5.Loops

- **Introduction to for and while loops.**

A **loop** is a way to **repeat** a block of code **multiple times** until a certain condition is met.

in Python, loops allow you to run the same code **over and over** without writing it multiple times.

It repeats the particular statement till the condition will satisfied.

Types of Loops:

- Entry Control Loops

  - for loop
  - while loop

- Exit Control Loops

  (Note: do while loop is not supported in python.)

  -do while loop

1. for loop

   - The **for loop** in Python is used to iterate over a sequence. The syntax is simple and flexible.

- Syntax

```
for variable in sequence:
 # Code to execute
```

2. While loop

- The **while loop** is used to execute a block of code as long as a condition is True. Once the condition becomes False, the loop stops.

  Syntax

```
while condition:
 # Code to execute as long as the condition is True
```

- **How loops work in Python.**

  Loops is a control structure that allows you to repeat ab block of code multiple times based on a condition or over a sequence.

  Loops reduce code repetition and make programs more efficient and readable

Why use loops?

- To repeat tasks automatically
- To automate repetitive tasks
- To process collections
- To wait for a condition to be met

- **Using loops with collections (lists, tuples, etc.).**

Collections are data structures that group multiple elements into a single object.

Using for Loops with Collections.

1. **List**

```
fruits = ['apple', 'banana', 'cherry']
for fruit in fruits:
    print(fruit)
```

Output

```
apple
banana
cherry
```

2. Tuple

```
colors = ('red', 'green', 'blue')

for color in colors:

    print(color)
```

Output

```
red

green

blue
```