```
In [1]:   #A.If - else statement:

In [2]:   #Example-01:

In [3]:   A = 10
          B = 20
          A,B

Out[3]:   (10, 20)

In [4]:   if A>B:
              print("A is greater than B.")
          else:
              print("B is greater than A.")

          B is greater than A.

In [5]:   #Example-02:

In [6]:   X = 190
          Y = 120
          Z = 260
          X,Y,Z

Out[6]:   (190, 120, 260)

In [7]:   if (X>Y) & (X>Z):
              print("X is the greatest number.")
          elif(Y>X) & (Y>Z):
              print("Y is the greatest number.")
          else:
              print("Z is the greatest number.")

          Z is the greatest number.
```

```
In [8]:    #Example-03:
```

```
In [9]:    p = 23.45
           q = 12.16
           r = 45
           s = 10.19
           p,q,r,s
```

```
Out[9]:    (23.45, 12.16, 45, 10.19)
```

```
In [10]:   if (p>q) & (p>r) & (p>s):
               print("P is the greatest number.")
           elif(q>p) & (q>r) & (q>s):
               print("Q is the greatest number.")
           elif(r>p) & (r>q) & (r>s):
               print("R is the greatest number.")
           else:
               print("S is the greatest number.")
```

```
           R is the greatest number.
```

```
In [11]:   #a.if - else statement with tuple:
```

```
In [12]:   #Example-01:
```

```
In [13]:   tup1 = ('a','q','m')
```

```
In [14]:   tup1
```

```
Out[14]:   ('a', 'q', 'm')
```

```
In [15]:   if "a" in tup1:
               print("The entered alphabet is present in tuple1.")
           else:
               print("The entered alphabet is not present in tuple1.")
```

The entered alphabet is present in tuple1.

In [16]: `# Example-02:`

In [17]:
```python
tup2 = ('w','p','x')
tup2
```

Out[17]: ('w', 'p', 'x')

In [18]:
```python
if "z" in tup2:
    print("The entered alphabet is present in tuple2.")
else:
    print("The entered alphabet is not present in tuple2.")
```

        The entered alphabet is not present in tuple2.

In [19]: `#Example-03:`

In [20]:
```python
tup3 = (19,25,8)
tup3
```

Out[20]: (19, 25, 8)

In [21]:
```python
if 19 in tup3:
    print("The entered number is present in tuple3.")
else:
    print("The entered number is not present in tuple3.")
```

        The entered number is present in tuple3.

In [22]:
```python
if 45 in tup3:
    print("The entered number is present in tuple3.")
else:
    print("The entered number is not present in tuple3.")
```

        The entered number is not present in tuple3.

```
In [23]:  #b.if-else statement with list:
```

```
In [24]:  #Example-01:
```

```
In [25]:  list1 = [12,34,'x','t',9-8j]
          list1
```

```
Out[25]:  [12, 34, 'x', 't', (9-8j)]
```

```
In [26]:  if list1[0] == 12:
              list1[0] = list1[0] + 20
```

```
In [27]:  list1
```

```
Out[27]:  [32, 34, 'x', 't', (9-8j)]
```

```
In [28]:  if list1[1] == 34:
              list1[1] = list1[1] - 10
```

```
In [29]:  list1
```

```
Out[29]:  [32, 24, 'x', 't', (9-8j)]
```

```
In [30]:  if list1[3] == 'p':
              list1[3] = "Mango"
          else:
              list1[3] = "Apple"
```

```
In [31]:  list1
```

```
Out[31]:  [32, 24, 'x', 'Apple', (9-8j)]
```

```
In [32]:  #Example-02:
```

```
In [33]:  list2 = ["Big",7+3j,8-5j]
          list2
```

```
Out[33]: ['Big', (7+3j), (8-5j)]
```

```
In [34]: if list2[-1] == 8-5j:
             list2[-1] = "Mike"
```

```
In [35]: list2
```

```
Out[35]: ['Big', (7+3j), 'Mike']
```

```
In [36]: #Example-03:
```

```
In [37]: list3 = [-7,"*",'Rat']
         list3
```

```
Out[37]: [-7, '*', 'Rat']
```

```
In [38]: if list3[-2] == "*":
             list3[-2] = "@"
```

```
In [39]: list3
```

```
Out[39]: [-7, '@', 'Rat']
```

```
In [40]: #c.if-else with dictionary:
```

```
In [41]: #Example-01:
```

```
In [42]: dict1 = {'k1':10,"k2":25,'k3':90}
         dict1
```

```
Out[42]: {'k1': 10, 'k2': 25, 'k3': 90}
```

```
In [43]: if dict1['k1'] == 10:
             dict1["k1"] = 190
```

```
In [44]: dict1
```

Out[44]: {'k1': 190, 'k2': 25, 'k3': 90}

```
In [45]: #Example-02:
```

```
In [46]: dict2 = {"x1":45,'x2':32,'x3':67}
         dict2
```

Out[46]: {'x1': 45, 'x2': 32, 'x3': 67}

```
In [47]: if dict2['x2'] == 2:
             dict2['x2'] = dict2['x2']+8
         else:
             dict2['x2'] = dict2['x2']-8
```

```
In [48]: dict2
```

Out[48]: {'x1': 45, 'x2': 24, 'x3': 67}

```
In [49]: #Example-03:
```

```
In [50]: dict3 = {'z1':16,'z2':90,'z3':65}
         dict3
```

Out[50]: {'z1': 16, 'z2': 90, 'z3': 65}

```
In [51]: if dict3['z2'] == 90:
             dict3['z2'] = {'m1':35,'m2':78,'m3':39}
```

```
In [52]: dict3
```

Out[52]: {'z1': 16, 'z2': {'m1': 35, 'm2': 78, 'm3': 39}, 'z3': 65}

```
In [53]: #d.if-else statement with set:
```

```
In [54]:    #Example-01:

In [55]:    set1 = {19,27,45,76}
            set1

Out[55]:    {19, 27, 45, 76}

In [56]:    if 19 in set1:
                set1.add(90)

In [57]:    set1

Out[57]:    {19, 27, 45, 76, 90}

In [58]:    #Example-02:

In [59]:    set2 = {'p','q','r','w'}
            set2

Out[59]:    {'p', 'q', 'r', 'w'}

In [60]:    if "p" in set2:
                set2.update('a','b','Park')

In [61]:    set2

Out[61]:    {'P', 'a', 'b', 'k', 'p', 'q', 'r', 'w'}

In [62]:    #Example-03:

In [63]:    set3 = {45,23,89,67}
            set3

Out[63]:    {23, 45, 67, 89}

In [64]:    if 9 in set3:
```

```
        set3.update('*','+',"@","!")
    else:
        set3.update("A","B","C")
```

In [65]: `set3`

Out[65]: `{23, 45, 67, 89, 'A', 'B', 'C'}`

In [66]: `# int, float and complex data types are not iterable in set.`

In [67]: `#B.While loop:`

In [68]: `#Example-01:`

In [69]:
```
i = 1
while i <= 10:
    print(i)
    i = i + 1
```

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

In [70]: `#Example-02:`

In [71]:
```
i = 20
while i <= 100:
    print(i)
    i = i + 5
```

```
20
25
30
35
40
45
50
55
60
65
70
75
80
85
90
95
100
```

In [72]: `#Example-03:`

In [73]:
```python
i = 50
while i >= 5:
        print(i)
        i = i - 5
```

```
50
45
40
35
30
25
20
15
10
5
```

In [74]: `# Example-04:`

```
In [75]: i = 1
         n = 2
         while i <= 10:
             print(n,"*",i,"=",n*i)
             i = i + 1
```

```
2 * 1 = 2
2 * 2 = 4
2 * 3 = 6
2 * 4 = 8
2 * 5 = 10
2 * 6 = 12
2 * 7 = 14
2 * 8 = 16
2 * 9 = 18
2 * 10 = 20
```

```
In [76]: #Example-02:
```

```
In [77]: i = 4
         n = 5
         while i <= 20:
             print(n,"*",i,'=',i*n)
             i = i + 3
```

```
5 * 4 = 20
5 * 7 = 35
5 * 10 = 50
5 * 13 = 65
5 * 16 = 80
5 * 19 = 95
```

```
In [78]: #Example-03:
```

```
In [79]: i = 400
         n = 25
         while i >= 20:
```

```
    print(n,"*",i,'=',i*n)
    i = i - 10
```

```
25 * 400 = 10000
25 * 390 = 9750
25 * 380 = 9500
25 * 370 = 9250
25 * 360 = 9000
25 * 350 = 8750
25 * 340 = 8500
25 * 330 = 8250
25 * 320 = 8000
25 * 310 = 7750
25 * 300 = 7500
25 * 290 = 7250
25 * 280 = 7000
25 * 270 = 6750
25 * 260 = 6500
25 * 250 = 6250
25 * 240 = 6000
25 * 230 = 5750
25 * 220 = 5500
25 * 210 = 5250
25 * 200 = 5000
25 * 190 = 4750
25 * 180 = 4500
25 * 170 = 4250
25 * 160 = 4000
25 * 150 = 3750
25 * 140 = 3500
25 * 130 = 3250
25 * 120 = 3000
25 * 110 = 2750
25 * 100 = 2500
25 * 90 = 2250
25 * 80 = 2000
25 * 70 = 1750
25 * 60 = 1500
25 * 50 = 1250
25 * 40 = 1000
```

```
25 * 30 = 750
25 * 20 = 500
```

In [80]: `#Example-04:`

In [81]:
```python
i = 8
n = 10
while i >=2:
    while n >= 1:
        print(n,'*',i,'=',i*n)
        n = n - 1
        i = i - 1
```

```
10 * 8 = 80
9 * 7 = 63
8 * 6 = 48
7 * 5 = 35
6 * 4 = 24
5 * 3 = 15
4 * 2 = 8
3 * 1 = 3
2 * 0 = 0
1 * -1 = -1
```

In [82]:
```python
i = 80
n = 100
while i >=20:
    while n >= 10:
        print(n,'*',i,'=',i*n)
        n = n - 5
        i = i - 5
```

```
100 * 80 = 8000
95 * 75 = 7125
90 * 70 = 6300
85 * 65 = 5525
80 * 60 = 4800
```

```
75 * 55 = 4125
70 * 50 = 3500
65 * 45 = 2925
60 * 40 = 2400
55 * 35 = 1925
50 * 30 = 1500
45 * 25 = 1125
40 * 20 = 800
35 * 15 = 525
30 * 10 = 300
25 * 5 = 125
20 * 0 = 0
15 * -5 = -75
10 * -10 = -100
```

In [83]: `#a.while loop with tuple:`

In [84]: `#Example-01:`

In [85]:
```python
tup1 = (10,20,30,40)
tup1
```

Out[85]: `(10, 20, 30, 40)`

In [86]:
```python
i = 0
while i < len(tup1):
    print(tup1[i])
    i = i+1
```

```
10
20
30
40
```

In [87]: `#Example-02:`

In [88]: `tup2 = (10,23.45,"A",'Mango','b',23+89j,True)`

```
tup2
```

Out[88]: (10, 23.45, 'A', 'Mango', 'b', (23+89j), True)

In [89]:
```python
i = 2
while i < len(tup2):
    print(tup2[i])
    i = i+1
```

A
Mango
b
(23+89j)
True

In [90]:
```python
#Example-03:
```

In [91]:
```python
tup3 = ("Robbin likes pizza.","String","*","+",90,False,77-98j)
tup3
```

Out[91]: ('Robbin likes pizza.', 'String', '*', '+', 90, False, (77-98j))

In [92]:
```python
i = -1
while i >= -(len(tup3)):
        print(tup3[i])
        i = i - 1
```

(77-98j)
False
90
+
*
String
Robbin likes pizza.

In [93]:
```python
#b.while loop with list:
```

In [94]:
```python
#Example-01:
```

```
In [95]: list1 = [12,34,56,78,90]
         list1
```

Out[95]: [12, 34, 56, 78, 90]

```
In [96]: i = 0
         while i < len(list1):
             list1[i] = list1[i] + 100
             print(list1[i])
             i = i + 1
```

```
112
134
156
178
190
```

```
In [97]: #Example-02:
```

```
In [98]: list2 = [ 2,4,6,8,10,12,14,16,18,20]
         list2
```

Out[98]: [2, 4, 6, 8, 10, 12, 14, 16, 18, 20]

```
In [99]: i = 0
         while i < len(list2):
             list2[i] = list2[i]*5
             print(list2)
             i = i + 1
```

```
[10, 4, 6, 8, 10, 12, 14, 16, 18, 20]
[10, 20, 6, 8, 10, 12, 14, 16, 18, 20]
[10, 20, 30, 8, 10, 12, 14, 16, 18, 20]
[10, 20, 30, 40, 10, 12, 14, 16, 18, 20]
[10, 20, 30, 40, 50, 12, 14, 16, 18, 20]
[10, 20, 30, 40, 50, 60, 14, 16, 18, 20]
[10, 20, 30, 40, 50, 60, 70, 16, 18, 20]
```

```
[10, 20, 30, 40, 50, 60, 70, 80, 18, 20]
[10, 20, 30, 40, 50, 60, 70, 80, 90, 20]
[10, 20, 30, 40, 50, 60, 70, 80, 90, 100]
```

In [100]: `#Example-03:`

In [101]:
```python
list3 = ["Rejina",'Balloon','P','h','+','%',True,98,76.54,900-8j]
list3
```

Out[101]: `['Rejina', 'Balloon', 'P', 'h', '+', '%', True, 98, 76.54, (900-8j)]`

In [102]:
```python
i = -1
while i >= -(len(list3)):
    print(list3[i])
    i = i - 1
```

```
(900-8j)
76.54
98
True
%
+
h
P
Balloon
Rejina
```

In [103]: `#C.For loop with dictionary:`

In [104]: `#a.For loop with tuple:`

In [105]: `#Example-01:`

In [106]:
```python
tuple1 = ('Mango','Orange','Joker','Dude')
tuple1
```

Out[106]: `('Mango', 'Orange', 'Joker', 'Dude')`

```
In [107]: for i in tuple1:
              print(i)

          Mango
          Orange
          Joker
          Dude
```

```
In [108]: #Example-02:
```

```
In [109]: tuple2 = (10,20,30,40)
          tuple3 = ('x','y','z')
          tuple2,tuple3
```

```
Out[109]: ((10, 20, 30, 40), ('x', 'y', 'z'))
```

```
In [110]: for i in tuple2:
              for j in tuple3:
                  print(i,'=>',j)

          10 => x
          10 => y
          10 => z
          20 => x
          20 => y
          20 => z
          30 => x
          30 => y
          30 => z
          40 => x
          40 => y
          40 => z
```

```
In [111]: #Example-03:
```

```
In [112]: tuple4 = ('I like to eat')
          tuple5 = ("=>")
```

```
tuple6 = ('Mangoes','Apples',"Grapes",'Cashew Nuts','Almonds')
tuple4,tuple5,tuple6
```

Out[112]: ('I like to eat',
            '=>',
            ('Mangoes', 'Apples', 'Grapes', 'Cashew Nuts', 'Almonds'))

In [113]:
```
for i in tuple4:
    for j in tuple5:
        for k in tuple6:
            print(i,j,k)
```

```
I = Mangoes
I = Apples
I = Grapes
I = Cashew Nuts
I = Almonds
I > Mangoes
I > Apples
I > Grapes
I > Cashew Nuts
I > Almonds
  = Mangoes
  = Apples
  = Grapes
  = Cashew Nuts
  = Almonds
  > Mangoes
  > Apples
  > Grapes
  > Cashew Nuts
  > Almonds
l = Mangoes
l = Apples
l = Grapes
l = Cashew Nuts
l = Almonds
l > Mangoes
l > Apples
```

```
l > Grapes
l > Cashew Nuts
l > Almonds
i = Mangoes
i = Apples
i = Grapes
i = Cashew Nuts
i = Almonds
i > Mangoes
i > Apples
i > Grapes
i > Cashew Nuts
i > Almonds
k = Mangoes
k = Apples
k = Grapes
k = Cashew Nuts
k = Almonds
k > Mangoes
k > Apples
k > Grapes
k > Cashew Nuts
k > Almonds
e = Mangoes
e = Apples
e = Grapes
e = Cashew Nuts
e = Almonds
e > Mangoes
e > Apples
e > Grapes
e > Cashew Nuts
e > Almonds
  = Mangoes
  = Apples
  = Grapes
  = Cashew Nuts
  = Almonds
  > Mangoes
  > Apples
```

```
              > Grapes
              > Cashew Nuts
              > Almonds
  t = Mangoes
  t = Apples
  t = Grapes
  t = Cashew Nuts
  t = Almonds
  t > Mangoes
  t > Apples
  t > Grapes
  t > Cashew Nuts
  t > Almonds
  o = Mangoes
  o = Apples
  o = Grapes
  o = Cashew Nuts
  o = Almonds
  o > Mangoes
  o > Apples
  o > Grapes
  o > Cashew Nuts
  o > Almonds
      = Mangoes
      = Apples
      = Grapes
      = Cashew Nuts
      = Almonds
      > Mangoes
      > Apples
      > Grapes
      > Cashew Nuts
      > Almonds
  e = Mangoes
  e = Apples
  e = Grapes
  e = Cashew Nuts
  e = Almonds
  e > Mangoes
  e > Apples
```

```
e > Grapes
e > Cashew Nuts
e > Almonds
a = Mangoes
a = Apples
a = Grapes
a = Cashew Nuts
a = Almonds
a > Mangoes
a > Apples
a > Grapes
a > Cashew Nuts
a > Almonds
t = Mangoes
t = Apples
t = Grapes
t = Cashew Nuts
t = Almonds
t > Mangoes
t > Apples
t > Grapes
t > Cashew Nuts
t > Almonds
```

In [114]: `#b.For loop with list:`

In [115]: `#Example-01:`

In [116]:
```python
l1 = [12,34,56,78,90]
for i in l1:
    print(i)
```

```
12
34
56
78
90
```

```
In [117]:  #Example-02:

In [118]:  l2 = ['Ripe','Juicy','Tasty']
           l3 = ['Mango','Apple','Orange']

In [119]:  for i in l2:
               for j in l3:
                   print(i,j)
```

Ripe Mango
Ripe Apple
Ripe Orange
Juicy Mango
Juicy Apple
Juicy Orange
Tasty Mango
Tasty Apple
Tasty Orange

```
In [120]:  #Example-03:

In [121]:  l2,l3,l1
```

Out[121]: (['Ripe', 'Juicy', 'Tasty'],
            ['Mango', 'Apple', 'Orange'],
            [12, 34, 56, 78, 90])

```
In [122]:  for i in l2:
               for j in l3:
                   for k in l1:
                       print(i,j,k)
```

Ripe Mango 12
Ripe Mango 34
Ripe Mango 56
Ripe Mango 78
Ripe Mango 90
Ripe Apple 12

```
Ripe Apple 34
Ripe Apple 56
Ripe Apple 78
Ripe Apple 90
Ripe Orange 12
Ripe Orange 34
Ripe Orange 56
Ripe Orange 78
Ripe Orange 90
Juicy Mango 12
Juicy Mango 34
Juicy Mango 56
Juicy Mango 78
Juicy Mango 90
Juicy Apple 12
Juicy Apple 34
Juicy Apple 56
Juicy Apple 78
Juicy Apple 90
Juicy Orange 12
Juicy Orange 34
Juicy Orange 56
Juicy Orange 78
Juicy Orange 90
Tasty Mango 12
Tasty Mango 34
Tasty Mango 56
Tasty Mango 78
Tasty Mango 90
Tasty Apple 12
Tasty Apple 34
Tasty Apple 56
Tasty Apple 78
Tasty Apple 90
Tasty Orange 12
Tasty Orange 34
Tasty Orange 56
Tasty Orange 78
Tasty Orange 90
```