

Python Conditional Statements (if, elif, else)

Python Control Statements:

- Control statements are used to control the flow of program execution. These are classified into three types.
 1. Conditional or Decision Making or Selection Statements.
 2. Looping or Iterative Statements.
 3. Transfer or Jump Statements.

1. Conditional | Decision Making Statements:

- Decision making is the most important aspect of almost all the programming languages. As the name implies, decision making allows us to run a particular block of code for a particular decision.
- Here, the decisions are made on the validity of the particular conditions. Condition checking is the backbone of decision making.
- Conditional statements will decide the execution of a block of code based on the expression.
- The conditional statements return result as a Boolean Value like True or False.

Python supports four types of conditional statements:

1. Simple IF or IF statement
2. IF - ELSE Statement
3. IF - ELSE IF (elif) Statement
4. Nested if statement

1. if Statement

- The Python **if** statement is same as it is with other programming languages.
- The **if** statement is used to test a specific condition. If the condition is true, a block of code (if-block) will be executed.
- If the condition is false, then a block of code (if-block) will not be executed.
- Here is the general form of one way if statement.

Syntax:

if expression | condition:
 statement_1

statement_2

.....

.....

statement_N

- In the above syntax, expression specifies the conditions it produces either True or False.
- If the expression evaluates to True then the same amount of indented statement(s) following it will be executed.
- This group of the statement(s) is called a block.

Note: In Python, indentation is used to declare a block.

Example 1: How to check a Student is passed or failed based on marks ?

```
>>> marks = int(input("Enter your marks to know pass or failed: "))
>>> if marks >= 35:
    print("You are passed ...")
```

Output:

```
Enter your marks to know pass or failed: 45
You are passed ...
```

Example 2: Compare values and display message ?

```
a = int(input("Enter First Value: "))
b = int(input("Enter Second Value: "))
c = int(input("Enter third Value: "))
if a > b < c:
    print("Hello")
```

Q. How to test which is maximum value among given two values?

```
a = int(input("Enter First Value: "))
b = int(input("Enter Second Value: "))
max = a if (a > b) else b;
print('Maximum value is :', max)
or
if a > b:
```

```
x = a
else:
    x = b
print('Maximum value is :', x)
```

2. if -- else Statement:

- In Python if-else statement has two blocks, first block follows the expression and the other block follows the else clause. Here is the syntax.

Syntax:

```
if expression :
    statement_1
    statement_2
    .....
else :
    statement_3
    statement_4
    .....
```

- In the above case, if the expression evaluates to True then the same amount of indented statements(s) (if block) executed.
- if the expression evaluates to False then same amount of indented statements(s) follow the **else** block will executed.

Example1: Write python script to check whether the given number is even or odd number ?

```
a = int(input('Enter Your number: '))
if a % 2 == 0:
    print(a, " is a even number")
else:
    print(a, " is a odd number")
```

Output:

```
Enter Your number: 20
20 is a even number
Or
```

Enter Your number: 21

21 is a odd number

Example 2: Write a python script to know student is passed or failed ?

```
marks = int(input("Enter your marks to know pass or failed: "))
```

```
if marks >= 35:
```

```
    print("Your are passed")
```

```
else:
```

```
    print("Your are failed")
```

Output:

Enter your marks to know pass or failed: 20

Your are failed`

Or

Enter your marks to know pass or failed: 40

Your are passed

3. If – elif - else Conditional Statements in Python (Multiple Conditions)

- The if statements are executed from the top down. As soon as one of the conditions controlling the if is true, the statement associated with that if is executed, and the rest of the ladder is bypassed.
- If none of the given conditions is true, then the final “else” statement will be executed.

Syntax:

```
if condition1:
```

```
    statement_1
```

```
elif condition2:
```

```
    statement_2
```

```
elif condition3:
```

```
    statement_3
```

```
else :
```

```
    statement_4
```

```
normal_statements
```

Explanation:

- In the above case, if the condition1 evaluates to True then the same amount of indented statements(s) are executed which are available in condition1.
- if the condition1 evaluates to False then checking condition2. If the condition2 evaluates to True then the condition2 block of statements are executed.
- Like this all available conditions are checked Top-Bottom approach and executes proper block of statements based on condition.
- if all the given conditions evaluates to False then same amount of indented statements(s) follow the **else** block will be executed.
- Next outside else block if any statements are there then it executes them.

Example1: How to check a Student result based on the marks?

```
marks = int(input("Enter Student marks: "))
if marks < 0 or marks > 100:
    print('Please enter valid marks')
elif marks < 35:
    print("Sorry! Student Failed")
elif marks < 60:
    print("Congrats! Student Passed & got 2nd class")
elif marks < 75:
    print("Congrats! Student Passed & got 1st class")
else:
    print("Congrats! Student Passed & got 1st class with distinction")
```

Output:

```
Enter Student marks: 120
Please enter valid marks
```

```
Enter Student marks: 20
Sorry! Student Failed
```

```
Enter Student marks: 40
Congrats! Student Passed & got 2nd class
```

Enter Student marks: 60

Congrats! Student Passed & got 1st class

Enter Student marks: 77

Congrats! Student Passed & got 1st class with distinction

Example 2: Write a program to check food timings for eating ?

```
time = int(input("Enter your time: "))
```

```
if time > 7 and time < 10:
```

```
    print("Its time to have Breakfast..")
```

```
elif time >= 10 and time < 12:
```

```
    print("Its time to have Brunch..")
```

```
elif time >= 12 and time < 15:
```

```
    print("Its time to have Lunch..")
```

```
elif time >= 15 and time < 18:
```

```
    print("Its time to have Snacks")
```

```
elif time >= 18 and time < 20:
```

```
    print("Its time to have Dinner")
```

```
elif time >= 20 and time <= 24:
```

```
    print("Its sleeping time")
```

```
elif time >= 1 and time <= 7:
```

```
    print("Its sleeping time")
```

```
else:
```

```
    print('you entered invalid time')
```

Output:

Enter your time: 8

Its time to have Breakfast..

Enter your time: 13

Its time to have Lunch..

Enter your time: -2

you entered invalid time

Enter your time: 3

Its sleeping time

Example 3: How to find the biggest value of three given values ?

```
a = int(input("Enter First Value: "))
b = int(input("Enter Second Value: "))
c = int(input("Enter third Value: "))
if a > b and a > c:
    print(a,'is greater then ',b, 'and',c)
elif b > c:
    print(b,'is greater then ',a, 'and',c)
else:
    print(c,'is greater then ',a,'and',b)
```

Output 1:

Enter First Value: 10

Enter Second Value: 20

Enter third Value: 15

20 is greater then 10 and 15

Output 2:

Enter First Value: 10

Enter Second Value: 5

Enter third Value: 30

30 is greater then 10 and 5

Output 3:

Enter First Value: 10

Enter Second Value: 3

Enter third Value: 5

10 is greater then 3 and 5

4. Nested if - else statement:

- If we creating **if-else** statements inside another if-else statements , then we called as **Nested if-else** statments.

Example 1:

Database contains only male records, if user enters about female then display 'female records are not available' and if user enters about male then check employees name, if male employee name existed then display his details, if that name is not available then display 'nobody is there with that name'. if he enters any wrong gender then display 'you entered wrong gender'. Finally display 'thank you' at the end of result.

Q) male records displaying ?

```
gender = input("Enter gender: ")
name = input("Enter name : ")
if gender == "Female" or gender == "Male":
    if gender == 'Female':
        print("Female records are not available")
    else:
        if name == 'Satya' and gender == "Male":
            print("Satya is from hyd and working as SE")

        elif name == 'Srinivas' and gender == "Male":
            print("Srinivas is from nagpura and working as ASE")

        elif name == 'Nani' and gender == "Male":
            print("Nani is from Hyd and working as TL")

        else:
            print("No one is there with that name")
```



```
else:  
    print("You entered wrong gender: ")  
print("Thank")
```

Output:

```
Enter gender : Male  
Enter name : Satya  
Satya is from hyd and working as SE  
Thank
```

Example 4: Male records display example

```
gender=input("Enter your gender: ")  
name=input("Enter your name: ")  
if gender == "Male" or gender == "Female":  
    if gender != "Female":  
        if name == "Satya":  
            print("Satya is from Hyd and havaing 10 years exp")  
        elif name == "Sai":  
            print("Sai is from mumbai and having 20 years exp")  
        elif name == "Srinivas":  
            print("Srinivas is having 6 years exp and he is from hyd")  
        else:  
            print("sorry, your name is not avaiable in the database")  
    else:  
        print("Sorry Female records are not available in the database..")  
else:  
    print("Sorry, You entered invalid gender" )  
print("Thank You .....")
```

Output:

```
Enter your gender: Male1  
Enter your name: Satya  
Sorry, You entered invalid gender  
Thank You .....  
Enter your gender: Male  
Enter your name: Sai
```

Sai is from mumbai and having 20 years exp

Thank You

Enter your gender: Female

Enter your name: Renu

Sorry Female records are not available in the database..

Thank You

Example2: Write a program to checking the eligibility of interview ?

```
name = input("Enter your name: ")
qualification = input("Enter your qualification: ")
passedoutyear = eval(input("Enter your degree finished year: "))
percentage = eval(input("Enter your degree percentage: "))
if qualification == 'b.tech' or qualification == 'b.e':
    if passedoutyear==2017 or passedoutyear == 2016:
        if percentage >= 60 and percentage <= 100:
            print("Hey",name,"Congrates you are eligible for attending interview this
week....")
        elif percentage >= 45 and percentage < 60:
            print("Hey",name,"You can attend the interview after two weeks")
        elif percentage >= 35 and percentage < 45:
            print("Hey",name,"First you work in someother organizations and after
two years you can try")
        elif percentage < 35:
            print("Hey",name,"Please dont try to attend interview in our
organization ")
        else:
            print("Hey",name,"Please enter valid percentage")
    elif passedoutyear > 2017:
        print("Hey",name,"you entered invalid year")
    else:
        print("Hey",name,"You are not fresher")
else:
    print("Hey",name,"Sorry, only btech or be students are eligible")
```

```
print(qualification,"students are not eligible")
```

Ternary Expression Conditional Statements in Python

The Python ternary Expression determines if a condition is true or false and then returns the appropriate value in accordance with the result.

The ternary Expression is useful in cases where we need to assign a value to a variable based on a simple condition, and we want to keep our code more concise and all in just one line of code.

Syntax of Ternary Expression

[on_true] if [expression] else [on_false]

Q. Python program to demonstrate nested ternary operator

Code:

```
a, b = 10, 20
```

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

Output:

b is greater than a

Q. Conditional expression example

```
x = 5
```

```
result = "High" if x > 10 else "Low"
```

```
print(result)
```

Outputs: "Low"

Practice Example:

Q) Write a program if student enters marks < 35 then display “You are failed”, if student enters >=35 and <=100 then display “You are passed”, if marks more than 100 then display “Enter proper marks” ?

Q. Write a program to check given number is Even or Odd number ?

- Q. Write a program to check given number is Positive or Negative number ?
- Q. Write a program to check whether the given Person is eligible for Vote or not ?
- Q. Write a program to check biggest number among the given two numbers ?
- Q. Write a program to check biggest number among the given Three numbers ?
- Q. Write a program to check given number is divisible by 5 or not ?