

*Solutions Manual for Starting Out with
C++ from Control Structures through
Objects 11th Edition by Gaddis*

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Starting Out with C++ from Control Structures to Objects, 11e (Gaddis)
Chapter 1 Introduction to Computers and Programming

TRUE/FALSE

1. Software engineering is a field that encompasses designing, writing, testing, debugging, documenting, modifying, and maintaining computer programs.

ANS: T

2. Pseudocode is a form of a program statement that will always evaluate to "false."

ANS: F

3. In programming, the terms "line" and "statement" always mean the same thing.

ANS: F

4. In C++, key words are written in all lowercase letters.

ANS: T

5. The preprocessor executes after the compiler.

ANS: F

6. Machine language is an example of a high-level language.

ANS: F

7. A CPU only understands machine language instructions.

ANS: T

8. Programs are often referred to as hardware.

ANS: F

9. The CPU is the most important component in a computer because without it, the computer could not run software.

ANS: T

10. The term "bit" stands for binary digit.

ANS: T

11. During the execute stage of the fetch/decode/execute cycle, a signal is routed to the appropriate component of the computer, causing it to perform an operation.

ANS: T

12. A Graphics Processing Unit (GPU) is designed to perform many calculations simultaneously, making it well-suited for AI, machine learning, and graphics processing.

ANS: T

13. Main memory is nonvolatile, meaning its contents are preserved even when the computer is powered off.

ANS: F

14. Cloud storage is a form of secondary storage that allows data to be accessed from multiple devices over an internet connection.

ANS: T

15. An operating system is an example of application software.

ANS: F

16. Pseudocode is a tool used during program design that combines elements of human language and a programming language to outline a program's logic.

ANS: T

17. A runtime error is always detected and reported by the compiler before the program is executed.

ANS: F

MULTIPLE CHOICE

1. What does the term *hardware* refer to?
- The relative difficulty of writing computer programs
 - The physical components that make up a computer
 - The way a computer's storage space is organized
 - The logical flow of instructions
 - None of these

ANS: B

2. A(n) _____ is a set of instructions that the computer follows to solve a problem.
- compiler
 - linker

- c. program
- d. operator
- e. None of these

ANS: C

3. Computer programs are also known as

- a. hardware
- b. firmware
- c. software
- d. Any of these
- e. None of these

ANS: C

4. At the heart of a computer is its central processing unit. The CPU's job is:

- a. To fetch instructions
- b. To carry out the operations commanded by the instructions
- c. To produce some outcome or resultant information
- d. All of these
- e. None of these

ANS: D

5. A computer stores a program while it is running

- a. in main memory
- b. on a hard disk
- c. on the computer monitor
- d. in the CPU
- e. None of these

ANS: A

6. The _____ decodes an instruction and generates an electronic signal.

- a. Arithmetic and Logic Unit
- b. Main memory
- c. BIOS
- d. Control Unit
- e. None of these

ANS: D

7. The CPU's control unit retrieves the next instruction in a sequence of program instructions from main memory in the _____ stage.

- a. fetch
- b. decode
- c. execute
- d. portability

ANS: A

8. During which stage does the central processing unit analyze the instruction and encode it in the form of a number, and then generate an electronic signal?
- a. fetch
 - b. decode
 - c. execute
 - d. portability

ANS: B

9. The two parts of the CPU are
- a. the output device and the input device
 - b. the software and the hardware
 - c. the Control Unit and the Arithmetic and Logic Unit
 - d. the single-task device and the multi-task device
 - e. None of these

ANS: C

10. A volatile type of memory that is used for temporary storage is
- a. an address
 - b. the ALU
 - c. RAM
 - d. a disk drive
 - e. None of these

ANS: C

11. The purpose of a memory address is:
- a. to identify the location of a byte in memory
 - b. to prevent multitasking
 - c. to obtain an algorithm
 - d. to improve the speed of processing
 - e. None of these

ANS: A

12. During which stage of the fetch/decode/execute cycle is a signal sent to the appropriate hardware component to carry out an operation?
- a. fetch
 - b. decode
 - c. execute
 - d. portability
 - e. None of these

ANS: C

13. Which of the following best describes a Graphics Processing Unit (GPU)?
- a. A processor that executes one instruction at a time very quickly
 - b. A processor designed to perform many calculations simultaneously, used for graphics, AI, and machine learning

- c. A type of volatile memory used to store running programs
- d. The unit inside the CPU that coordinates all CPU operations
- e. None of these

ANS: B

14. Which of the following is an example of system software?
- a. A word processing program
 - b. A video game
 - c. An operating system
 - d. A web browser
 - e. None of these

ANS: C

15. A utility program is best described as
- a. a program that controls the internal hardware operations of a computer
 - b. a program such as a virus scanner or file-compression tool that performs a specialized task
 - c. the compiler and linker used to translate source code
 - d. a program used directly by users to accomplish everyday tasks such as writing documents or browsing the web
 - e. None of these

ANS: B

16. Programs are normally stored in _____ and loaded into main memory as needed.
- a. the input device
 - b. the output device
 - c. secondary storage
 - d. the CPU
 - e. None of these

ANS: C

17. A computer screen is a type of
- a. input device
 - b. output device
 - c. storage device
 - d. software
 - e. None of these

ANS: A

18. Which of the following is *not* a common input device?
- a. keyboard
 - b. mouse
 - c. camera
 - d. printer
 - e. All are common input devices

ANS: D

19. Which of the following is *not* one of the major components of a computer system?

- a. the preprocessor
- b. the CPU
- c. main memory
- d. input/output devices
- e. secondary storage

ANS: A

20. A set of well-defined steps for performing a task or solving a problem is known as a(n):

- a. hierarchy chart
- b. algorithm
- c. instruction set
- d. statement
- e. None of these

ANS: B

21. When a programmer saves to a file the statements he or she writes to create a program, these statements are

- a. high level
- b. source code
- c. a preprocessor file
- d. object code
- e. None of these

ANS: B

22. In the process of translating a source file into an executable file, which of the following is the correct sequence?

- a. Source code, preprocessor, modified source code, linker, object code, compiler, executable code
- b. Preprocessor, source code, compiler, executable code, linker, modified source code, object code
- c. Source code, compiler, modified source code, preprocessor, object code, linker, executable code.
- d. Source code, preprocessor, modified source code, compiler, object code, linker, executable code.
- e. Source code, linker, object code, compiler, modified source code, preprocessor, executable code.

ANS: D

23. An Integrated Development Environment (IDE) typically consists of

- a. a text editor
- b. a compiler
- c. a debugger
- d. All of the above
- e. None of these

ANS: D

24. A _____ is used to translate source code instructions into the machine language instructions.

- a. module

- b. runtime library
- c. compiler
- d. preprocessor directive
- e. None of these

ANS: C

25. This is a set of rules that must be followed when constructing a program:

- a. syntax
- b. punctuation
- c. key words
- d. operators
- e. identifiers

ANS: A

26. Words that have a special meaning and may be used only for their intended purpose are known as

- a. operators
- b. programmer defined words
- c. keywords
- d. syntax
- e. None of these

ANS: C

27. Which of the following best describes an operator?

- a. An operator is a rule that must be followed when constructing a program.
- b. An operator allows you to perform operations on one or more pieces of data.
- c. An operator marks the beginning or ending of a statement or is used to separate items in a list.
- d. An operator is a word that has a special meaning.
- e. An operator is a symbolic name that refers to a variable.

ANS: B

28. This is used in a program to mark the beginning or ending of a statement, or separate items in a list:

- a. separators
- b. punctuation
- c. operators
- d. key words
- e. None of these

ANS: B

29. Characters or symbols that perform operations on one or more operands are:

- a. separators
- b. op codes
- c. operators
- d. key words
- e. None of these

ANS: C

30. This is a complete instruction that causes the computer to perform some action:
- a. line
 - b. statement
 - c. variable
 - d. key word
 - e. None of these

ANS: B

31. A named storage location in the computer's memory that holds a piece of information is a(n):
- a. variable
 - b. operator
 - c. key word
 - d. statement
 - e. None of these

ANS: A

32. A variable definition defines the name of a variable that will be used in a program, as well as:
- a. the type of data it will be used to hold
 - b. the operators that will be used on it
 - c. the number of times it will be used in the program
 - d. the value it will hold
 - e. None of these

ANS: A

33. Three primary activities of a program are:
- a. variable definitions, operators, lists of key words
 - b. lines, statements, punctuation
 - c. input, processing, output
 - d. integer, floating-point, character definitions
 - e. None of these

ANS: C

34. Which step uncovers any syntax errors in your program?
- a. editing
 - b. compiling
 - c. linking
 - d. executing
 - e. None of these

ANS: B

35. Mistakes that cause a running program to produce incorrect results are called:
- a. syntax errors
 - b. logic errors

- c. compiler errors
- d. linker errors
- e. None of these

ANS: B

36. The programming process consists of several steps, which include:
- a. key words, operator definitions, punctuation
 - b. design, creation, testing, debugging
 - c. input, processing, output
 - d. syntax, logic, error handling
 - e. None of these

ANS: B

37. What is pseudocode?
- a. Another name for machine language
 - b. A diagram that shows the logical flow of a program
 - c. A cross between human language and a programming language used to plan a program's logic
 - d. A diagram that graphically depicts the structure of a program using boxes and connections
 - e. None of these

ANS: C

38. The process of breaking a program's overall task into smaller and smaller subtasks during program design is known as
- a. pseudocoding
 - b. top-down design
 - c. object-oriented programming
 - d. desk checking
 - e. None of these

ANS: B

39. The first step in writing a program is to
- a. type the code
 - b. visualize the program running on a computer
 - c. visualize logical errors
 - d. clearly define what the program is to do
 - e. None of these

ANS: D

40. A model often used when creating a program that begins with the overall task and refines it into smaller subtasks is a(n)
- a. flowchart
 - b. UML diagram
 - c. blueprint
 - d. hierarchy chart
 - e. None of these

ANS: D

41. The term that refers to the programmer reading the program from the beginning and stepping through each statement is
- a. pseudocoding
 - b. software engineering
 - c. desk checking
 - d. spot checking
 - e. None of these

ANS: C

42. The two methods used by C++ to write computer programs are:
- a. top-down programming and procedural programming
 - b. procedural programming and object-oriented programming
 - c. pseudocoding and object-oriented programming
 - d. flowcharting and procedural programming
 - e. None of these

ANS: B