

Python Control Statements

In any programming language a program may execute sequentially, selectively or iteratively. Every programming language provides constructs to support Sequence, Selection and Iteration. In Python all these construct can broadly categorized in 2 categories.

A. Conditional Control Construct
(Selection, Iteration)

B. Un- Conditional Control Construct
(pass, break, continue, exit(), quit())

Python have following types of control statements

1. **Selection** (branching) Statement
2. **Iteration** (looping) Statement
3. **Jumping** (break / continue)Statement

**Conditional Control
Statements**

**Un Conditional Control
Statements**

Python Selection Statements

Python have following types of selection statements

1. if statement
2. if else statement
3. Ladder if else statement (if-elif-else)
4. Nested if statement

Python If statements

This construct of python program consist of one if condition with one block of statements. When condition becomes true then executes the block given below it.

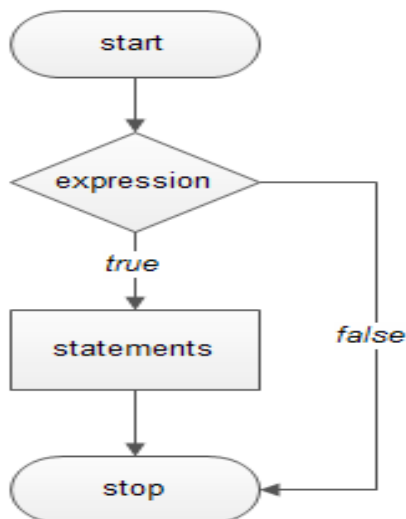
Syntax:



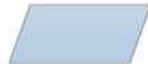


if (condition):

.....
.....
.....

Flow Chart: it is a graphical representation of steps an algorithm to solve a problem.

Flowchart



Symbol	Name	Function
	Start/end	An oval represents a start or end point
	Arrows	A line is a connector that shows relationships between the representative shapes
	Input/Output	A parallelogram represents input or output
	Process	A rectangle represents a process
	Decision	A diamond indicates a decision

Example:

```
Age=int(input("Enter Age: "))  
If ( age>=18):  
    Print("You are eligible for vote")
```

```
If(age<0):  
    Print("You entered Negative Number")
```

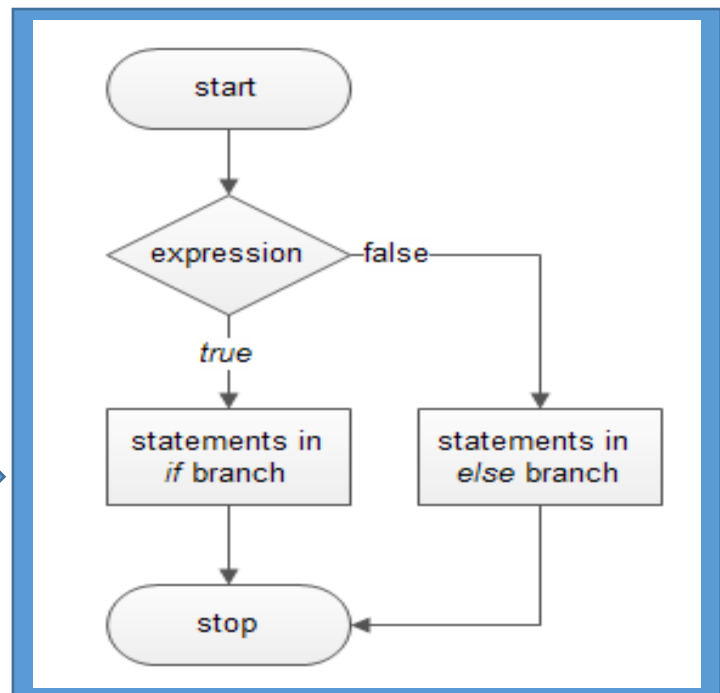
Python if - else statements

This construct of python program consist of **one if condition with two blocks**. When condition becomes true then executes the block given below it. If condition evaluates result as false, it will executes the block given below else.

Syntax:

```
if ( condition):  
    .....  
else:  
    .....
```

Flowchart →



Example-1:

```
Age=int(input("Enter Age: "))
```

```
if ( age>=18):
```

```
    print("You are eligible for vote")
```

```
else:
```

```
    print("You are not eligible for vote")
```

Example-2:

```
N=int(input("Enter Number: "))
```

```
if(n%2==0):
```

```
    print(N," is Even Number")
```

```
Else:
```

```
    print(N," is Odd Number")
```

Python Ladder if else statements (if-elif-else)

This construct of python program consist of **more than one if condition**. When first condition evaluates result as true then executes the block given below it. If condition evaluates result as false, it transfer the control at else part to test another condition. So, it is **multi-decision making** construct.

Syntax:

if (condition-1):

.....
.....

elif (condition-2):

.....
.....

elif (condition-3):

.....
.....

else:

.....
.....

Example:

```
num=int(input("Enter Number: "))
```

```
If ( num>=0):
```

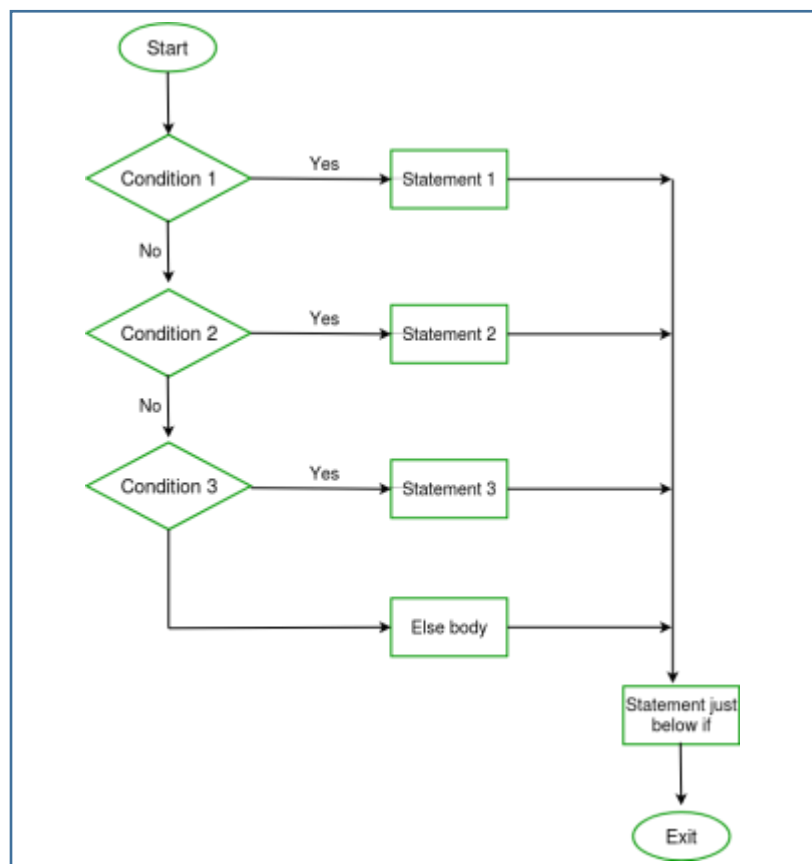
```
    Print("You entered positive number")
```

```
elif ( num<0):
```

```
    Print("You entered Negative number")
```

```
else:
```

```
    Print("You entered Zero ")
```



Python Nested if statements

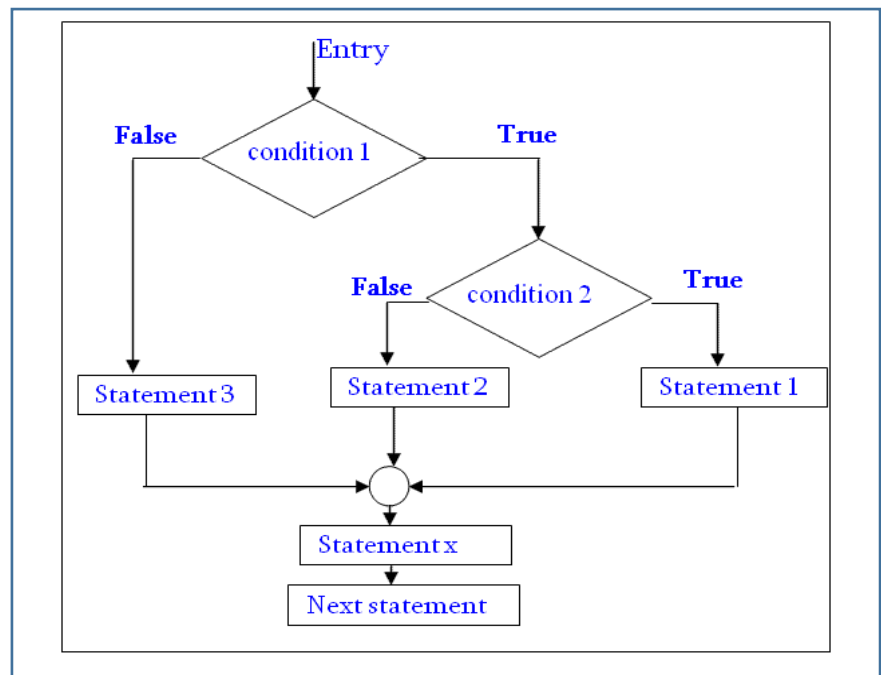
It is the construct where one if condition take part inside of other if condition. This construct consist of **more than one if condition**. Block executes when condition becomes false and next condition evaluates when first condition became true.

So, it is also **multi-decision making** construct.

Syntax:

```
if ( condition-1):  
    if (condition-2):  
        .....  
        .....  
    else:  
        .....  
        .....  
else:  
    .....  
    .....
```

FlowChart



Example:

```
num=int(input("Enter Number: "))  
If ( num<=0):  
    if ( num<0):  
        Print("You entered Negative number")  
    else:  
        Print("You entered Zero ")  
else:  
    Print("You entered Positive number")
```

Program: find largest number out of given three numbers

```
x=int(input("Enter First Number: "))
y=int(input("Enter Second Number: "))
z=int(input("Enter Third Number: "))
if(x>y and x>z):
    largest=x
elif(y>x and y>z):
    largest=y
elif(z>x and z>y):
    largest=z
print("Largest Value in %d, %d and %d is: %d"%(x,y,z,largest))
```

Program: calculate simple interest

Formula: principle x (rate/100) x time

```
p=float(input("Enter principle amount: "))
r=float(input("Enter rate of interest: "))
t=int(input("Enter time in months: "))
si=p*r*t/100
print("Simple Interest=",si)
```

Program: calculate EMI

Input the following to arrive at your Equal Monthly Installment -EMI:

1. Loan Amount: Input the desired loan amount that you wish to avail.
2. Loan Tenure (In Years): Input the desired loan term for which you wish to avail the loan.
3. Interest Rate (% P.A.): Input interest rate.
4. $EMI = \frac{P \cdot R \cdot (1+R)^N}{[(1+R)^N - 1]}$

```
P=int(input("Enter loan amount: "))
```

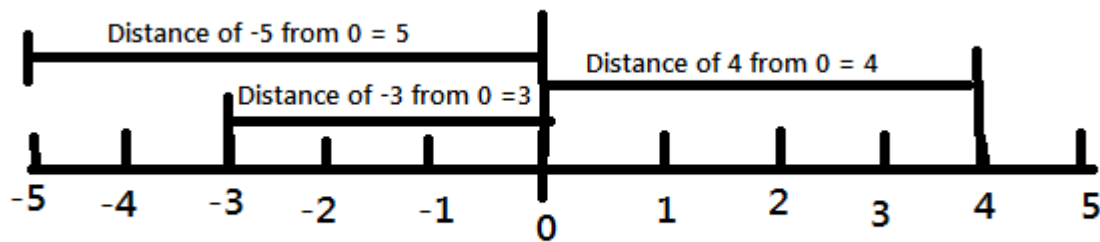
```
YR=float(input("Enter rate of interest P.A. : "))
T=int(input("Enter tenure(Installments) in years: "))
MR=YR/(12*100) # Monthly Rate
EMI=(P*MR*(1+MR)**T)/(((1+MR)**T)-1)
print("Principle Amount: ",P)
print("Rate of Interest(Yearly): ",YR)
print("No. of Installments: ",T)
print("EMI Amount: ",EMI)
```

Program: Sorting of three number. (Ascending and Descending)

```
x=int(input("Enter First Number: "))
y=int(input("Enter Second Number: "))
z=int(input("Enter Third Number: "))
min=max=mid=None
if(x>=y and x>=z):
    if(y>=z):
        min,mid,max=z,y,x
    else:
        min,mid,max=y,z,x
elif(y>=x and y>=z):
    if(x>=z):
        min,mid,max=z,x,y
    else:
        min,mid,max=x,z,y
elif(z>=x and z>=y):
    if(x>=y):
        min,mid,max=y,x,z
    else:
        min,mid,max=x,y,z
print("Numbers in Ascending Order: ",min,mid,max)
print("Numbers in Descending Order: ",max,mid,min)
```


Program: Absolute Value

Absolute value of a given number is always measured as positive number. This number is the distance of given number from the 0(Zero). The input value may be integer, float or complex number in Python. The absolute value of given number may be integer or float.



Concept of Absolute Value

(i). Absolute Value of -5 is 5 (ii) Absolute Value of -3 is 3 (iii) Absolute Value of 4 is 4

```
n=float(input("Enter a number to find absolute value: "))
print("Absolute Value using abs(): ",abs(n))
if(n-int(n)>=0 or n-int(n)<=0): # This code is used to identify that number is float or int type.
    pass
else:
    n=int(n)
if(n<0):
    print("Absolute Value= ",n*-1)
else:
    print("Absolute Value= ",n)
```

Program: Calculate the Total selling price after levying the GST (Goods and Service Tax) as CGST and SGST on sale.

CGST (Central Govt. GST), SGST (State Govt. GST)

Sale amount	CGST Rate	SGST Rate
0-50000	5%	5%
Above 50000	18%	18%

```
amt=float(input("Enter total Sale Amount: "))
if(amt<=50000):
    rate=5
else:
    rate=18
cgst=sgst=amt*rate/100
tot_amt=amt+cgst+sgst
print("Amount of Sale: ",amt)
print("GST rate of Sale: ",rate)
print("CGST of Sale: ",cgst)
print("SGST of Sale: ",sgst)
print("Total Payable Amount of Sale: ",tot_amt)
```

Thanks