Q1. What are the two values of the boolean data types? how do you write them ?

Ans : `True` and `False` are the two values of the boolean data types.

Python is case sensitive so the initial letter of both the value must be in upper case and rest be in lower case.

Also, In Python True and False are equivalent to "any integer value except 0" and "0" respectively.

In [1]:
```
ineuron_is_an_evolutionary_firm_for_edTech_and_Product_Based_Services = True
All_Oranges_are_Apples  = False

print(f"iNeuron is an evolutionary firm for edTech and Product Based Services: {ineu
print(f"Data Type : {type(ineuron_is_an_evolutionary_firm_for_edTech_and_Product_Bas
print(f"All Oranges are Apples: {All_Oranges_are_Apples}")
print(f"Data Type : {type(All_Oranges_are_Apples)}")
```

```
iNeuron is an evolutionary firm for edTech and Product Based Services: True
Data Type : <class 'bool'>
All Oranges are Apples: False
Data Type : <class 'bool'>
```

In [2]:
```
while(1):
  print("1 works like True")
  break
else:
  print("Outside of loop")

print("-"*60)

while(0):
  print("inside loop")
  break
else:
  print("0 work like False")
```

```
1 works like True
------------------------------------------------------------
0 work like False
```

Q2. What are the three different types of Boolean operators?

Ans : The three basic kind of boolean operators in python are: `OR` , `AND` and, `NOT` operator, they return bool values (`True or False`) as output.

In [3]:
```
# For AND operator
print(5>2 and 2>1) # AND operator gives True as output when both conditions are True
print(5>10 and 9>8) # print(False and True) --> False
print(15>10 and 1>10) # print(True and False) --> False
print(5>10 and 9>10) # print(False and False) --> False
```

```
True
False
False
False
```

In [4]:
```
# for OR operator
```

```
print(5>12 or 2>11) # AND operator gives False as output when both conditions are Fa
print(5>10 or 9>8) # print(False and True) --> True
print(15>10 or 1>10) # print(True and False) --> True
print(15>10 or 19>10) # print(False and False) --> True
```

```
False
True
True
True
```

In [5]:

```
# for NOT operator
print(not(1>100)) # 1 > 100 gives False because 1 is not greator than 100 but not op
print(not(100>1)) # 100 > 1 gives True and not(100>1) --> not(True) gives False
```

```
True
False
```

Q3. Make a list of each Boolean operator's truth tables (i.e. every possible combination of Boolean values for the operator and what it evaluate)?

Ans: Just, Above this question I display all the possible values for two columns using `and` , `or` and, `not` .
The Truth tables for the boolean tables are as follows:

For AND Operator:

A	B	A and B
False	False	False
True	False	False
False	True	False
True	True	True

For OR Operator:

A	B	A or B
False	False	False
True	False	True
False	True	True
True	True	True

For NOT Operator:

A	Not (A)
True	False
False	True

Q4. What are the values of the following expressions ?

`(i). (5 > 4) and (3 == 5)`

`(ii). not (5 > 4)`

`(iii). (5 > 4) or (3 == 5)`

`(iv). not ((5 > 4) or (3 == 5))`

`(v). (True and True) and (True == False)`

`(vi). (not False) or (not True)`

In [6]:
```
from prettytable import PrettyTable

A = (5 > 4)
B = (3 == 5)
C = (True and True)
D = (True == False)
E = (not False)
F = (not True)

print(f"A = (5 > 4)             ==>  {(5 > 4)}")
print(f"B = (3 == 5)            ==>  {(3 == 5)}")
print(f"C = (True and True)     ==>  {(True and True)}")
print(f"D = (True == False)     ==>  {(True == False)}")
print(f"E = (not False)         ==>  {(not False)}")
```

```
print(f"F = (not True)          ==>  {(not True)}\n")
print("Truth Table:")
PTables = PrettyTable()
PTables.field_names = ["A", "B", "A and B", "not(A)", "A or B", "not(A or B)", "C an
PTables.add_row([A, B, A and B, not A, A or B, not A or B, C and D, E or F])
print(PTables)
```

```
A = (5 > 4)             ==>  True
B = (3 == 5)            ==>  False
C = (True and True)     ==>  True
D = (True == False)     ==>  False
E = (not False)         ==>  True
F = (not True)          ==>  False

Truth Table:
+------+-------+---------+--------+--------+-------------+---------+--------+
|  A   |   B   | A and B | not(A) | A or B | not(A or B) | C and D | E or F |
+------+-------+---------+--------+--------+-------------+---------+--------+
| True | False |  False  | False  |  True  |    False    |  False  |  True  |
+------+-------+---------+--------+--------+-------------+---------+--------+
```

Q5. What are the six comparison operators?

Ans : The Six Comparison operators are:

In [7]:

```
A=9
B=5
print("A = 9")
print("B = 5\n")
PTables = PrettyTable()
PTables.field_names = ["Operators", "Description", "Syntax", "Output"]
PTables.add_row([">", "Greater than: True if the left operand is greater than the ri
PTables.add_row(["<", "Less than: True if the left operand is less than the right",
PTables.add_row(["==", "Equal to: True if both operands are equal", "A == B", A == B
PTables.add_row(["!=", "Not equal to - True if operands are not equal", "A != B", A
PTables.add_row([">=", "Greater than or equal to: True if left operand \
 is greater than or equal to the right", "A >= B", A >= B])
PTables.add_row(["<=", "Less than or equal to: True if left operand \
is less than or equal to the right", "A <= B", A <= B])
print(PTables)
```

```
A = 9
B = 5

+-----------+-------------------------------------------------------------------------
----------------+--------+--------+
| Operators |                                          Description
| Syntax | Output |
+-----------+-------------------------------------------------------------------------
----------------+--------+--------+
|     >     |            Greater than: True if the left operand is greater than the
right           | A > B  |  True  |
|     <     |               Less than: True if the left operand is less than the rig
ht              | A < B  | False  |
|     ==    |                         Equal to: True if both operands are equal
| A == B | False  |
|     !=    |                      Not equal to - True if operands are not equal
| A != B |  True  |
|     >=    | Greater than or equal to: True if left operand  is greater than or equ
al to the right | A >= B |  True  |
|     <=    |     Less than or equal to: True if left operand is less than or equal
to the right    | A <= B | False  |
```

```
+----------+-------------------------------------------------------------------------
---------------+--------+--------+
```

Q6. How do you tell the difference between the equal to and assignment operators? Describe a condition and when you would use one ?

Ans : `==` is the equal to operator that compares two values and evaluates to a Boolean, while `=` is that assignment operator that stores a value in a variable.

In [8]:
```
tech_neuron_price = 7080 # Assignment operator "=" assign the price value
coupon = "KRISH10" # Assignment operator "=" assign the Coupon value

if coupon == "KRISH10": # Conditional operator check the Coupon value for resulting
  tech_neuron_price -= tech_neuron_price * 0.1
  print(f"You successfully applied the coupon : {coupon}")
  print(f"Total Price : {tech_neuron_price}")
else:
  print("Invalid coupon code")
  print(f"Total Price : {tech_neuron_price}")
```

```
You successfully applied the coupon : KRISH10
Total Price : 6372.0
```

Q7. Identify the three blocks in this code:

```
spam = 0

if spam == 10:
  print('eggs')
if spam > 5:
  print('bacon')
else:
  print('ham')
  print('spam')
  print('spam')
```

Ans : In Python, code block refers to a collection of code that is in the same block or indent. This is most commonly found in classes, functions, and loops.

In [9]:
```
spam = 0
if spam == 10:
    print('eggs')  # first block
if spam > 5:
    print('bacon') # second block
else:
    print('ham')  # third block
    print('spam')
    print('spam')
```

```
ham
spam
spam
```

Q8. Write code that prints Hello if 1 is stored in spam, prints Howdy if 2 is stored in spam, and prints Greetings! if anything else is stored in spam.

In [10]:
```
def f(spam):
  if spam==1:
```

```
    print('Hello')
  elif spam==2:
    print('Howdy')
  else:
    print('Greetings!')


f(1)
f(2)
f("kuch bhi")
```

```
Hello
Howdy
Greetings!
```

Q9.If your programme is stuck in an endless loop, what keys you'll press?

Ans : Press `Ctrl + C` to stop a program execution while stucked in an infinite loop

In [11]:

```
while(1):
  print("ineuron") # Without breaking conditioor break statement the Loop stucked in
  #break
  # CTRL + C used to interrupt the execution
```

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---------------------------------------------------------------------------
KeyboardInterrupt                         Traceback (most recent call last)
<ipython-input-11-6ea9fe1e5933> in <module>()
      1 while(1):
----> 2   print("ineuron") # Without breaking conditioor break statement the loop st
ucked into infinite execution
      3   #break
      4   # CTRL + C used to interrupt the execution

/usr/local/lib/python3.7/dist-packages/ipykernel/iostream.py in write(self, string)
    396                 string = string.decode(self.encoding, 'replace')
    397 
--> 398             is_child = (not self._is_master_process())
    399             # only touch the buffer in the IO thread to avoid races
    400             self.pub_thread.schedule(lambda : self._buffer.write(string))

/usr/local/lib/python3.7/dist-packages/ipykernel/iostream.py in _is_master_process(s
elf)
    306 
    307     def _is_master_process(self):
--> 308         return os.getpid() == self._master_pid
    309 
    310     def set_parent(self, parent):

KeyboardInterrupt: 
```

Q10. How can you tell the difference between break and continue?

Ans : The break statement will move the execution outside the loop if break condtion is satisfied. Whereas the continue statement will move the execution to the start of the loop.

In [12]:
```
#Above the same example is shown without break statement and here, we used break sta
#going into infinite looping condition
while(1):
  print("ineuron")
  break # Break statement saves this loop to gone under infinite execution
```

```
ineuron
```

Q11. In a for loop, what is the difference between range(10), range(0, 10), and range(0, 10, 1)?

Ans : No difference in output but Syntatical differences are as follows:

1. The **range(10)** call range from 0 to 9 (but not include 10)
2. The **range (0,10)** explicitly tells the loop to start at 0
3. The **range(0,10,1)** explicitly tells the loop to increase the variable by 1 on each iteration.

In [13]:
```
for i in range(10):  # only end is mention that is 10 but loop executes 0 - 9 (end-1
  print(i, end=" ")
```

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

In [14]:
```
for i in range(0, 10): # Both start and end points are given
  print(i, end=" ")
```

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

In [15]:
```
for i in range(0, 10, 1): # Start, End and Step Size are mentioned
  print(i, end=" ")
```

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

Q12. Write a short program that prints the numbers 1 to 10 using a for loop. Then write an equivalent program that prints the numbers 1 to 10 using a while loop ?

In [16]:
```
print("~"*10, "Using for - loop", "~"*10)

for num in range(1, 11):
  print(num, end=" ")


print('\n')
print("~"*10, "Using while - loop", "~"*10)

num=1
while num <= 10:
  print(num, end=" ")
  num += 1
```

```
~~~~~~~~~~ Using for - loop ~~~~~~~~~~
1 2 3 4 5 6 7 8 9 10

~~~~~~~~~~ Using while - loop ~~~~~~~~~~
1 2 3 4 5 6 7 8 9 10
```

Q13. If you had a function named bacon() inside a module named spam, how would you call it after importing spam ?

Ans : That function can be called by using `module_name.fuction_name()` generic synax:

`spam.bacon()`

In [17]:
```
class spam:
  def bacon(obj):
    print(obj)

bacon("Hello")
```

```
---------------------------------------------------------------------------
NameError                                 Traceback (most recent call last)
<ipython-input-17-ff314f3b1d15> in <module>()
      3     print(obj)
      4
----> 5 print(bacon("Hello"))

NameError: name 'bacon' is not defined
```

In [20]:
```
class spam:
  def bacon(obj):
    print(obj)

spam.bacon("Hello")
```

```
Hello
```

In [ ]:
```

```