Assignment

1) What is Python, and why is it popular?

Ans: Python is a high-level, general-purpose programming language known for its readability and ease of use. Its popularity stems from its versatility, extensive libraries, and a large, supportive community, making it a favorite for tasks ranging from web development to data science and AI.

2) What is an interpreter in Python?

Ans: An interpreter is a program that reads and executes Python code line by line, allowing you to see the results immediately. Unlike compilers, which translate code into machine code before execution, interpreters translate and execute code at runtime.

3) What are pre-defined keywords in Python?

Ans: Keywords are reserved words in Python that have specific, predefined meanings and purposes. These keywords cannot be used as identifiers (variable names, function names, etc.) because they are part of the language's syntax and structure.

4) Can keywords be used as variable names?

Ans: No, keywords cannot be used as variable names in Python.

5) What is mutability in Python?

Ans: Mutability in Python refers to the ability of an object to be modified after it is created. If an object is mutable, its state can be changed without creating a new object.

6) Why are lists mutable, but tuples are immutable?

Ans: Lists are mutable because they are designed to allow for changes after they are created, while tuples are immutable because they are designed to maintain a fixed, unchangeable sequence of elements.

7) What is the difference between “==” and “is” operators in Python?

Ans: The "==" operator checks for equality of value, while the "is" operator checks for identity.

8) What are logical operators in Python?

Ans: Logical operators in Python are used to combine or modify conditional statements. They work with Boolean values (True or False) and return a Boolean result. There are three main logical operators in Python: and, or, and not.

9) What is type casting in Python?

Ans: Type Casting is the method to convert the Python variable datatype into a certain data type in order to perform the required operation by users.

10) What is the difference between implicit and explicit type casting?

Ans: Implicit type casting happens automatically by the compiler, while explicit type casting requires the programmer to define the conversion using specific syntax.

11) What is the purpose of conditional statements in Python?

Ans: Conditional statements in Python enable programs to make decisions and execute different code blocks based on whether specific conditions are met. These statements control the flow of execution, allowing for dynamic and responsive behavior.

12) How does the elif statement work?

Ans: The elif statement in Python allows for multiple conditions to be checked in sequence. It is short for "else if" and is used after an if statement to check an additional condition if the if condition is false. If the elif condition is true, its corresponding block of code is executed. You can have multiple elif statements to check various conditions. If none of the if or elif conditions are true, an optional else block can be included to execute a default block of code.

13) What is the difference between for and while loops?

Ans: for loops are best suited for situations where you know exactly how many times the loop will execute, often when iterating over a collection or sequence. while loops, on the other hand, are more flexible and used when the number of iterations is unknown and depends on a dynamic condition.

14) Describe a scenario where a while loop is more suitable than a for loop?

Ans: When the number of iterations is not known in advance and depends on a condition being met. Consider a program that prompts the user for input until they enter a specific word, such as "quit". A while loop can efficiently handle this situation.