PYTHON TUTORIAL FOR BEGINNERS

Source: www.youtube.com/@RishabhMishraOfficial

Chapter - 09

Conditional Statements in Python

- Conditional Statement definition
- Types of Conditional Statement
- Conditional Statement examples

Conditional Statements in Python

Conditional statements allow you to execute code based on **condition** evaluates to True or False. They are essential for **controlling the flow** of a program and making decisions based on different inputs or conditions.

```
# Examples

            a = 26
            b = 108
            if b > a:
                print("b is greater than a")

# Indentation - whitespace at the beginning of a line
```

Types of Conditional Statements

There are 5 types of conditional statements in Python:

1. `'if'` Statement
2. `'if-else'` statement
3. `'if-elif-else'` statement
4. Nested `'if else'` statement
5. Conditional Expressions (Ternary Operator)

1. 'if' Conditional Statement

The `if` statement is used to test a condition and execute a block of code **only if the condition is true**.

Syntax:

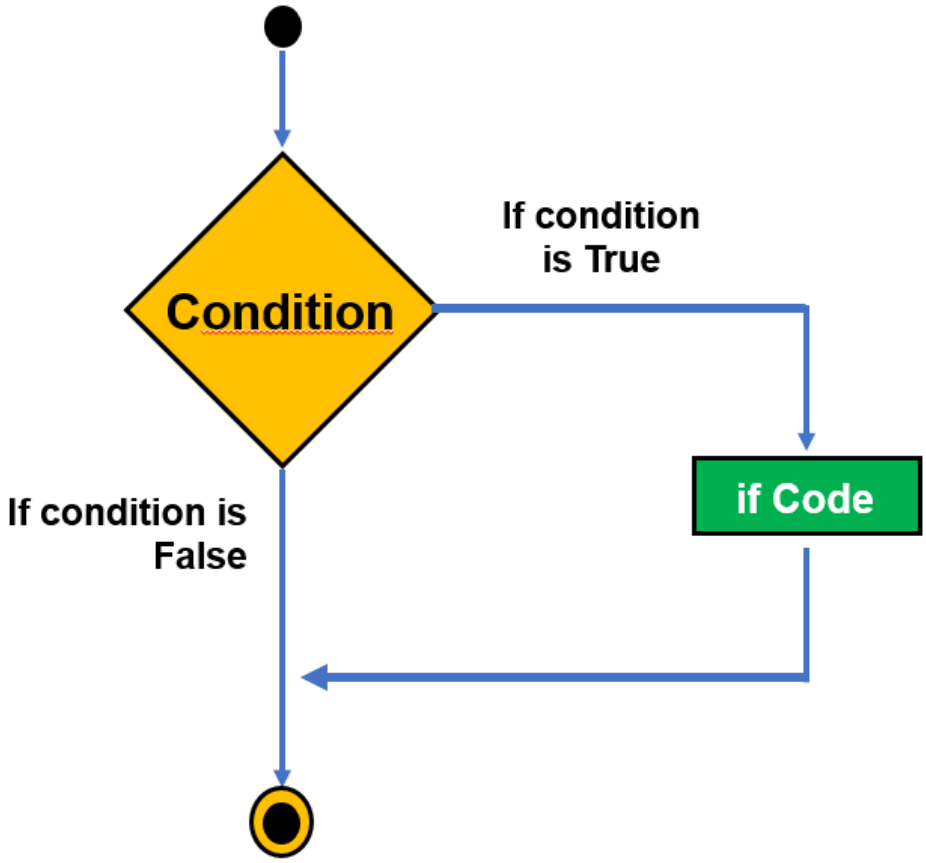
```
if condition:
    # Code to execute if the condition is true
```

Example:

```
age = 26

if age > 19:
    print("You are an adult")
```

'if' statement flow diagram:



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2. 'if-else' Conditional Statement

The `if-else` statement provides an alternative block of code to execute if the condition is **false**.

Syntax:

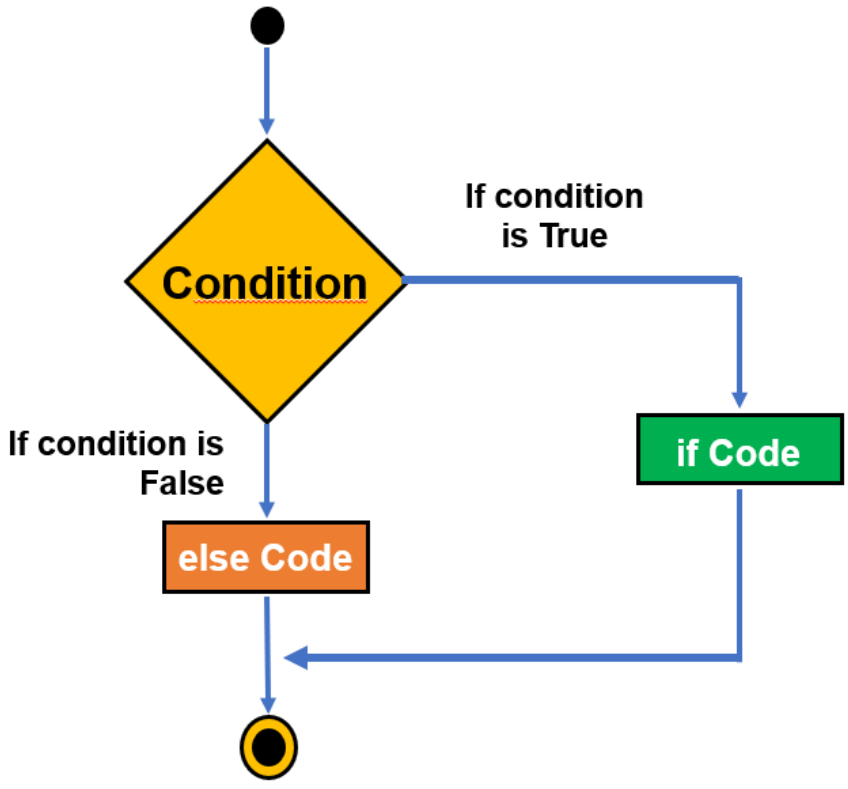
```
if condition:
    # Code to execute if the condition is true
else:
    # Code to execute if the condition is false
```

Example:

```
temperature = 30

if temperature > 25:
    print("It's a hot day.")
else:
    print("It's a cool day.")
```

'if-else' statement flow diagram:



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3. 'if-elif-else' Conditional Statement

The `if-elif-else` statement allows to check **multiple conditions** and execute different blocks of code based on which condition is true.

Syntax:

```
if condition1:
    # Code to execute if condition1 is true
elif condition2:
    # Code to execute if condition2 is true
else:
    # Code to execute if none of the above conditions are true
```

Example:

Grading system: Let's write a code to classify the student's grade based on their total marks (out of hundred).

```
score = 85
if score >= 90:
    print("Grade - A")
elif score >= 80:
    print("Grade - B")
elif score >= 70:
    print("Grade - C")
else:
    print("Grade - D")
```

4. Nested 'if-else' Conditional Statement

A `nested if-else` statement in Python involves placing an if-else statement **inside** another if-else statement. This allows for more complex decision-making by checking **multiple conditions that depend on each other**.

Syntax:

```
if condition1:
    # Code block for condition1 being True
    if condition2:
        # Code block for condition2 being True
    else:
        # Code block for condition2 being False
else:
    # Code block for condition1 being False
... ..
```

Example:

Number Classification: Let's say you want to classify a number as positive, negative, or zero and further classify positive numbers as even or odd.

```
number = 10
if number > 0:  # First check if the number is positive
    if number % 2 == 0:
        print("The number is positive and even.")
    else:
        print("The number is positive and odd.")
else:  # The number is not positive
    if number == 0:
        print("The number is zero.")
    else:
        print("The number is negative.")
```

5. Conditional Expressions

Conditional expressions provide a shorthand way to write simple if-else statements. Also known as Ternary Operator.

Syntax:

```
value_if_true if condition else value_if_false
```

Example:

```
age = 16

status = "Adult" if age >= 18 else "Minor"
print(status)
```

Conditional Statements- HW

Q1: what is expected output and reason?

```
value = None

if value:
    print("Value is True")
else:
    print("Value is False")
```

Q2: write a simple program to determine if a given year is a leap year using user input.

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