Loops -- in software program if a task to be perform repeatedly, we use loops. It may be because of condition base or due to due to repeated actions.

There are two types of loops

- While loop
- For loop

```python
In [1]: print('data science')
        print('data science')
        print('data science')
        print('data science')
        print('data science')
```

```
data science
data science
data science
data science
data science
```

```python
In [2]: i = 1          # initializing

        while i<=3:     # condition
            print('data science')
            i = i + 1  # increment
```

```
data science
data science
data science
```

```python
In [4]: i = 5          # initializing

        while i>=1:     # condition
            print('data science')
            i = i - 1  # decrement
```

```
data science
data science
data science
data science
data science
```

```python
In [5]: i = 1          # initializing
        while i<=5:     # condition
            print('data science : ', i)
            i = i + 1  # increment
```

```
data science :  1
data science :  2
data science :  3
data science :  4
data science :  5
```

```python
In [3]: i = 5
        while i >=1:
            print('data science :', i)
            i = i - 1
```

```
data science : 5
data science : 4
data science : 3
data science : 2
data science : 1
```

```python
In [6]: #nested while loop
        i = 1

        while i <=5:
            print('data science :', i)
            j =1
            while j <=4:
                print('technology : ', j)
                j = j + 1
            i = i +1
```

```
data science : 1
technology :  1
technology :  2
technology :  3
technology :  4
data science : 2
technology :  1
technology :  2
technology :  3
technology :  4
data science : 3
technology :  1
technology :  2
technology :  3
technology :  4
data science : 4
technology :  1
technology :  2
technology :  3
technology :  4
data science : 5
technology :  1
technology :  2
technology :  3
technology :  4
```

```python
In [15]: i = 1
```

```python
while i <= 5:
    print('data science', end= ' ')
    j = 1
    while j <=4:
        print('technology', end= ' ')
        j = j + 1

    i = i + 1
    print()
```

```
data science technology technology technology technology
data science technology technology technology technology
data science technology technology technology technology
data science technology technology technology technology
data science technology technology technology technology
```

In [17]:
```python
# lets use while loop usig some numbers
i = 1

while i <= 2 :
    j = 0
    while  j <= 2 :
        print(i*j, end=" ")
        j += 1
    print()
    i += 1
```

```
0 1 2
0 2 4
```

In [22]:
```python
i = 1

while i <= 4:
    j =0
    while j <=4:
        print(i * j, end = " ")
        j = j + 1
    i = i + 1
    print()
```

```
0 1 2 3 4
0 2 4 6 8
0 3 6 9 12
0 4 8 12 16
```

In [24]:
```python
name = 'vinay'

for i in name:
    print(i)
```

```
v
i
n
a
y
```

In [29]:
```python
name1 = [1,3.5,'vinay'] #i want print the value individualy

for i in name1:
    print(i, end = " ")
```

```
1 3.5 vinay
```

In [31]:
```python
range(10)
```

Out[31]:
```
range(0, 10)
```

In [33]:
```python
for i in range(10):
    print(i)
```

```
0
1
2
3
4
5
6
7
8
9
```

In [35]:
```python
for i in range(2,10):
    print(i)
```

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

In [40]:
```python
for i in range(1,10,4):
    print(i)
```

```
1
5
9
```

In [48]:
```python
for i in range(5):
    print(i)
```

```
0
1
2
3
4
```

In [56]:
```python
# multiple of 5
for i in range(1,11):
    j = 5
    print(f'{j} * {i} = {i * j}')
    i +=1
```

```
5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

In [58]:
```python
#brek statement breaks the loop
for i in range(1,11):
    if i == 6:
        break
    print(i)
```

```
1
2
3
4
5
```

In [64]:
```python
# continue statement skips the condition mentioned and continues
for i in range(1,11):
    if i == 3:
        continue
    print(i)
```

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

In [70]:
```python
##PASS Statement - pass the code & it wont go ( code give you the error)
for i in range(1,11):
    pass
```

In [8]:
```python
for i in range(10):
    if i == 3:
        print(i)
    else:
        print('number not found')
    i = i + 1
```

```
number not found
number not found
number not found
3
number not found
number not found
number not found
number not found
number not found
number not found
```

In [10]:
```python
# for else
for i in range(10):
    if i == 3:
        print(i)
    i = i + 1
else:
        print('number not found')
```

```
3
number not found
```

In [ ]:

In [ ]:

In [ ]: