Loops

- loops in python are used to execute a block of code repeatedly until certain condition is met.

Python mainly have <u>3 loops</u>

1. for loop
2. while loop !
3. nested loop
   - for loop inside for loop
   - for loop inside while loop
   - while loop inside while loop
   - while loop inside for loop

- Instead of writing the same code again & again, loops help to reduce repetition & make program more efficient.

1. <u>for loop</u>
   - Used when you want to repeat a block of code for a specific no. of times or iterate over a sequence
     - for loop with sequence : string, list, tuple, set, dict
     - for loop with range

- For loop with sequence :- A for loops with a sequence in python allows to iterate over each element in the sequence & perform operation on it

- For i in range :- i is a variable, after i whatever comes is itterative variable, values are not constant.

   Eg :- name = ("inchara")
        for i in range name :
        print (i)

        i
        n
        c
        h
        ara

② for i in enumerate (name) :
     print (i).

      (0, 'i')

      (1, 'n')

      (2, 'c')

      (3, 'h')

      (4, 'a')

      (5, 'r')

      (6, 'a')

Note :→ enumerate is a function, it gives position & characters

* In for loop with sequence it is not necessary to mention initiz initialization, condition, incrementation & decrementation it is automatically handled by python.

* each data is a tuple

(0, 'i')

Note

→ **Initialization** :   (starting point)
    sets the starting value of the loop variable

→ **Condition** : Defines the end point or condition under which loop continues.

→ **Incrementation / decrementation** : update loop variable after each iteration.

For Eg :-

* @ range (1, 11, 1)
  (i = 1, i < 11, i + 1)
  i = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10

* range (1, 10, 1)
  (i = 1, i < 10, i + 1)
  i = 1, 2, 3, 4, 5, 6, 7, 8, 9

eg :- for i in range (1, 23, 2) :
      Print (i)

1
3
5
7
9
11
13
15
17
19
21

Note :- 1 - start value

23 - stop value (compulsar

2 - step size (each value iterates.

```
for i in range (8) :
    print (i)
```

0
1
2
3
4
5
6
7

Note :- • Here 8 is the stop value
• Here default start value is 0
                Step size is 1

• Compulsary we have to give stop value.

• if we are giving step size we have
    to give start value.

Ans

For stop value we can also write as len function

name = inchara

Eg :-
```
for i in range (0, len(name), 1):
    print (i, name [i])
```

0   i
1   n
2   c
3   h
4   a
5   a
6