Name: Kiran Yadav

Email: kiranyadav1102003@gmail.com

Course Name:Devops and Cloud Computing Course

Assignment Name: Python Basics Assignment

Git Link:https://github.com/Hydra-Dev110/Python

Drive Link:
https://docs.google.com/document/d/1U8OCwylxRieexlY0oUtF6EEE69jzlmQiu5fToR_qMDA/edit?usp=sharing

---

1. Key features of Python that make it a popular programming language

Python is one of the most widely used programming languages because of its powerful and user-friendly features:

Easy to learn and use: Python has a simple and readable syntax.

Interpreted language: Code is executed line by line, making debugging easier.

Dynamically typed: No need to declare variable types.

High-level language: Manages memory automatically.

Extensive standard library: Provides many built-in modules and functions.

Platform independent: Runs on Windows, Linux, and macOS.

Supports multiple programming styles: Procedural, Object-Oriented, and Functional programming.

Example:

```
print("Welcome to Python")
```

2. Role of predefined keywords in Python

Predefined keywords are reserved words that have special meanings in Python. They are used to define the structure and logic of a program and cannot be used as variable names.

Some common keywords include:
if, else, for, while, def, return, True, False

Example:

```
if number > 0:
    print("Positive number")
```

Here, if is a keyword used to check a condition.

3. Mutable and Immutable objects in Python
Mutable Objects

Can be modified after creation.

Examples: list, dictionary, set

```
numbers = [1, 2, 3]
numbers[1] = 5
print(numbers)
```

Immutable Objects

Cannot be modified after creation.

Examples: int, float, string, tuple

```
name = "Python"
# name[0] = "J"  # Error
```

4. Types of operators in Python
Arithmetic Operators
Used for mathematical operations.

```
a = 10
b = 3
print(a + b)
print(a * b)
```

Comparison Operators

Used to compare values.

```
print(a > b)
print(a == b)
```

Logical Operators
Used to combine conditions.

```
print(a > 5 and b < 5)
```

Assignment Operators

Used to assign values.

```
a += 2
```

Membership Operators
Check if a value exists in a sequence.

```
print(3 in [1, 2, 3])
```

All Operations combined example:

```
a = 10
b = 3
#Arithmetic Operators
print(a + b)
print(a * b)

#Comparison Operators
print(a > b)
print(a == b)

#Logical Operators
print(a > 5 and b < 5)

#Assignment Operators
a += 2
print(a)

#Membership Operators
print(3 in [1, 2, 3])
```

Output:

```
PS E:\PW Assignment\Python\Python basics> & C:/Users/HYDRA/python.exe "e:/PW Assignment/Python/Python basics/Arithmetic_Operations.py"
13
30
True
False
True
12
True
```

5. Type casting in Python

Type casting means converting one data type into another.

Implicit Type Casting
Automatically done by Python.

```
x = 5
y = 2.5
z = x + y
```

Explicit Type Casting
Done manually using functions.

```
num = "50"
num = int(num)
print(num + 10)
```

6. Conditional statements in Python

Conditional statements allow a program to make decisions based on conditions.

Types:

- if
- if-else
- if-elif-else

Example:

```
marks = 78

if marks >= 90:
    print("Grade A")
elif marks >= 75:
    print("Grade B")
else:
    print("Grade C")
```

Output:

```
PS E:\PW Assignment\Python\Python basics> & C:/Users/HYDRA/python.exe "e:/PW Assignment/Python/Python basics/Conditional_statements.py"
Grade B
```

7. Types of loops in Python

Loops are used to repeat a block of code.

for loop

Used when the number of iterations is known.

```
for i in range(1, 6):
    print(“For Loop:”,i)
```

while loop

Used when the condition needs to be checked repeatedly.

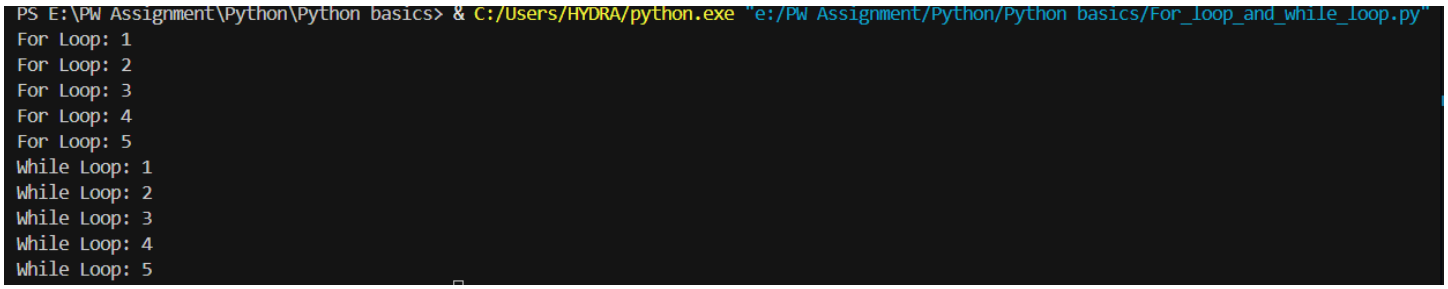
```
count = 1
while count <= 5:
    print(count)
    count += 1
```

Combined Example:

```
#For Loop
for i in range(1, 6):
    print('For Loop:',i)

#While Loop
count = 1
while count <= 5:
    print('While Loop:', count)
    count += 1
```

Output:



Loop Control Statements

break: stops the loop

continue: skips the current iteration

```
for i in range(5):
    if i == 3:
        break
    print(i)
```