Python Basic Assignment – PW Skills

Q.1 - **Explain the key features of Python that make it a popular choice for programming.**

Ans.- **Key Features of Python**

- Simple syntax, interpreted, dynamically typed, with vast libraries.
- Supports object-oriented and functional programming.
- Cross-platform and has strong community support.

Q.2- **Describe the role of predefined keywords in Python and provide examples of how they are used in a program.**

Ans.- Python has a set of predefined keywords that serve as commands, data types, and functions, which help structure the code. Some common keywords include if, for, while, def, return, True, and False.

Q.3- **Compare and contrast mutable and immutable objects in Python with examples.**

Ans.- **Mutable Objects**: These can be changed after they are created. Examples include lists, dictionaries, and sets.

Immutable Objects: These cannot be altered once created. Examples include strings, tuples, and integers.

Q.4- **Discuss the different types of operators in Python and provide examples of how they are used.**

Ans.- **Types of Operators in Python**

1. **Arithmetic Operators**: Perform basic arithmetic operations.
2. **Comparison Operators**: Compare values.
3. **Logical Operators**: Combine conditional statements.
4. **Assignment Operators**: Assign values to variables.
5. **Membership Operators**: Check if a value is in a sequence.

Q.5- **Explain the concept of type casting in Python with examples.**

Ans.- Type casting in Python converts one data type to another.

Examples:

1. **String to Integer**:

```
x = "10"
y = int(x)  # Converts to integer 10
```

2. **Integer to Float**:

```
x = 5
y = float(x)  # Converts to float 5.0
```

3. **Float to Integer**:

```
x = 10.8
y = int(x)  # Converts to integer 10 (truncates the decimal)
```

4. **Integer to String**:

```
x = 123
y = str(x)  # Converts to string "123"
```

Type casting is useful when operations require specific data types, like string concatenation or arithmetic.

Q.6- **How do conditional statements work in Python? Illustrate with examples.**

Ans.- Conditional statements allow branching of code based on conditions. Example:

```
x = 10
if x > 5:
    print("x is greater than 5")
elif x == 5:
    print("x is equal to 5")
else:
    print("x is less than 5")
```

Here, if, elif, and else allow the program to make decisions based on x's value.

Q.7- **Describe the different types of loops in Python and their use cases with examples.**

Ans.- **for Loop**: Iterates over a sequence like a list, tuple, or range.

```
for i in range(5):
    print(i)  # Output: 0, 1, 2, 3, 4
```

while Loop: Repeats as long as a condition is True.

```
i = 0
while i < 5:
    print(i)
    i += 1  # Output: 0, 1, 2, 3, 4
```

break and continue Statements: Control the flow within loops.

```
for i in range(5):
    if i == 3:
        break  # Exit loop when i is 3
    print(i)
```