

Tutorial 8

Date: Feb 6, 2021

Email: mohdakram.ansari@ucalgary.ca

Agenda

1. While loop
 2. Flag based loops
 3. Nested while loop
-

1. While Loop

With the while loop we can execute a set of statements as long as a condition is true.

Example

Print i as long as i is less than 6:

```
1 i = 1
2 while i < 6:
3     print(i)
4     i += 1
```

Output

```
1 1
2 2
3 3
4 4
5 5
```

The break Statement

With the break statement we can stop the loop even if the while condition is true:

Example

Exit the loop when i is 3:

```
1 i = 1
2 while i < 6:
3     print(i)
4     if i == 3:
5         break
6     i += 1
```

Output

```
1 | ???
```

Example

An input loop terminated when user enters "q"

```
1 | power = 5
2 |
3 | while power > 0:
4 |     print("Available power : {}".format(power))
5 |     user_choice = input("Press enter to proceed or q to quit")
6 |     if user_choice == "q":
7 |         break
8 |     power -= 1
9 |
10 | print("Game Over")
```

2. Flag based loop

We can use a boolean variable in place of the boolean expression in a while loop. The value of the boolean variable will be checked each time before loop executes.

Example

Flag based loop to print first 5 positive integers

```
1 | flag = True
2 | i = 1
3 | while flag:
4 |     print(i)
5 |     if i == 5:
6 |         flag = False
7 |     i += 1
```

Output

```
1 | 1
2 | 2
3 | 3
4 | 4
5 | 5
```

3. Nested while loop

Python programming language allows the use of a while loop inside another while loop.

The syntax of the nested- while loop in Python as follows:

Syntax

```
1 while expression:
2     ...                # Outer Loop
3     while expression:
4         ...            # Inner Loop
5         ...            # Outer Loop
```

Example

```
1 i=1
2 while i<=3 :
3     print("i = {0}".format(i))
4     j=1
5     while j<=3:
6         print("    j = {0}".format(j))
7         j+=1
8     i+=1
9
```