

Problem Solving through Programming in C

Week 01 Assignment Solution

1. Which of the following is a valid C variable name?

- a) 2variable
- b) variable_2
- c) variable-2
- d) variable.2

Answer: b) variable_2

Explanation: In C, variable names must start with a letter or an underscore, followed by letters, digits, or underscores. 'variable_2' follows these rules, whereas '2variable' starts with a digit, and 'variable-2' and 'variable.2' contain invalid characters.

2. Which of the following functions is used to read a single character from the keyboard in C?

- a) printf()
- b) scanf()
- c) getchar()
- d) puts()

Answer: c) getchar()

Explanation: The getchar() function reads the next character from the standard input (keyboard).

3. What is the purpose of the #include directive in a C program?

- a) To include a library file.
- b) To include a library file.
- c) To define a constant.
- d) To start the main function.

Answer: a) To include a library file.

Explanation: The #include directive is used to include the contents of a file or library into the program.

4. Which of the following correctly describes the purpose of a compiler in C?

- a) To execute the program line by line.
- b) To convert source code into machine code.
- c) To provide a runtime environment for program execution.
- d) To interpret and run the program interactively.

Answer: b) To convert source code into machine code.

Explanation: A compiler translates the entire source code of a program into machine code, which can then be executed by the computer.

5. Which of the following is true about the execution nature of C programs?

- a) C programs are executed in an event-based manner.
- b) C programs are executed concurrently.

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- c) C programs are executed in a multi-threaded manner.
- d) C programs are executed sequentially.

Answer: d) C programs are executed sequentially.

Explanation: By default, C programs execute statements sequentially, one after the other, unless control flow statements (like loops or conditionals) alter this sequence.

6. In C programming, what is the best way to comment multiple lines?

- a) Using `//` at the beginning of each line.
- b) Enclosing the comments between `/*` and `*/`.
- c) Using `#` at the beginning of each line.
- d) Enclosing the comments between `{` and `}`.

Answer: b) Enclosing the comments between `/*` and `*/`.

Explanation: In C, multi-line comments are enclosed between `/*` and `*/`.

7. Which of the following is a characteristic of the ASCII standard?

- a) It supports encoding for all the world's languages.
- b) It uses 16-bit encoding for characters.
- c) It is a 7-bit character encoding standard.
- d) None of the above.

Answer: c) It is a 7-bit character encoding standard.

Explanation: ASCII (American Standard Code for Information Interchange) is a 7-bit character encoding standard that represents text in computers and other devices that use text.

8. Which of the following statements is true regarding variable declaration in C?

- a) Variables can be declared at any point in the program.
- b) Variables must be declared before they are used.
- c) Variables are automatically initialized to zero.
- d) Variable names can start with a digit.

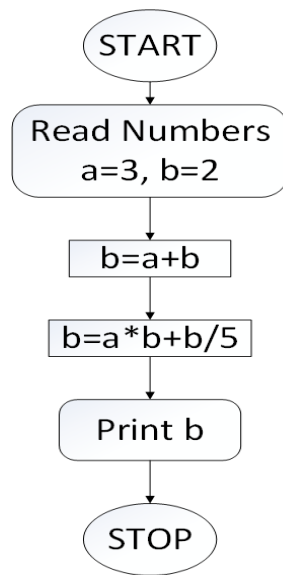
Answer: b) Variables must be declared before they are used.

Explanation: In C, variables must be declared before they are used in the code.

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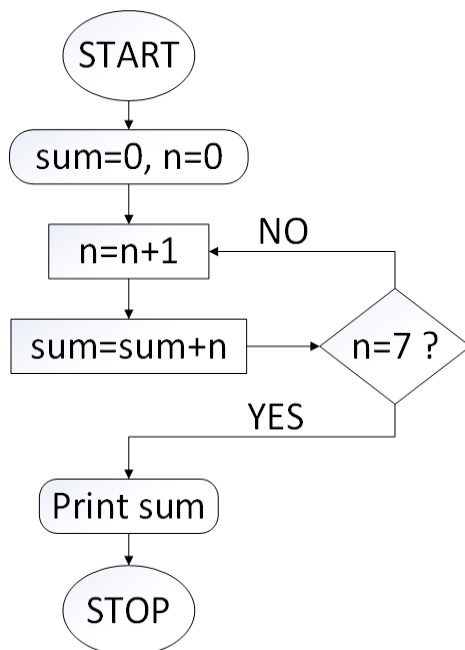
9. What will be the output of the flowchart given below?



- a) 4
- b) 8
- c) 16
- d) 20

Solution: (c) $b=a+b=5, b=a*b+b/5=3*5+5/5=15+1=16$

10. The output of the following algorithm is



- a) 21
- b) 28
- c) 30
- d) 40

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Solution: (b) The flowchart finds the sum of first 7 natural numbers. Hence, the right answer is 28.