Python Programing fundamentels

1. Control flow statements
2. Functions

Control flow statements

- In python programing, control flow is the which satatements or blocks of code are executed.

```
a = [1,2,3,4,5,6,7,8,9,0]
b = [0,9,8,7,6,5,4,3,2,1,]
a<b
```

```
False
```

```
x = 8
if x==8:
    print("x is ", x)
```

```
x is  8
```

```
x = 8                           # if example
if x==8:
    print("x is ", x)
    y = 9
    print(y)
```

```
x is  8
9
```

```
x = 8           # if example if is true so python will not see the
else or elif.
if x==8:
    print("x is ", x)
else:
    print("x is not 8")
    a = "rohit"
    print(a)
```

```
x is  8
```

```
x = 8            # if ,elif, else example
if x==8:
    print("x is ", x)
```

```
elif x == 10:
    print("x is ",x)
else:
    print("x is not 8")
```

```
x is  8
```

```
x = 8            # if , else example
if x==8:
    print("x is ", x)
else:
    print("x is not 8")
elif x == 10:
    print("x is " x)
```

```
  Cell In[6], line 6
    elif x == 10:
    ^
SyntaxError: invalid syntax
```

```
x = 23
if x==8:
    print("x is ", x)
elif x==1:
    print("x is ",x)
elif x==3:
    print("x is ",x)
elif x==4:
    print("x is ",x)
elif x==8:
    print("x is ",x)
elif x==23:
    print("x is ",x)
else:
    print("x is not 8" )
```

```
x = input()
if x==8:
    print("hello")
elif x==10:
    print("welcome")
elif x==3:
    print("this")
elif x>4:
    print("python")
elif x<24:
```

```
    print("class")
else:
    print("yes")

x = int(input())
if x==8:
    print("hello")
elif x//10:
    print("welcome")
elif x==78:
    print("this")
elif x>4:
    print("python")
elif x<24:
    print("class")
else:
    print("yes")

# Nested if, else
x = input("value for x")
y = input("value for y")
z = input("value for z")

if x>y:
    if x>z:
        print("x>y>z")
    else:
        print("y<x<z")
elif x==y:
    if x>z:
        print("y==x>z")
    else:
        print("y==x<z")
elif x<y:
    if x>z:
        print("y>x>z")
    else:
        print("y<x<z")

x = input("value for x")
y = input("value for y")
z = input("value for z")

if (x>y):
    if (x>z):
        print("x>y>z")
    else:
        print("y<x<z")
elif (x==y):
    if (x>z):
```

```
        print("y==x>z")
    else:
        print("y==x<z")
elif (x<y):
    if (x>z):
        print("y>x>z")
    else:
        print("y>x<z")
```

```
value for x6
value for y6
value for z7
y==x<z
```

```
#Single line if statement

if x>y: print("x>y")
elif x==y: print("x==y")
else: print("x<y")
```

```
x==y
```

```
if (8+4)/2==6:
    print("6")
else:
    print()
```

```
6
```

```
if 8+4/2==10:
    print("10")
else :
    print()
```

```
10
```

Loop

Loops are used to execute a block of code repeatedly

for loop

The for loop iterates over an iterable object .

- 1- for loops are used when you have of code which you want to repeat a fixed number of times.
- 2- for loops are also used to perform the same set of operations for each item in an iterable.

- 3- Thus, for loops reduce the code complexity and saves time.

```
# string, list, tuple, dictionary,ranger - iterable data types
x = [1,2,3,4]
for a in x :
    print(a)
print("value of a",a)
```

```
1
2
3
4
value of a 4
```

```
x = (1,2,3,4,5,6,7,8)
for a in x :
    print(x)
```

```
(1, 2, 3, 4, 5, 6, 7, 8)
(1, 2, 3, 4, 5, 6, 7, 8)
(1, 2, 3, 4, 5, 6, 7, 8)
(1, 2, 3, 4, 5, 6, 7, 8)
(1, 2, 3, 4, 5, 6, 7, 8)
(1, 2, 3, 4, 5, 6, 7, 8)
(1, 2, 3, 4, 5, 6, 7, 8)
(1, 2, 3, 4, 5, 6, 7, 8)
```

```
x = list(range(0,4))
print(x)
```

```
[0, 1, 2, 3]
```

```
x = list(range(0,4))
print(x[0])
print(x[1])
print(x[2])
print(x[3])


for x in range(0,4):
    print(x)
```

```
0
1
2
3
```

```
y = range(0,4)
for x in y:
    print(x)
```

```
0
1
2
3
```

```
for x in range(0,4):
    print(list(range(0,4)))
```

```
[0, 1, 2, 3]
[0, 1, 2, 3]
[0, 1, 2, 3]
[0, 1, 2, 3]
```

```
# print sum of all even numbers for 1 to 10.

for m in range(1,11,9):
    if m%2==0:
        print(m*3)
```

```
30
```

```
sum = 0                                  # right method shotest method
for z in range (2,11,2):
    sum += z
print(sum)
```

```
30
```

```
#ask the user for the range from whitch the sum ofthe even num should
be printed .
# eg.10 to 20 , 60 to 1000 , 70 to 80

e = int(input("enter starting num  :- "))
f = int(input("enter stop num :- "))

sum = 0
for q in range(e,f+1,2):
        sum = sum + q
        print("sum of all even num :-" ,sum)
print("sum even num :-" ,sum)
```

```
enter starting num  :- 10
enter stop num :- 20
sum of all even num :- 10
sum of all even num :- 22
sum of all even num :- 36
sum of all even num :- 52
sum of all even num :- 70
sum of all even num :- 90
sum even num :- 90
```

```python
for m in range(1,11):
    if m%2==0 :
        print(m+m+m)
```

```
6
12
18
24
30
```

```python
b = 0
for a in range(1,11):
    if a%2==0 :
        b = a*a
        print(b)
```

```
4
16
36
64
100
```

```python
r = 0
n = [1,2,3,4,5,6,7,8,9,10]
for a in range(n):
    r = a*a
    print(str((r))
```

```
  Cell In[37], line 7

    ^
SyntaxError: incomplete input
```

```python
x = range(1,10+1)
for a in x:
    if a%2==0:
        print ("enter even num :",a)
    else:
        print("enter odd num :",a)
```

```python
for a in range(1,100+1) :
    if a%2==0:
        print("even num :-",a)
```

```
    else:
        print("odd num :- ",a)

e = int(input("enter starting num  :- "))
f = int(input("enter stop num :- "))

sum = 0
for q in range(e,f+1,2):
        sum = sum + q
        print("sum of all even num :-" ,sum)
print("sum even num :-" ,sum)

2+4+6+8+10

for x in range(2,8):
    for y in range(1,11):
        print(x,"X",y,"=",x*y)
```

```
2 X 1 = 2
2 X 2 = 4
2 X 3 = 6
2 X 4 = 8
2 X 5 = 10
2 X 6 = 12
2 X 7 = 14
2 X 8 = 16
2 X 9 = 18
2 X 10 = 20
3 X 1 = 3
3 X 2 = 6
3 X 3 = 9
3 X 4 = 12
3 X 5 = 15
3 X 6 = 18
3 X 7 = 21
3 X 8 = 24
3 X 9 = 27
3 X 10 = 30
4 X 1 = 4
4 X 2 = 8
4 X 3 = 12
4 X 4 = 16
4 X 5 = 20
4 X 6 = 24
4 X 7 = 28
4 X 8 = 32
4 X 9 = 36
4 X 10 = 40
5 X 1 = 5
5 X 2 = 10
```

```
5 X 3 = 15
5 X 4 = 20
5 X 5 = 25
5 X 6 = 30
5 X 7 = 35
5 X 8 = 40
5 X 9 = 45
5 X 10 = 50
6 X 1 = 6
6 X 2 = 12
6 X 3 = 18
6 X 4 = 24
6 X 5 = 30
6 X 6 = 36
6 X 7 = 42
6 X 8 = 48
6 X 9 = 54
6 X 10 = 60
7 X 1 = 7
7 X 2 = 14
7 X 3 = 21
7 X 4 = 28
7 X 5 = 35
7 X 6 = 42
7 X 7 = 49
7 X 8 = 56
7 X 9 = 63
7 X 10 = 70
```

```
for x in range(1,11):print(2," X ",x,"=",x * 2,"\t",3,"X",x,"=",x*3,"\
t",4,"X",x,"=",x*4,"\t",5,"X",x,"=",x*5,"\t",6,"X",x,"=",x*6)
```

```
for x in range(1,11):
    print(2," X ",x,"=",x * 2)
    if x >= 10  :
        for x in range(1,11):
            print(3," X ",x,"=",x * 3)
        for x in range(1,11):
            print(4," X ",x,"=",x * 4)
```

```
2  X  1 = 2
2  X  2 = 4
2  X  3 = 6
2  X  4 = 8
2  X  5 = 10
2  X  6 = 12
```

```
2  X  7 = 14
2  X  8 = 16
2  X  9 = 18
2  X  10 = 20
3  X  1 = 3
3  X  2 = 6
3  X  3 = 9
3  X  4 = 12
3  X  5 = 15
3  X  6 = 18
3  X  7 = 21
3  X  8 = 24
3  X  9 = 27
3  X  10 = 30
4  X  1 = 4
4  X  2 = 8
4  X  3 = 12
4  X  4 = 16
4  X  5 = 20
4  X  6 = 24
4  X  7 = 28
4  X  8 = 32
4  X  9 = 36
4  X  10 = 40
```

```
print("hello")
print(" world")
print("hello",end =" oooooo ")
print("python")

print("hello",end=" ")
print("rohit")

print("hello",end="")
print("python")

print("hello",end=" everyone  ")
print("python",end = " ")
print("is good")

for r in range(5):
    print("*")
```

```
*
*
*
*
*
```

```
for v in "*****":
    print(v)
```

```
*
*
*
*
*
```

```
for j in ("*"*5):
    print(j)
```

```
*
*
*
*
*
```

for loop in one line

```
lst = []
for x in range(0,4): lst.append(x)
print(lst)
```

Transfer Statemente

break

The break statement is used to terminate the loop instantly when it is encountered.

```
for x in range(0,5):
    if x>3:
        break
    print(x)
print("hello")
```

```
0
1
2
3
hello
```

```
# here it breaks the innermost loop
for x in range(1):
    for y in range(2):
        for z in range(5):
            if z>2:                          # z ki value ho gyi 3 tb
break ho gya.
                print("i an breaking it")
```

```
                break
        print(z)
```

```
i an breaking it
3
i an breaking it
3
```

```
for x in range(2):
    for y in range(3):
        for z in range(5):
            if z>3:                             # z ki value ho gyi 4 tb
break ho gya.
                print("i an breaking it")
                break
        print(z)
```

```
i an breaking it
4
i an breaking it
4
i an breaking it
4
i an breaking it
4
i an breaking it
4
i an breaking it
4
```

```
for x in range(2):
    for y in range(1):
        for z in range(5):
            if z>2:
                print("iooooooi")
                break
            print(z)
```

```
0
1
2
iooooooi
0
1
2
iooooooi
```

```
for x in range(2):
    for y in range(1):
        for z in range(1):
            for w in range(4):
```

```
                if w==1:
                    print("hello")
                    continue
                print(w)
```

```
0
hello
2
3
0
hello
2
3
```

```
for e in range(5,0,-1):
    w =("*")
    print(e*w)
```

```
*****
****
***
**
*
```

```
for e in range(6):
    w =("*  ")
    print(e*w)
```

```
*
*  *
*  *  *
*  *  *  *
*  *  *  *  *
```

```
for e in range(6):
    w =("*")
    print(e*w,"\n",end=" ")
```

```
 *
 **
 ***
 ****
 *****
```

Continue

The continue statement skips the current iteration of the loop and jumps to the next iteration

```
for x in range(5):
    print(x)
    continue
    print(x+1)
```

```
0
1
2
3
4
```

```
for x in range(5):
    if x==3:
        continue
    print(x)
```

```
0
1
2
4
```

pass

The pass statement does nothing .it is used to create an empty block that may be useful in future

```
for x in range(5):
    pass

for x in range(5):
    continue

for x in range(2):
    pass
    print("hello")
```

```
hello
hello
```

```
y = 3
for x in range(4):
    if x==y:
        continue
    print("hello")
```

```
hello
hello
hello
```

```
for q in range(7):
    if q==3:
        pass
    print(q)
```

```
for q in range(5):
    if q==3:
        continue
    print(q)
```

```
y=6
if y>3:
    pass
print("kdkd")
```

```
kdkd
```

```
y=6
if y>4:
    continue
print("kdkd")
```

```
  Cell In[59], line 3
    continue
    ^
SyntaxError: 'continue' not properly in loop
```

```
y=6
if y>3:
    break
print("kdkd")
```

```
0 or True
```