While loop

- We already know that any loop we required three things

- Intialization to start the loop

- Increment or decrement

- Condition to stop the loop

```
In [ ]:  # Aug7th video dont ask admin
         # message me what is the class
         # Assignments are not uploading GC: My drive is full
         # Online lab

         # If you not attend the lab ==== proceed
         # Online exam
         # One more exam
         # 10Python screening test
         # 1-2 months DS : Python
         # DS 20 screening test +
         # 19th 1month batch free
         # 19th 4 weeks
         # Company ds
         # 5 to 7 7 to 9 4 hours class
```

```
In [1]:  for i in range(5):
             print(i)
         # i=0   i +1    i= 5-1=4

         # here i starts with 0 increment by1
         # when i reach to 4 the loop stop
```

```
0
1
2
3
4
```

- in for loop all 3 things in a single line

- but in while loop we need to write a 3 lines

- It is like wrapper

- summation and count wrapper

- at start intilaization, inside loop increment

```
In [ ]:  intial_point= value

         while <condition>:

             # write your lines
```

```
    increment or decrement
```

```python
# for i in range(5):
#     print(i)
i=0
while <cond>:
    print(i)
    i=i+1
```

In [6]:
```python
# 0  1   2   3   4
i=0
while i<5:
    print(i,end=' ')
    i=i+1

# step-1: i=0 === > while 0<5 T == print(0) === i=0+1=1
# step-2: i=1 ====> while 1<5 T == print(1) === i=1+1=2
# step-3: i=2 ====> while 2<5 T == print(2) === i=2+1=3
# step-4: i=3 ===> while 3<5 T == print(3) === i= 3+1=4
# step-5: i=4 ===> while 4<5 T == print(4) === i= 4+1=5
# step-6: i=5 ==== >   5<5 F
```
```
0 1 2 3 4
```

In [5]:
```python
i=0
while i<=4:
    print(i,end=' ')
    i=i+1
```
```
0 1 2 3 4
```

In [ ]:
```python
# 1 to 10
# -1 to -10
# 10 to 1
# -10 to -1
```

In [8]:
```python
i=0
while i<5:
    print(i)
    i=i-1
    if i==-5:
        break

# i=0 === > 0<5 T === > 0  ==> 0-1= -1
# i=-1 === > -1<5 T === > -1 === > -1-1=-2
#i=-2 ===> -2<5  T === > -2  === > -2-1=-3
```
```
0
-1
-2
-3
-4
```

In [14]:
```python
# 1 to 10
i=1
while i<=10:
    print(i,end=' ')
    i=i+1
print("====== second case")
```

```python
# -1 to -10
i=-1
while i>=-10:
    print(i,end=' ')
    i=i-1

print("====== Third case")
# 10 to 1
i=10
while i>=1:
    print(i,end=' ')
    i=i-1

print("====== Fourth case")
# -10 to -1
i=-10
while i<=-1:
    print(i,end=' ')
    i=i+1
```

```
1 2 3 4 5 6 7 8 9 10 ====== second case
-1 -2 -3 -4 -5 -6 -7 -8 -9 -10 ====== Third case
10 9 8 7 6 5 4 3 2 1 ====== Fourth case
-10 -9 -8 -7 -6 -5 -4 -3 -2 -1
```

In [15]:
```python
# 1 to 10
i=1
while True:
    print(i,end=' ')
    i=i+1
    if i==10:
        break
```

```
1 2 3 4 5 6 7 8 9
```

In [16]:
```python
i=1
while True:
    print(i,end=' ')
    i=i+1
    if i==10:
        break
```

```
1 2 3 4 5 6 7 8 9
```

In [17]:
```python
# 1 to 10
i=1
while True:
    print(i,end=' ')
    i=i+1
    if i==10:break
print("====== second case")
# -1 to -10
i=-1
while True:
    print(i,end=' ')
    i=i-1
    if i==-10:break

print("====== Third case")
# 10 to 1
i=10
```

```python
while True:
    print(i,end=' ')
    i=i-1
    if i==1:break

print("====== Fourth case")
# -10 to -1
i=-10
while True:
    print(i,end=' ')
    i=i+1
    if i==-1:break
```

```
1 2 3 4 5 6 7 8 9 ====== second case
-1 -2 -3 -4 -5 -6 -7 -8 -9 ====== Third case
10 9 8 7 6 5 4 3 2 ====== Fourth case
-10 -9 -8 -7 -6 -5 -4 -3 -2
```

In [18]:
```python
i=1
while True:
    i=i+1
    print(i,end=' ')
    if i==5:
        break
# 1 2 3 4
```

```
2 3 4 5
```

In [ ]:
```python
# Do not run: infinite loop
i=1
while True:
    print(i,end=' ')
    if i==5:
        break
```

In [19]:
```python
i=1
i=i+1
while True:
    i=i+1
    print(i,end=' ')
    if i==5:
        break
```

```
3 4 5
```

In [20]:
```python
# WAP ask the user get three numbers randomly and print the square of the number
# First do with for loop
# Exactly replace with while loop
import random
for i in range(3):
    num=random.randint(1,100)
    print(f"The square of {num} is {num*num}")
```

```
The square of 81 is 6561
The square of 19 is 361
The square of 23 is 529
```

In [21]:
```python
import random
i=0
while i<3:
    num=random.randint(1,100)
```

```
        print(f"The square of {num} is {num*num}")
        i=i+1
```

The square of 70 is 4900
The square of 90 is 8100
The square of 13 is 169

For loop and While loop

- with for loop infinte iterations not possibile

- with while loop infinte iterations are possibile

  - which means we can perform the loop till condition satisfies

In [ ]:
```
# ask the user enter a pwd
# original pwd is : iam a ds
# if the pwd==originalpwd then only you have life
# else : pwd is incorrect
# and ask the pwd again
# the loop should continue till the pwd is correct
# step-1: original_pwd='iam a ds'
# step-2: while True
# step-3:     user_pwd=input()
# step-4:     if original_pwd==user_pwd:
# step-5:         print and apply break
# step-6:     else: print ('')
```

In [22]:
```
original_pwd='iam a ds'
while True:
    user_pwd=input("enter the pwd")
    if original_pwd==user_pwd:
        print("correct pwd")
        break
    else:
        print("enter the correct pwd")
```

enter the correct pwd
enter the correct pwd
correct pwd

In [ ]:
```
########## ALL For loop need to conver into while =============
kindly complete all questions , we will do same replica in While loop
#1Q) For example
# take a random number between  1 to 100
# print it is a even number and odd number
# you need to generate 3 random number

#2Q) wap ask the user print the number is even or odd between 10 to 20

#3Q) wap ask the user print the square of the number between
# 20 to 25

#4Q) WAP ask the user enter number three times find the square of the number
# How many times loop should run


#5Q) Print the 14th table
# ans:   14 x 1 = 14
#        14 x 2 = 28
```

```python
#        14 x 3 = 42
#
#
#        14 x10 = 140
# How many times 10


#6 Q) Find the factors of 75
# step-1: Iterate the loop = which numbers factor you want
# step-2: Apply the if condition
#          cond= divide the number with each i


#7Q) Write the sum of first 10 Natural numbers
# 1 to 10
# 1+2+3+4+5+6+7+8+9+10=55


# 8Q) Average first 1 to 10 numbers
# avg= summation of all the numbers/total number
#Wap to find the average of ' N ' numbers in Python.


#9Q) Find the number of divisors of 75
# ans: 1,3,5,15,25,75
# Number =6



# 10Q)
# Get a random number between  1 to 10 :  num1
# Ask the user enter a number : num2
# if num1 == num2  then print won
# else print fail

# Give 3 chances

# Case-2: whenever you won the code should stop

# Case-3:
# Suppose i want to give 4 chances
# Every time you fail I want to display
#      Number of chances left

# If all the chances you are used
#    Try again after 24 hours

# If you are win



11q)# wap ask the user get 5 random numbers
# Get it is an even number or odd number
# also count how many even numbers are there
# and  count how many odd numbers are there

# Idea
# take two counters one even and odd count
# For loop 5 times
```

```python
# each time take the random number
# If condition
#     True counter update
# else
#    Update the counter



12Q) # wap ask the user get 5 random numbers
# Get it is an even number or odd number
# also count how many even numbers are there
# and  count how many odd numbers are there
# I want summ even numbers
# I want summ odd numbers
```