addressing mode to the operand rather than the opcode is that any addressing mode can be used with any opcode.** | T |
| 16. | **The advantage of _____ is that no memory reference other than the instruction fetch is required to obtain the operand.**<br><br>**A. direct addressing B. immediate addressing**<br><br>**C. register addressing D. stack addressing** | B. immediate addressing |
| 17. | **The principal advantage of _____ addressing is that it is a very simple form of addressing.**<br><br>**A. displacement B. register**<br><br>**C. stack D. direct** | D. direct |
| 18. | **_____ has the advantage of large address space, however it has the disadvantage of multiple memory references.**<br><br>**A. Indirect addressing B. Direct addressing**<br><br>**C. Immediate addressing D. Stack addressing** | A. Indirect addressing |
| 19. | **The advantages of _____ addressing are that only a small address field is needed in the instruction and no time-consuming memory references are required.** | C. register |

**A. direct B. indirect**

**C. register D. displacement**

20. **_____ has the advantage of flexibility, but the disadvantage of complexity.** B. Displacement addressing

**A. Stack addressing B. Displacement addressing**

**C. Direct addressing D. Register addressing**

21. **For _____, the address field references a main memory address and the referenced register contains a positive displacement from that address.** A. indexing

**A. indexing B. base-register addressing**

**C. relative addressing D. all of the above**

22. **Indexing performed after the indirection is _____.** C. postindexing

**A. relative addressing B. autoindexing**

**C. postindexing D. preindexing**

23. **For the _____ mode, the operand is included in the instruction.** A. immediate

**A. immediate B. base**

**C. register D. displacement**

24. **The only form of addressing for branch instructions is _____ addressing.** D. immediate

**A. register B. relative**

**C. base D. immediate**

25. **Which of the following interrelated factors go into determining the use of the addressing bits?**

    **A. number of operands B. number of register sets**

    **C. address range D. all of the above**

    D. all of the above

26. **_____ is a principle by which two variables are independent of each other.**

    **A. Opcode B. Orthogonality**

    **C. Completeness D. Autoindexing**

    B. Orthogonality

27. **The _____ was designed to provide a powerful and flexible instruction set within the constraints of a 16-bit minicomputer.**

    **A. PDP-1 B. PDP-8**

    **C. PDP-11 D. PDP-10**

    C. PDP-11

28. **The _____ byte consists of three fields: the Scale field, the Index field and the Base field.**

    **A. SIB B. VAX**

    **C. PDP-11 D. ModR/M**

    A. SIB

29. **All instructions in the ARM architecture are _____ bits long and follow a regular format.**

    **A. 8 B. 16**

    **C. 32 D. 64**

    C. 32

30. **_____ is a design principle employed in designing the PDP-10 instruction set.**

    D. All of the above

**A. Orthogonality B. Completeness**

**C. Direct addressing D. All of the above**

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| 31. | **The actual mapping to a physical address is a function of the _____ and is invisible to the programmer.** | memory management unit (MMU) |
| 32. | **The simplest form of addressing is _____ addressing.** | immediate |
| 33. | **Not common on contemporary architectures, _____ requires only one memory reference and no special calculation, but provides only a limited address space.** | direct addressing |
| 34. | **Just as register addressing is analogous to direct addressing, _____ addressing is analogous to indirect addressing.** | register indirect |
| 35. | **A very powerful mode of addressing, _____ combines the capabilities of direct addressing and register indirect addressing, requiring that the instruction have two address fields, at least one of which is explicit.** | displacement addressing |
| 36. | **_____ is when the increment or decrement of the index register after each reference to it is done automatically as part of the same instruction cycle.** | autoindexing |
| 37. | **Sometimes referred to as a pushdown list or last-in-first-out queue, a _____ is a linear array of locations.** | stack |
| 38. | **In the _____ mode the instruction includes a displacement to be added to a base register, which may be any of the general-purpose registers.** | base with displacement |
| 39. | **A(n) _____ defines the layout of the bits of an instruction in terms of its constituent fields, must in-** | instruction format |

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| | **clude an opcode and, implicitly or explicitly, zero or more operands.** | |
| 40. | **"All instructions should have the 'natural' number of operands" and "all operands should have the same generality in specification" are two criteria that were used in designing the _____ instruction format.** | VAX |
| 41. | **_____ explicitly specifies which segment register an instruction should use, overriding the default segment-register selection generated by the x86 for that instruction.** | segment override |
| 42. | **The _____ byte specifies whether an operand is in a register or in memory, and if it is in memory, then fields within the byte specify the addressing mode to be used.** | ModR/M |
| 43. | **The _____ instruction set is designed to increase the performance of ARM implementations that use a 16-bit or narrower memory data bus and to allow better code density than provided by the ARM instruction set.** | Thumb |
| 44. | **Programs written in assembly language are translated into machine language by an _____.** | assembler |
| 45. | **If a programmer wished to program directly in machine language it would be necessary to enter the program as _____ data.** | binary |