

Loops

1) For Loop

A For loop is used when you know the exact number of times you want to repeat a block of code. It goes through a sequence (like numbers, lists, strings, etc.)

Syntax:

→ For Loop with Sequence :-
 for var in sequence-name:
 statements
 → For loop with range :-
 for var in range (start value, stop value, step):
 statements

e.g:- for i in range (1,6):
 print(i, end=" ")

Output

1 2 3 4 5

2) While Loop

A while loop is used when you don't know how many times you need to repeat. It runs as long as the condition is true.

Syntax

initialization
 while (condition):
 statements
 Inc / Dec

e.g:-

i=1
 while (i<=5):
 print(i)
 i+=1

3) Nested loop

A nested loop means a loop inside another loop used when you need rows & columns (like patterns, tables, matrices)

a) for loop inside for loop

Syntax :
 for var-a in range ():
 for var-b in range ():
 statements of inner loop
 statement of outer loop

eg: for i in range(1,4):

for j in range(1,4):

print(i,j)

Output

1 1 1 2 3 1 2 3 1 2 2

b) While loop inside another loop

Initialization of outer loop

while (condition) of outer loop):

Initializations of inner loop

while (condition of inner loop):

statements of inner loop

inc/dec. of inner loop

statements of outer loop

statements of outer loop

inc/dec of outer loop

incidence of outer loop