Data Science & AI
&
NIC - Param

Python-For Data Science

Flow Control Statements

Lecture No.- 04

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Recap of Previous Lecture

Topic Control Flow Statement - 03

Topics to be Covered

Topic Control Flow Statement - 04

Topic : Control Flow Statements

```
for i in range(1,4):
    Code
```

i=1 → code ✓

i=2 → code ✓

i=3 → code ✓

i = 1, 2, 3 → code ✓

```
for i in range(1,4):
    code
```

```
for j in range(1,5):
    print(j, end='')
```

j	
1	1
2	2
3	3
4	4

1234

i = 1,2,3 → code ✓

```
for i in range(1,4):
    for j in range(1,5):
        print(j, end='')
```

code

i = 1

j = 1,2,3,4

1 2 3 4

1234_

i	
1	code ✓ ↓ j: 1 ⇒ Print(1, end='') 2 ⇒ Print(2, end='') 3 ⇒ Print(3, end='') 4 ⇒ Print(4, end='')
2	code ✓
3	code ✓

1234

i = 1,2,3 → code ✓

```
for i in range(1,4):
    for j in range(1,5):
        print(j, end='')
```

code

i = 1

j = 1,2,3,4

1 2 3 4

1234 1234

i	
1	code ✓ → j: 1 ⇒ Print(1, end='') 2 ⇒ Print(2, end='') 3 ⇒ Print(3, end='') 4 ⇒ Print(4, end='') 1234
2	code ✓ → j: 1 ✓ 2 ✓ 3 ✓ 4 ✓
3	code ✓

i = 1,2,3 → code ✓

```
for i in range(1,4):
    for j in range(1,5):
        print(j, end='')
```

code

i

1 → code ✓

↓

j

1 ⇒ Print(1, end='')
2 ⇒ Print(2, end='')
3 ⇒ Print(3, end='')
4 ⇒ Print(4, end='')

1234

2 → code ✓

3 → code ✓

i = 1

j = 1,2,3,4

1 2 3 4

1234 1234 1234

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

code

```
    for j in range(1,5):
        print(i,j)
```

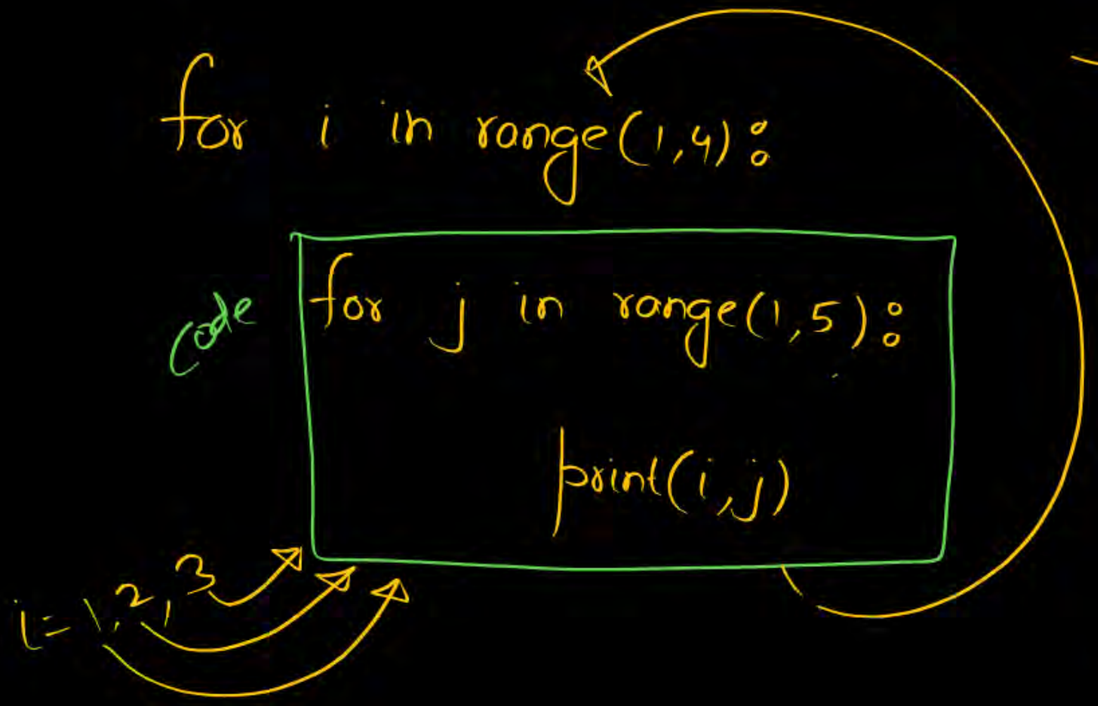
i			
1	j = 1	Print(i,j)	1 1
			–

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

code

```
    for j in range(1,5):
        print(i,j)
```

i			
1	j = 1	Print(i,j)	1 1
	j = 2	Print(i,j)	1 2
			—



i			
1	j = 1	Print(i,j)	1 1
	j = 2	Print(i,j)	1 2
	j = 3	Print(i,j)	1 3
	j = 4	Print(i,j)	1 4
2	j = 1	Print(i,j)	2 1
	j = 2	Print(i,j)	2 2
	j = 3	Print(i,j)	2 3
	j = 4	Print(i,j)	2 4
3	j = 1	Print(i,j)	3 1
	j = 2	Print(i,j)	3 2
	j = 3	Print(i,j)	3 3
	j = 4	Print(i,j)	3 4

Nested loop

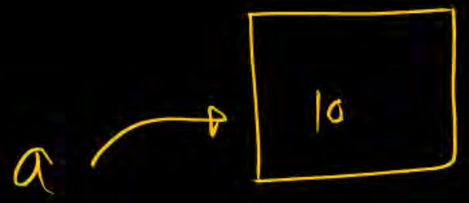
```
for i in range(1,4):
    ① for j in range(1,5):
            print(i,j, end=' ')
    ② print()
```

Code

previous 8 video

i	
1	① inner loop j = 1, j = 2, j = 3, j = 4 — 1 1 1 2 1 3 1 4 ② Print() ⇒ new line
2	① inner loop (j) j = 1, j = 2, j = 3, j = 4 — 2 1 2 2 2 3 2 4 ② Print() → new line
3	① inner loop (j) j = 1, j = 2, j = 3, j = 4 — 3 1 3 2 3 3 3 4 ② Print() → new line

$a = 10$



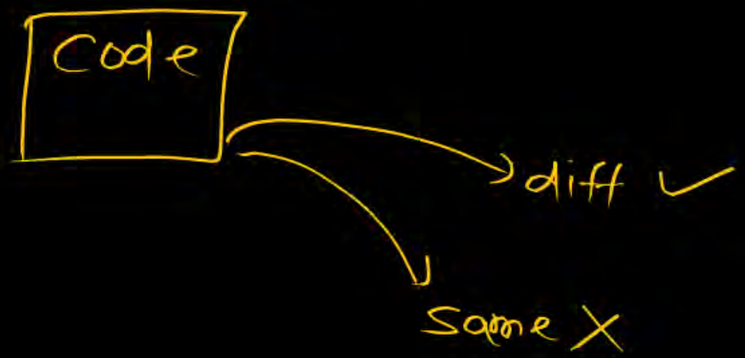
$a == 20$ (whether a is equal to 20)

①

Pankaj
Pankaj
Pankaj
Pankaj

```
for i in range(1,5):
    print("Pankaj")
```

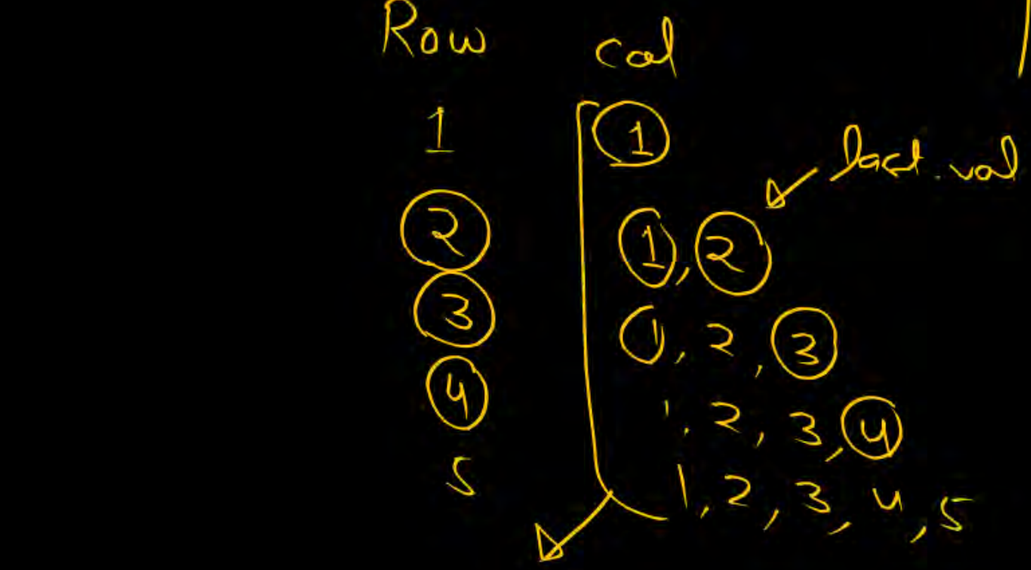
for Row in range(1,6):



Row 1	1
2	1 2
3	1 2 3
4	1 2 3 4
5	1 2 3 4 5

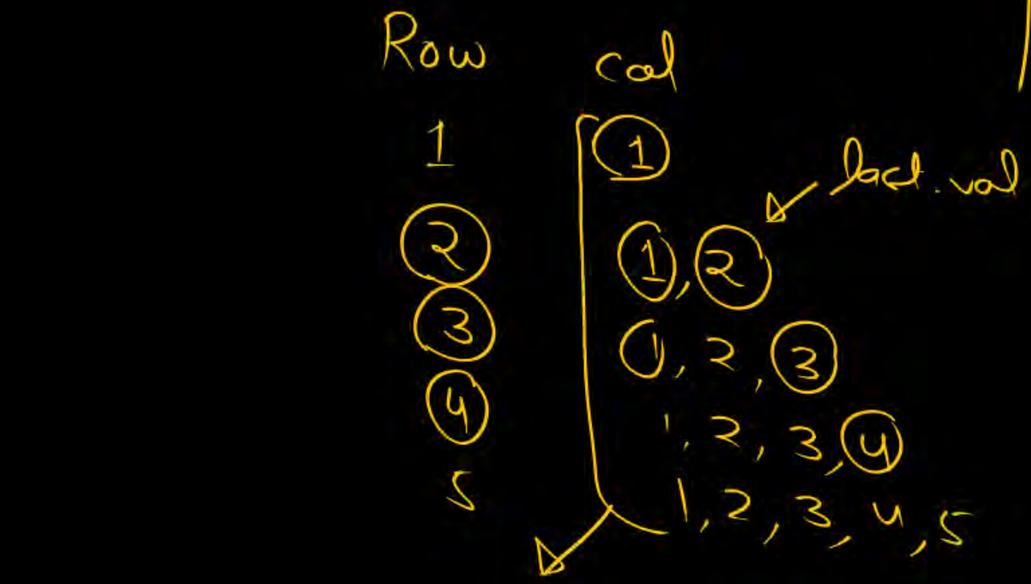
```
for Row in range(1,6):
    Code
```

Row \ col	1	2	3	4	5
1	1				
2	1	2			
3	1	2	3		
4	1	2	3	4	
5	1	2	3	4	5



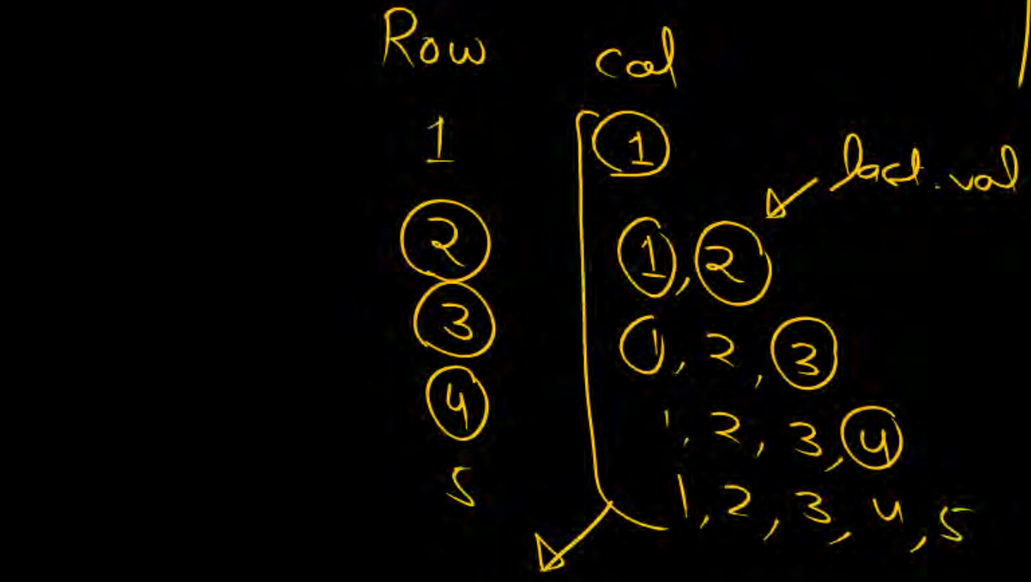
```
for Row in range(1,6):
    for col in range(1, Row+1):
        Code
```

Row \ col	1	2	3	4	5
1	1				
2	1	2			
3	1	2	3		
4	1	2	3	4	
5	1	2	3	4	5



```
for Row in range(1,6):
    for col in range(1, Row+1):
        print(col, sep='', end='')
```

Row \ col	1	2	3	4	5
1	1				
2	1	2			
3	1	2	3		
4	1	2	3	4	
5	1	2	3	4	5



```
for Row in range(1,6):
    for col in range(1, Row+1):
        print(col, sep='', end='')
    print()
```

Row \ col	1 2 3 4 5
1	1
2	1 2
3	1 2 3
4	1 2 3 4
5	1 2 3 4 5

Row	col		
1	1	print(1)	1
2	1	print(1)	12
	2	print(2)	

```
for Row in range(1,6):
    for col in range(1, Row+1):
        print(col, sep='', end='')
    print()
```

Row \ col	1	2	3	4	5	6
1	1					
2	1	2				
3	1	2	3			
4	1	2	3	4		
5	1	2	3	4	5	
6	1	2	3	4	5	6

Row \ col	1	2	3	4	5
1	1				
2	1	2			
3	1	2	3		
4	1	2	3	4	
5	1	2	3	4	5

```
n = int(input("Enter a number"))
for Row in range(1, n+1):
    for col in range(1, Row+1):
        print(col, sep="", end="")
    print()
```

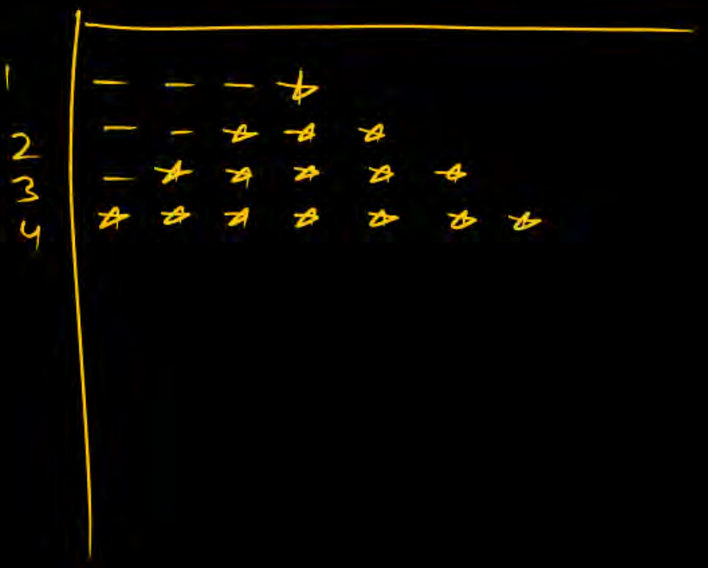
Row \ col	1	2	3	4	5	6
1	1					
2	1	2				
3	1	2	3			
4	1	2	3	4		
5	1	2	3	4	5	
6	1	2	3	4	5	6

Row \ col	1	2	3	4	5
1	1				
2	1	2			
3	1	2	3		
4	1	2	3	4	
5	1	2	3	4	5

```
for rows in range(1,5):
```

① some space to be printed

② some star to be printed



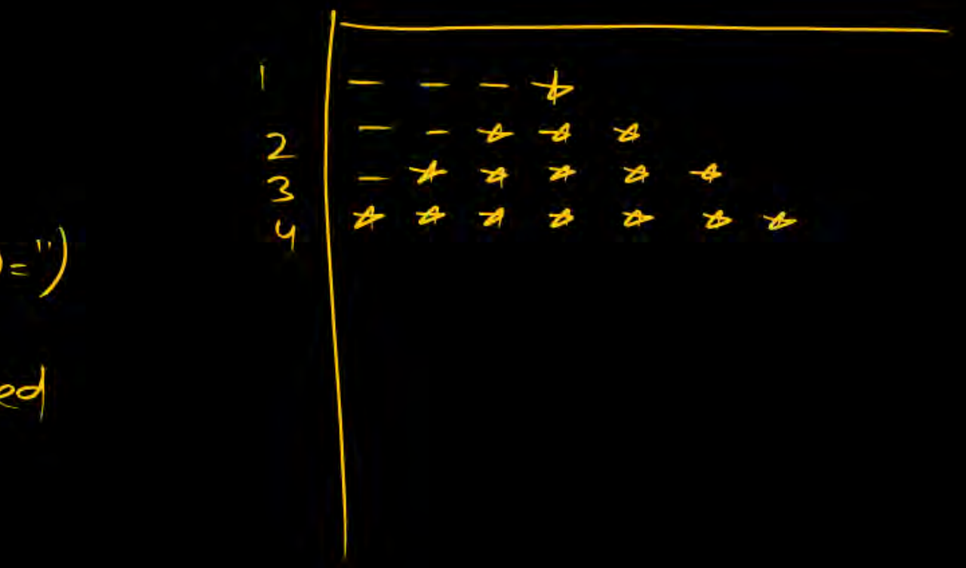
Row	space
1	3
2	2
3	1
4	0

Row + space = 4

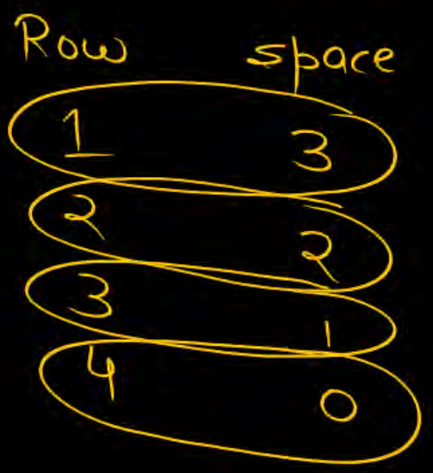
space = 4 - Row

```
for rows in range(1,5):
    print(' ' * (4- rows), end='')
```

② some star to be printed



rows	
1	' ' X (4-1) ⇒ ---*
2	' ' X (4-2) ⇒ --**
3	' ' X (4-3) ⇒ -***
4	' ' X (0) ⇒ ****



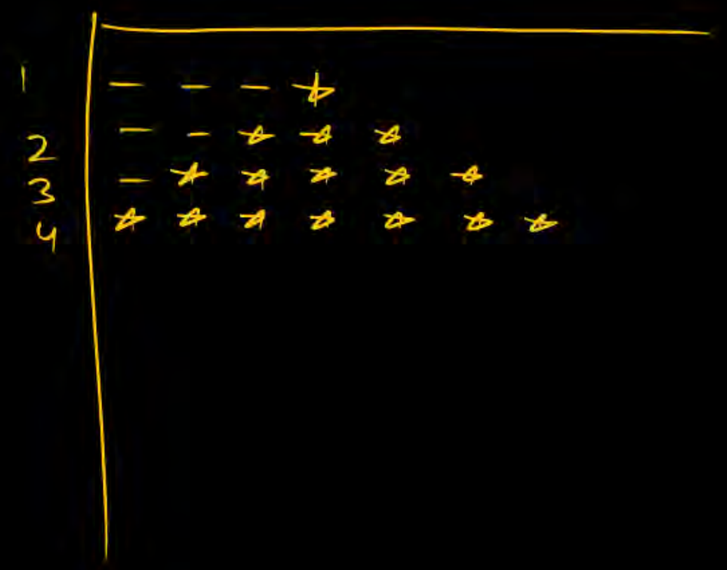
Row + space = 4

space = 4 - Row

```
for rows in range(1,5):
    print(' ' * (4- rows), end='')
    print('*' * (2*rows-1))
```

Row	star	star ⇒ 2·row−1
1	1	⇒ 2·1−1
2	3	⇒ 2·2−1
3	5	⇒ 2·3−1
4	7	⇒ 2·4−1

```
for rows in range(1,5):
    print(' ' * (4 - rows), end='')
    print('*' * (2*rows-1))
```



rows


```
for rows in range(1,n+1):
    print(' ' * (n - rows), end='')
    print('*' * (2*rows-1))
```

H.W

① 1 2 3 4
1 2 3
1 2
1

② 1 2 3 4
1 2 3
1 2
1

③
1
1 2
1 2 3
1 2 3 4

④

using nested loop

t.me/PWpankajsirP

Python loop

loop with else

```
for i in range(1,11):
    if i%5==0:
        break
    print(i)
else:
    print("Hello")
```

Code will execute if we came out of loop without break

H.W

Review

control flow ✓
loop

complaint


String
1
2
Extra class

In [1]:
```
for i in range(1,4):
    for j in range(1,5):
        print(j,end='')
```

```
123412341234
```

In [3]:
```
for i in  range(1,4):
    for j in range(1,5):
        print(i,j)
```

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

In [4]:
```
for i in  range(1,4):
    for j in range(1,5):
        print(i,j,end='')
    print()
```

```
1 11 21 31 4
2 12 22 32 4
3 13 23 33 4
```

In [5]:
```
for i in  range(1,4):
    for j in range(1,5):
        print(i,j,end=' ')
    print()
```

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

In [6]:
```
for i in  range(1,4):
    for j in range(1,5):
        print(i,j,sep='',end=' ')
    print()
```

```
11 12 13 14
21 22 23 24
31 32 33 34
```

In [7]:
```
for row in range(1,6):
    for col in range(1,row+1):
        print(col,sep='',end='')
    print()
```

```
1
12
123
1234
12345
```

In [9]:
```
for row in range(1,6):
    for col in range(1,row+1):
        print('*',end='')
    print()
```

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

In [10]:
```
n=int(input("enter a number"))
for row in range(1,n+1):
    for col in range(1,row+1):
        print(col,end='')
    print()
```

```
enter a number5
1
12
123
1234
12345
```

In [11]:
```
n=int(input("enter a number"))
for row in range(1,n+1):
    for col in range(1,row+1):
        print(col,end='')
    print()
```

```
enter a number7
1
12
123
1234
12345
123456
1234567
```

In [12]:
```
n=int(input("enter a number"))
for row in range(1,n+1):
    for col in range(1,row+1):
        print(col,end='')
    print()
```

```
enter a number10
1
12
123
1234
12345
123456
1234567
12345678
123456789
12345678910
```

In [13]:
```
for row in range(1,5):
    print(' '*(4-row),end='')
    print('*'*(2*row-1))
```

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

In [14]:
```
n=int(input("enter number"))
for row in range(1,n+1):
    print(' '*(n-row),end='')
    print('*'*(2*row-1))
```

```
enter number6
     *
    ***
   *****
  *******
 *********
***********
```

In [15]:
```
n=int(input("enter number"))
for row in range(1,n+1):
    print(' '*(n-row),end='')
    print('*'*(2*row-1))
```

```
enter number15
              *
             ***
            *****
           *******
          *********
         ***********
        *************
       ***************
      *****************
     *******************
    *********************
   ***********************
  *************************
 ***************************
*****************************
```

In [16]:
```
n=int(input("enter number"))
for row in range(1,n+1):
    print(' '*(n-row),end='')
    print('*'*(2*row-1))
```

```
enter number20
                    *
                   ***
                  *****
                 *******
                *********
               ***********
              *************
             ***************
            *****************
           *******************
          *********************
         ***********************
        *************************
       ***************************
      *****************************
     *******************************
    *********************************
   ***********************************
  *************************************
 ***************************************
*****************************************
```

In [18]:
```
for i in range(1,11):
    if i%5==0:
        break
    print(i)
else :
    print("Hello")#this will not execute as we r coming out of loop using break
```

```
1
2
3
4
```

In [19]:
```
for i in range(1,11):
    if i%50==0:
        break
    print(i)
else :
    print("Hello")#this will execute
```

```
1
2
3
4
5
6
7
8
9
10
Hello
```

In [ ]:
```

```

THANK - YOU