**PW Skill python assignment**

**Question / Answer**

Q1. Explain the key features of Python that make it a popular choice for programming

* Ans. **Simple and Readable Syntax**: Python is easy to understand for the user as well as reader
* **Interpreted Language**: This approach allows for easier debugging and development without the need for compilation, providing fast feedback during code execution.
* **Dynamically Typed**: This flexibility allows for faster development but requires careful handling to prevent runtime errors.
* **Integration Capabilities**: Python integrates well with other languages, such as C/C++

Q2. Describe the role of predefined keywords in Python and provide examples of how they are used in a program

Ans. Predefined keywords in Python are reserved words that have special meanings and serve as the building blocks of the language's syntax and structure. They are essential for interpreting the commands in a program

**Example**  **1.** The print command used to print any value or character

Print”hello world”

**2.** type is used to identify type of data

Type(“a”)

Q3. Compare and contrast mutable and immutable objects in Python with examples

Ans. Mutable objects can be changed after they are created. This means you can modify their contents without creating a new object. Typical examples of mutable objects include lists, dictionaries, and sets.

Immutable objects, on the other hand, cannot be changed after they are created. Any attempt to modify an immutable object will result in the creation of a new object in memory. Common examples of immutable objects include integers, floats, strings, and tuples.

Q4. Discuss the different types of operators in Python and provide examples of how they are used

Ans. **Types of operators in python**

Arithmetic operators are used for mathematical calculations.

1. + (Addition): Adds two numbers.
2.  - (Subtraction): Subtracts the right operand from the left.
3.  \* (Multiplication): Multiplies two numbers.
4.  / (Division): Divides the left operand by the right, resulting in a float.
5.  % (Modulus): Returns the remainder of the division

Comparison operators compare two values and return a Boolean (True or False).

* == (Equal): Checks if two values are equal.
* != (Not Equal): Checks if two values are not equal.
* > (Greater than): Checks if the left operand is greater than the right.
* < (Less than): Checks if the left operand is less than the right.
* >= (Greater than or Equal to): Checks if the left operand is greater than or equal to the right.
* <= (Less than or Equal to): Checks if the left operand is less than or equal to the right.

Logical operators are used to combine conditional statements.

* and: Returns True if both statements are true.
* or: Returns True if at least one statement is true.
* not: Reverses the result, returning True if the condition is false.

Bitwise operators operate on the binary representations of integers.

* & (AND): Performs binary AND.
* | (OR): Performs OR
* << (Left Shift): Shifts bits to the left by a specified number of positions.
* >> (Right Shift): Shifts bits to the right by a specified number of positions.

Membership operators check for the presence of a value within a sequence, such as a list, tuple, or string.

* in: Returns True if the specified value is found in the sequence.
* not in: Returns True if the specified value is not found in the sequence.

Q5. Explain the concept of type casting in Python with examples

Ans. , **type casting** (or type conversion) is the process of converting one data type to another. Type casting can be **implicit** (done automatically by Python) or **explicit** (done manually by the programmer).

**In implicit type casting**, Python automatically converts one data type to another whenever it deems it necessary. This typically happens when combining types that are compatible, such as integers and floats.

**Explicit type casting** is when you manually convert a variable from one data type to another using specific functions. This is often done when data types are not compatible, such as when combining integers with strings, or when you need to force a type conversion.