Conditional or Selection or Branching Statements (Flow Control Statements) in Python.
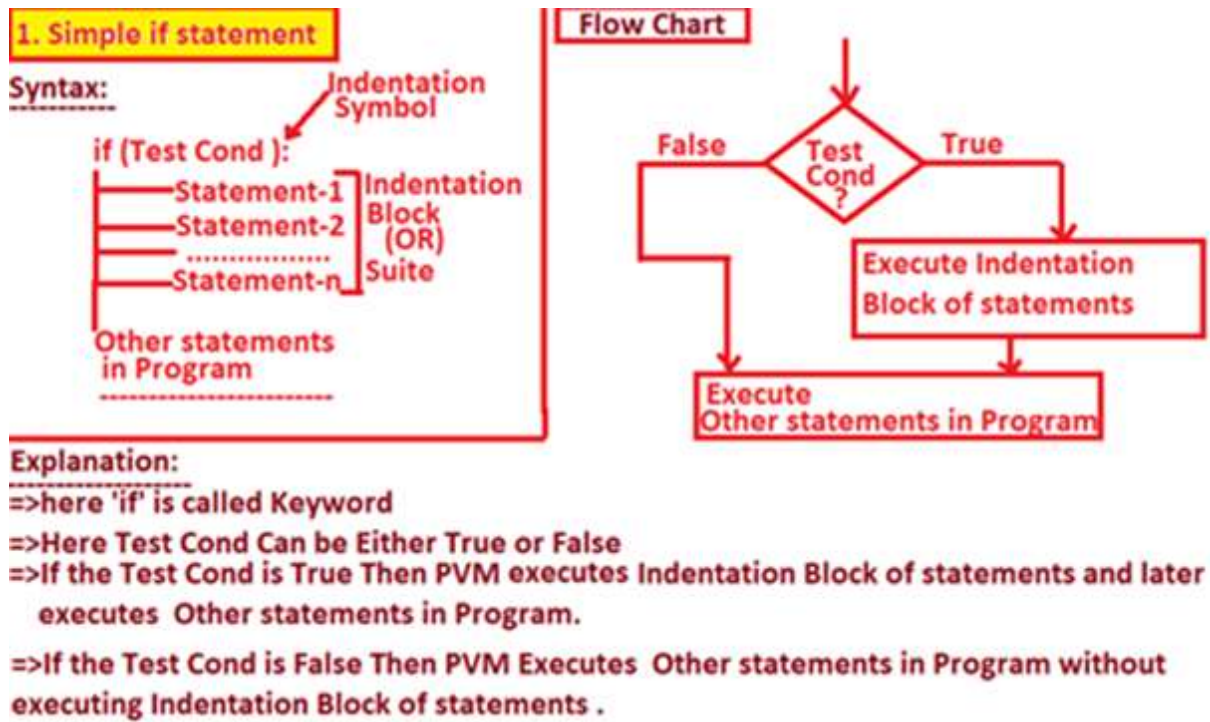
- **The purpose of Conditional or Selection or Branching Statements is that "To perform either X-Operation in the case of True or Y-Operation in the case of False only Once".**

- **Types of conditional statements,they are :**

1) Simple if statement

2) if - else statement

3) if - elif - else statement

4) nested if statement

Block Structure (Block of Statements) :

- The code that is executed when a specific condition is met is defined in a "Block".
- Statements preceeding block generally end with a colon (:).
- In Python, the block structure is signalled by changes in indetation.
- Each line of code in a certain block level must be indented equally and indented more than the surrounding scope.
- The standard is to use 4 spaces for each level of block indentation.

1) Simple if statement (If)

Explanation:
=>here 'if' is called Keyword
=>Here Test Cond Can be Either True or False
=>If the Test Cond is True Then PVM executes Indentation Block of statements and later
    executes Other statements in Program.

=>If the Test Cond is False Then PVM Executes Other statements in Program without
    executing Indentation Block of statements .

```python
In [1]: if (1<2):                  # When "if" condition True.
            print("Hello")
```

```
Hello
```

```python
In [2]: if (1>2):                  # When "if" condition False.
            print("Hello")
```

```python
In [3]: if (1<2):                  # When "if" condition True.
            print("Hello")
        print("Welcome")
```

```
Hello
Welcome
```

```python
In [4]: if (1>2):                  # When "if" condition False.
            print("Hello")
        print("Welcome")
```

```
Welcome
```

In [26]:
```python
''' Program for accepting two values and find big among them by using
simple if statement'''

# Accept two values from kewboard
a = float(input("Enter value of a:"))
b = float(input("Enter value of b:"))

# If a is bigger than b then print "a value is bigger".
if (a>b):
    print("a={} is bigger".format(a))

# If b is bigger than a then print "b value is bigger".
if (a<b):
    print("b={} is bigger)".format(b))

# If a is equal to b then print "both the values are equal".
if (a==b):
    print("Both the values are equal")
print("Program Execution completed")
```

```
Enter value of a:10
Enter value of b:15
b=15.0 is bigger)
Program Execution completed
```

In [13]:
```python
''' Program for accepting three values and find big among them by using
simple if statement.'''

# Accept three values from kewboard
a = float(input("Enter value of a:"))
b = float(input("Enter value of b:"))
c = float(input("Enter value of c:"))

# If a is bigger than b and c then print "a value is bigger".
if (a>b and a>c):
    print("a={} is bigger".format(a))

# If b is bigger than a and c then print "b value is bigger".
if (b>a and b>c):
    print("b={} is bigger".format(b))

# If c is bigger than a and b then print "c value is bigger".
if (c>a and c>b):
    print("c={} is bigger".format(c))

# If all values are equal then print "All three values are equal".
if (a==b and a==c):
    print("All three values are equal")
print("Program Execution completed")
```

```
Enter value of a:100
Enter value of b:140
Enter value of c:120
b=140.0 is bigger
Program Execution completed
```
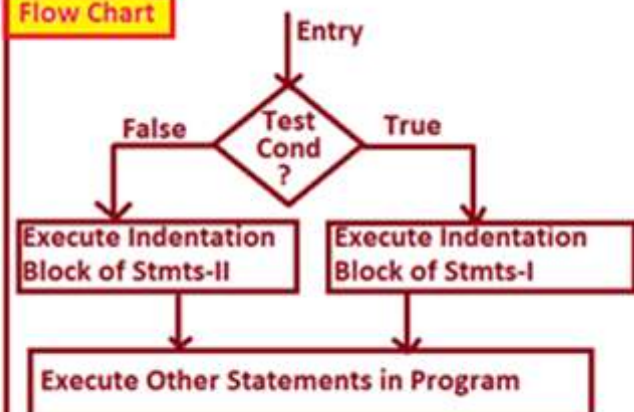
2) if - else statement

In [1]:
```python
if 1>2:
    print("First")
else:
    print("Last")
```

Last

In [27]:
```python
''' Take a variable x and print "Even" if the number is divided by 2,
otherwise print "Odd".'''

x = int(input("Enter a Number:"))

# If the number is divided by 2 then print "x is Even Number".
if (x%2==0):
    print("{} is Even Number".format(x))

# If the number is  not divided by 2 then print "x is Odd Number".
else:
    print("{} is Odd Number".format(x))
print("Program Execution Completed")
```

```
Enter a Number:19
19 is Odd Number
Program Execution Completed
```

In [5]:
```python
a,b,c,d=2,2,3,4
if (a==b or c==d):
    print("abc")
else:
    print("def")
```

abc

In [10]:
```python
''' Program for accepting any two numerical values and find biggest
among them by using if..else statement.'''

# Accept two values from kewboard
a = float(input("Enter value of a:"))
b = float(input("Enter value of b:"))

# If a is bigger than b then print "a value is bigger".
if (a>b):
    print("a={} is bigger".format(a))

# If b is bigger than a then print "b value is bigger".
else:
    print("b={} is bigger".format(b))
```

```
Enter value of a:200
Enter value of b:200
b=200.0 is bigger
```

```python
In [15]: ''' Program for accepting any two numerical values and find biggest among them
         and check for equality by using if..else statement.'''

         # Accept two values from kewboard
         a=float(input("Enter First Value:"))
         b=float(input("Enter Second Value:"))

         # If a is bigger than b then print "a value is bigger".
         if(a>b):
             print("a={} is bigger".format(a))
         else:
             # If b is bigger than a then print "b value is bigger".
             if(b>a):
                 print("b={} is bigger".format(b))
             # If a is equal to b then print "both the values are equal".
             else:
                 print("Both the values are Equal")
```

```
Enter First Value:10
Enter Second Value:10
Both the values are Equal
```

3) if - elif - else statement
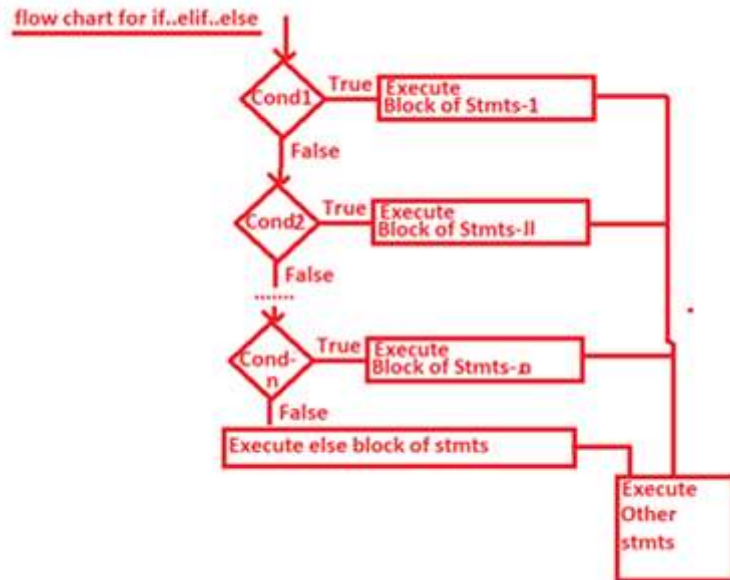
flow chart for if..elif..else


```
In [16]: if 2 != 2:
             print("First")
         elif 3==3:
             print("Middle")
```

Middle

```
In [17]: if 1 == 1:
             print("How did that happen")
         elif 1<3:
             print("Yikes")
         else:
             print("All is well with the world")
```

How did that happen

In [22]:
```python
''' Take a variable y and print "Grade A" if y is greater then 90, "grade B"
if y is greater than 60 and less than or equal to 90, "Grade F" if y is
less than or equal to 60.'''

#Take a variable y from the keyboard
y=int(input("Enter the number:"))

# If y is greater then 90, then print "Grade A".
if (y>90):
    print("Grade A")

# If y is greater then 60 and less than equal to 90, then print "Grade A".
elif (y>60 and y<=90):
    print("Grade B")

# If y is less than or equal to 60, then print "Grade F".
else:
    print("Grade F")
```

```
Enter the number:95
Grade A
```

In [23]:
```python
'''Program for accepting any two numerical values and find biggest among them
and check for equality by using if-elif-else stmt.'''

# Accept two values from kewboard
a=float(input("Enter First Value:"))
b=float(input("Enter Second Value:"))

# If a is bigger than b then print "a value is bigger".
if(a>b):
    print("a={} is bigger".format(a))

# If b is bigger than a then print "b value is bigger".
elif (b>a):
    print("b={} is bigger".format(b))

# If a is equal to b then print "both the values are equal".
else:
    print("Both the values are Equal")
```

```
Enter First Value:100
Enter Second Value:200
b=200.0 is bigger
```

In [11]:
```python
''' Write a python program which will accept any digit (0-9) & print
the name of the digit by using "if else" statement.'''

# Ask the user to enter the digit
dig = int(input("Enter the digit:"))

# If user enter's "0",then print "Zero"
if (dig==0):
    print("{} is Zero".format(dig))

else:
    # If user enter's "1",then print "One"
    if (dig==1):
        print("{} is One".format(dig))
    else:
        # If user enter's "2",then print "Two"
        if (dig==2):
            print("{} is Two".format(dig))
        else:
            # If user enter's "3",then print "Three"
            if (dig==3):
                print("{} is Three".format(dig))
            else:
                # If user enter's "4",then print "Four"
                if (dig==4):
                    print("{} is Four".format(dig))
                else:
                    # If user enter's "5",then print "Five"
                    if (dig==5):
                        print("{} is Five".format(dig))
                    else:
                        # If user enter's "6",then print "Six"
                        if (dig==6):
                            print("{} is six".format(dig))
                        else:
                            # If user enter's "7",then print "Seven"
                            if (dig==7):
                                print("{} is Seven".format(dig))
                            else:
                                # If user enter's "8",then print "Eight"
                                if (dig==8):
                                    print("{} is Eight".format(dig))
                                else:
                                    # If user enter's "9",then print "Nine"
                                    if (dig==9):
                                        print("{} is Nine".format(dig))
```

```
Enter the digit:5
5 is Five
```

In [14]:
```python
''' Write a python program which will accept any digit (0-9) & print
the name of the digit by using "if elif else" statement.'''

# Ask the user to enter the digit
dig = int(input("Enter the digit:"))

# If user enter's "0",then print "Zero"
if (dig==0):
    print("{} is Zero".format(dig))

# If user enter's "1",then print "One"
elif (dig==1):
    print("{} is One".format(dig))

# If user enter's "2",then print "Two"
elif (dig==2):
    print("{} is Two".format(dig))

# If user enter's "3",then print "Three"
elif (dig==3):
    print("{} is Three".format(dig))

# If user enter's "4",then print "Four"
elif (dig==4):
    print("{} is Four".format(dig))

# If user enter's "5",then print "Five"
elif (dig==5):
    print("{} is Five".format(dig))

# If user enter's "6",then print "Six"
elif (dig==6):
    print("{} is six".format(dig))

# If user enter's "7",then print "Seven"
elif (dig==7):
    print("{} is Seven".format(dig))

# If user enter's "8",then print "Eight"
elif (dig==8):
    print("{} is Eight".format(dig))

# If user enter's "9",then print "Nine"
elif (dig==9):
    print("{} is Nine".format(dig))

# If user enter's Number (apart from (0-9)) then print "dig is number"
else:
    print("{} is Number".format(dig))
print("Program execution is completed")
```

```
Enter the digit:11
11 is Number
Program execution is completed
```

In [17]:
```python
''' Write a python program which will accept any digit (0-9) & print
the name of the digit by using "simple if" statement.'''

# Ask the user to enter the digit
dig = int(input("Enter the digit:"))

# If user enter's "0",then print "Zero"
if (dig==0):
    print("{} is Zero".format(dig))

# If user enter's "1",then print "One"
if (dig==1):
    print("{} is One".format(dig))

# If user enter's "2",then print "Two"
if (dig==2):
    print("{} is Two".format(dig))

# If user enter's "3",then print "Three"
if (dig==3):
    print("{} is Three".format(dig))

# If user enter's "4",then print "Four"
if (dig==4):
    print("{} is Four".format(dig))

# If user enter's "5",then print "Five"
if (dig==5):
    print("{} is Five".format(dig))

# If user enter's "6",then print "Six"
if (dig==6):
    print("{} is six".format(dig))

# If user enter's "7",then print "Seven"
if (dig==7):
    print("{} is Seven".format(dig))

# If user enter's "8",then print "Eight"
if (dig==8):
    print("{} is Eight".format(dig))

# If user enter's "9",then print "Nine"
if (dig==9):
    print("{} is Nine".format(dig))
print("Program Execution Completed")
```

```
Enter the digit:9
9 is Nine
Program Execution Completed
```

```
In [19]:  ''' Write a python program which will accept any digit (0-9) & print the name
          of the digit from the given dict by using conditional statement.'''

          # User given dict
          d = {0:"ZERO",1:"ONE",2:"TWO",3:"THREE",4:"FOUR",5:"FIVE",6:"SIX",7:"SEVEN",
               8:"EIGHT",9:"NINE"}

          # Ask the user to enter the digit
          dig = int(input("Enter the digit:"))

          ''' Based on the "dictobj.get(key)", put the dig as key, print the name of the
          digit by using get method. '''
          result = d.get(dig)

          # If user enter's digit, then print the name of the digit.
          if (result != None):
              print("{} is {}".format(dig,result))

          # If user enter's invalid digit, then print "dig, is Number".
          else:
              print("{} is Number".format(dig))
```

```
Enter the digit:6
6 is SIX
```

```
In [24]:  ''' Write a Python program which will accept numerical value & decide whether
          it is positive or negative or zero.'''

          # Ask the user to enter the numeric value.
          n = int(input("Enter any Number:"))

          # If user enter's "0" then print "0 is Zero"
          if (n==0):
              print("{} is Zero".format(n))

          else:
              # If user enter's positive value, print "n, is Positive Number"
              if (n>0):
                  print("{} is Positive Number".format(n))
              else:
                  # If user enter's negative value, print "n, is Negative Number"
                  print("{} is Negative Number".format(n))
```

```
Enter any Number:0
0 is Zero
```

Nested if Statements

- We can have a if-elif-else statement inside another if-elif-else statement. This is called nesting in computer programming.

In [24]:
```python
num = -20

if (num>=0):
    if (num==0):
        print("Zero")
    else:
        print("Positive Number")

else:
    print("Negetive Number")
```

```
Negetive Number
```

In [43]:
```python
# Next program on Bank transaction using conditional statements.

# Balance amount in our account
amount=100000
# pin code of our account
pin=1234

''' Enter the pin, if user entered correct pin number, then user enter
into withdrwal page.'''
if (int(input("Enter the pin number"))==pin):
    # Accept the withdrawal account by key-board
    with_draw=int(input("Enter withdraw amount:"))

    ''' If withdrawal amount is less than or equal to main amount balance,
    then complete the transaction and print (with_dram 'successfully
    transaction completed')'''
    if (with_draw<=amount):
        print("{} successfully transaction completed".format(with_draw))

    # If withdrawal amount more than main amount balance, then diclane
    # the transaction and print (with_dram 'no sufficient fund in
    # your account')'''
    else:
        print("{} no sufficient fund in your account".format(with_draw))

# If user entered invalid pin number, then decline the transaction and print
# "Invalid pin number".
else:
    print("Invalid pin number")
```

```
Enter the pin number1234
Enter withdraw amount:50000
50000 successfully transaction completed
```

In [ ]: