**Assignment 1.1**

##### **Interview Questions**

**Data Types:**

1. **Question:** What are the basic data types in Python?
   * **Answer:** The basic data types in Python include integers, floating-point numbers, strings, booleans, and None.
2. **Question:** How do you check the type of a variable in Python?
   * **Answer:** You can use the **type()** function to check the type of a variable.
3. **Question:** What is the difference between **int** and **float** data types in Python?
   * **Answer:** **int** represents integer numbers without decimal points, while **float** represents numbers with decimal points.
4. **Question:** Explain the concept of dynamic typing in Python.
   * **Answer:** In Python, variables are dynamically typed, meaning their type is determined at runtime and can change during the program's execution.
5. **Question:** What are the string interpolation methods in Python?
   * **Answer:** String interpolation in Python can be achieved using f-strings, format(), and % formatting.

**Operators:**

1. **Question:** What is the difference between '==' and 'is' operators in Python?
   * **Answer:** '==' checks for equality of values, while 'is' checks for object identity (whether two variables refer to the same object).
2. **Question:** Explain the difference between 'and' and 'or' operators in Python.
   * **Answer:** 'and' returns True if both operands are True, while 'or' returns True if at least one operand is True.
3. **Question:** What does the 'not' operator do in Python?
   * **Answer:** The 'not' operator negates a boolean expression, turning True into False and vice versa.
4. **Question:** What is the purpose of the 'in' operator in Python?
   * **Answer:** The 'in' operator is used to check if a value is present in a sequence, such as a list, tuple, or string.
5. **Question:** How do you perform exponentiation in Python?
   * **Answer:** Exponentiation is performed using the **\*\*** operator. For example, **2 \*\* 3** equals 8.

**Conditional Statements:**

1. **Question:** What is the difference between 'if', 'elif', and 'else' in Python?
   * **Answer:** 'if' is used for the main condition, 'elif' for additional conditions, and 'else' for what to do if none of the conditions are met.
2. **Question:** How do you write a ternary conditional expression in Python?
   * **Answer:** You can write a ternary conditional expression as **value\_if\_true if condition else value\_if\_false**.
3. **Question:** Explain the purpose of the **pass** statement in Python.
   * **Answer:** The **pass** statement is a placeholder that does nothing, typically used when a statement is syntactically required but doesn't need to do anything.
4. **Question:** What is short-circuit evaluation in Python?
   * **Answer:** Short-circuit evaluation is a feature where, in a compound boolean expression, if the outcome is already known after evaluating the first part, the second part is not evaluated.
5. **Question:** How do you use the 'assert' statement in Python?
   * **Answer:** The 'assert' statement is used for debugging. If the condition is False, it raises an AssertionError.

**Looping Statements:**

1. **Question:** What is the difference between 'for' and 'while' loops in Python?
   * **Answer:** 'for' loops are used for iterating over a sequence, while 'while' loops continue to execute as long as a given condition is True.
2. **Question:** How do you exit a loop prematurely in Python?
   * **Answer:** You can use the 'break' statement to exit a loop prematurely.
3. **Question:** What is the 'range' function used for in 'for' loops?
   * **Answer:** The 'range' function generates a sequence of numbers that are often used in 'for' loops to control the number of iterations.
4. **Question:** Explain the 'continue' statement in Python.
   * **Answer:** The 'continue' statement is used to skip the current iteration and proceed to the next one in a loop.
5. **Question:** What is an 'infinite loop,' and how can it be avoided in Python?
   * **Answer:** An infinite loop is a loop that continues to execute without termination. To avoid it, ensure that the loop condition eventually becomes False or use control statements like 'break.'

**Functions:**

1. **Question** What is a function in Python, and what is its purpose?

* **Answer:** A function is a reusable block of code that performs a specific task. Functions help in organizing code, making it more modular and maintainable.

1. **Question**: What is the difference between a function definition and a function call in Python?

* **Answer**: A function definition is where the function is created, specifying its name, parameters, and code. A function call is where the function is invoked or executed, passing arguments to it.

1. **Question**: How do you return a value from a function in Python?

* **Answer**: You can use the 'return' statement to send a value back from a function to the caller. For example,

def add (a, b):

return a + b.

1. **Question**: What is a recursive function in Python, and how does it work?

* **Answer**: A recursive function is a function that calls itself. It divides a problem into smaller subproblems and solves them. Each recursive call must have a base case to stop the recursion.

1. **Question**: What is the difference between 'global' and 'local' variables in Python functions?

* **Answer:** A global variable is defined outside any function and can be accessed from any part of the code. A local variable is defined inside a function and is only accessible within that function.