# Python If ... Else

Python Conditions and If statements

Python supports the usual logical conditions from mathematics:

- Equals: a == b
- Not Equals: a != b
- Less than: a < b
- Less than or equal to: a <= b
- Greater than: a > b
- Greater than or equal to: a >= b

These conditions can be used in several ways, most commonly in "if statements" and loops.

An "if statement" is written by using the if keyword.

## Example 1

**If statement:**

```
a = 33

b = 200

if b > a:

  print("b is greater than a")
```

## Example 2

```
# python program to illustrate If statement

i = 10

if (i > 15):

        print("10 is less than 15")

print("I am Not in if")
```

## Example 3

```
# Simple Python program to understand the if statement
num = int(input("enter the number:"))

if num%2 == 0:
```

```
    print("The Given number is an even number")
```

**Example 4**

Program to print the largest of the three numbers.

```
a = int (input("Enter a: "));
b = int (input("Enter b: "));
c = int (input("Enter c: "));
if a>b and a>c:
   print ("From the above three numbers given a is largest");
if b>a and b>c:
   print ("From the above three numbers given b is largest");
if c>a and c>b:
   print ("From the above three numbers given c is largest");
```

## The if-else statement

The if-else statement provides an else block combined with the if statement which is executed in the false case of the condition.

If the condition is true, then the if-block is executed. Otherwise, the else-block is executed.

**The syntax of the if-else statement is given below.**

```
if condition:
   #block of statements
else:
   #another block of statements (else-block)
```

Example 1 :

Program to check whether a person is eligible to vote or not.

```
age = int (input("Enter your age: "))
if age>=18:
```

```
        print("You are eligible to vote !!");
    else:
        print("Sorry! you have to wait !!");
```

### Example 2:

### Program to check whether a number is even or not.

```
num = int(input("enter the number:"))
if num%2 == 0:
   print("The Given number is an even number")
else:
   print("The Given Number is an odd number")
```

## The elif statement

The elif statement enables us to check multiple conditions and execute the specific block of statements depending upon the true condition among them. We can have any number of elif statements in our program depending upon our need. However, using elif is optional.

The elif statement works like an if-else-if ladder statement in C. It must be succeeded by an if statement.

**The syntax of the elif statement is given below.**

```
if expression 1:
   # block of statements


elif expression 2:
   # block of statements


elif expression 3:
   # block of statements
```

```
else:
   # block of statements
```

**Example 1**

```
        # Simple Python program to understand elif statement
        number = int(input("Enter the number?"))
        if number==10:
           print("The given number is equals to 10")
        elif number==50:
           print("The given number is equal to 50");
        elif number==100:
           print("The given number is equal to 100");
        else:
           print("The given number is not equal to 10, 50 or 100");
```

**Example 2**

```
# Simple Python program to understand elif statement
marks = int(input("Enter the marks? "))
if marks > 85 and marks <= 100:
  print("Congrats ! you scored grade A ...")
elif marks > 60 and marks <= 85:
  print("You scored grade B + ...")
elif marks > 40 and marks <= 60:
  print("You scored grade B ...")
elif (marks > 30 and marks <= 40):
  print("You scored grade C ...")
else:
  print("Sorry you are fail ?")
```

## Short Hand If

If you have only one statement to execute, you can put it on the same line as the if statement.

### Example

One line if statement:

```
if a > b: print("a is greater than b")
```

## Short Hand If ... Else

If you have only one statement to execute, one for if, and one for else, you can put it all on the same line:

### Example

One line if else statement:

```
a = 2

b = 330

print("A") if a > b else print("B")
```

### Example

One line if else statement, with 3 conditions:

```
a = 330

b = 330

print("A") if a > b else print("=") if a == b else print("B")
```

### And

The and keyword is a logical operator, and is used to combine conditional statements:

### Example

Test if a is greater than b, AND if c is greater than a:

```
a = 200

b = 33
```

```
c = 500
if a > b and c > a:
  print("Both conditions are True")
```

## Or

The or keyword is a logical operator, and is used to combine conditional statements:

### Example

Test if a is greater than b, OR if a is greater than c:

```
a = 200
b = 33
c = 500
if a > b or a > c:
  print("At least one of the conditions is True")
```

### Not

The not keyword is a logical operator, and is used to reverse the result of the conditional statement:

### Example

Test if a is NOT greater than b:

```
a = 33
b = 200
if not a > b:
  print("a is NOT greater than b")
```

## Nested If

You can have if statements inside if statements, this is called nested if statements.

### Example

```
x = 41
if x > 10:
    print("Above ten,")
 if x > 20:
      print("and also above 20!")
 else:
    print("but not above 20.")
```

## The pass Statement

if statements cannot be empty, but if you for some reason have an if statement with no content, put in the pass statement to avoid getting an error.

## Example

```
a = 33
b = 200
if b > a:
 pass
```