20 Interview Questions on Data Types, Operators, Looping Statement, Conditional statement, Function

Data Types:

1. **Question:** What are primitive data types?
   - **Answer:** Primitive data types are basic data types provided by a programming language. Examples include int, float, char, and bool.
2. **Question:** Explain the difference between int and float data types.
   - **Answer:** Integers (int) represent whole numbers, while floats represent numbers with decimal points.
3. **Question:** What is the difference between a string and a character?
   - **Answer:** A character (char) represents a single letter, digit, or symbol. A string is a sequence of characters.
4. **Question:** What is the boolean data type used for?
   - **Answer:** Boolean data type is used to represent true or false values.

Operators:

5. **Question:** Explain the difference between "==" and "===" in programming languages like JavaScript.
   - **Answer:** "==" checks for equality of values, while "===" checks for equality of values and data types.
6. **Question:** What is the ternary operator? Provide an example.
   - **Answer:** The ternary operator (?:) is a shorthand way to write an if-else statement. Example: **result = (a > b) ? a : b;**
7. **Question:** Explain what short-circuiting means in the context of logical operators.
   - **Answer:** Short-circuiting means that logical operators may not evaluate all of their operands. In an OR (||) operation, if the first operand is true, the entire expression is true, and the rest of the operands are not evaluated. In an AND (&&) operation, if the first operand is false, the entire expression is false, and the rest of the operands are not evaluated.

Looping Statement:

8. **Question:** Explain the difference between "for," "while," and "do-while" loops.
   - **Answer:** A "for" loop is used when the number of iterations is known beforehand. A "while" loop is used when the condition is checked before entering the loop. A "do-while" loop is similar to a "while" loop, but it always executes the loop body at least once before checking the condition.
9. **Question:** What is an infinite loop? How can you avoid it?
   - **Answer:** An infinite loop is a loop that continues to execute endlessly without terminating. To avoid it, ensure that the loop's termination condition is properly defined and reachable within the loop body.
10. **Question:** How does the "break" statement work in loops?
    - **Answer:** The "break" statement is used to exit a loop prematurely. When encountered, it immediately terminates the loop, and control moves to the statement following the loop.
11. **Question:** Explain the "continue" statement in loops.
    - **Answer:** The "continue" statement is used to skip the rest of the loop's code and move to the next iteration. When encountered, it skips the remaining code in the loop body and moves to the loop's next iteration.

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Conditional Statement:

12. **Question:** How does a switch statement differ from an if-else statement?
    - **Answer:** A **switch** statement is used to select one of many code blocks to be executed based on the value of an expression. It is often more efficient than a series of **if-else if** statements when comparing the same variable against multiple values.
13. **Question:** What is the purpose of the "break" statement in a switch statement?
    - **Answer:** The **break** statement is used to exit the **switch** statement after a case is matched and executed. It prevents fall-through, ensuring that only the code associated with the matched case is executed.
14. **Question:** How does short-circuit evaluation work in conditional statements?
    - **Answer:** Short-circuit evaluation is the behavior where the second part of a logical expression is not evaluated if the first part already determines the outcome. For example, in the expression **A && B**, if **A** is false, **B** will not be evaluated because the entire expression is already false.
15. **Question:** Explain the purpose of the "else" block in an if-else statement.
    - **Answer:** The **else** block contains the code that is executed when the condition specified in the **if** statement is false. It provides an alternative code path when the initial condition is not met.

Functions:

16. **Question:** What is the difference between parameters and arguments in a function?
    - **Answer:** Parameters are variables listed in the function definition, while arguments are the values passed to the function when it is called. Parameters are used to define the function, and arguments are the actual values provided during function invocation.
17. **Question:** What is the purpose of the **return** statement in a function?
    a. **Answer:** The **return** statement is used to exit a function and return a value to the caller. It can also be used to return multiple values by separating them with commas. If a function does not have a **return** statement, it implicitly returns **None**.
18. **Question:** What is a function in Python?
    a. **Answer:** A function in Python is a reusable block of code that performs a specific task. Functions help in organizing code, improving readability, and facilitating reusability.
19. **Question:** How do you define a function in Python?
    a. **Answer:** Functions in Python are defined using the **def** keyword, followed by the function name, parameters in parentheses, a colon, and the function body.
20. **Question:** What is a lambda function in Python?
    - **Answer:** A lambda function, also known as an anonymous function, is a small, unnamed function defined using the **lambda** keyword. It can have any number of parameters but can only have one expression. Lambda functions are often used for short, simple operations.