Unit:2; Class:4

Conditional Statements

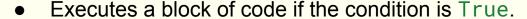
Introduction to Conditionals

- Conditionals allow programs to make decisions.
- A conditional evaluates a condition and executes a block of code based on the result (True or False).
- Keywords used: if, elif, else.

Practice Problems:

1. Define what a conditional is in Python and its purpose.

The if Statement



```
if condition:
    # Code to execute

Example Code:

x = 10
    if x > 5:
        print("x is greater than 5")
```

Class Work:

- Write a program to check if a number is positive.
- 2. Modify the above program to also check if the number is zero.

Multiple if Statements

- Each if condition is checked independently.
- All conditions that are True will execute their respective code blocks.

Syntax:

```
if condition1:
    # Code for condition1
if condition2:
    # Code for condition2
```

```
x = 10
y = 20
if x > 5:
    print("x is greater than 5")
if y > 15:
    print("y is greater than 15")
```

Class Work: Write a program to check if a number is both greater than 10 and even.

The if-else Statement



Provides an alternative block of code if the condition is False.

Syntax:

```
if condition:# Code if condition is Trueelse:# Code if condition is False
```

```
x = 3
if x > 5:
    print("x is greater than 5")
else:
    print("x is less than or equal to 5")
```

Class Work: Write a program to check if a person is eligible to vote (age >= 18).

The if-elif-else Statement

- Allows checking multiple conditions.
- Executes the first block of code where the condition is True.

Syntax:

```
if condition1:
    # Code for condition1
elif condition2:
    # Code for condition2
else:
    # Code if all conditions are False
```

```
x = 15
if x < 10:
    print("x is less than 10")
elif x < 20:
    print("x is between 10 and 20")
else:
    print("x is 20 or more")</pre>
```

Class Work: Write a program to find the largest of three numbers using conditionals.

Multiple elif Statements

- Used when more than one condition needs to be checked in sequence.
- Only the first True condition's block of code will execute.

Syntax:

```
if condition1:
    # Code for condition1
elif condition2:
    # Code for condition2
elif condition3:
    # Code for condition3
else:
    # Code if all conditions are False
```

```
x = 25
if x < 10:
    print("x is less than 10")
elif x < 20:
    print("x is between 10 and 20")
elif x < 30:
    print("x is between 20 and 30")
else:
    print("x is 30 or more")</pre>
```

Class Work: Write a program to assign a grade based on marks using multiple elif statements.

Nested Conditionals

- Conditionals inside other conditionals.
- Useful for complex decision-making.

```
x = 10
y = 5
if x > 5:
    if y < 10:
        print("x is greater than 5 and y is less than 10")</pre>
```

Class Work: Write a program to check if a number is even or odd and also if it is divisible by 5.

Solution:

```
# Write a program to check if a number is even or odd and also if it is divisible by 5.
# Input: Number from user
number = 25#int(input("Enter a number: "))
# Check if the number is even or odd
if number % 2 == 0: # even
    print(f"{number} is an even number.")
    # Nested condition to check if the number is divisible by 5
    if number % 5 == 0:
        print(f"{number} is also divisible by 5.")
    else:
        print(f"{number} is not divisible by 5.")
else: # odd
    print(f"{number} is an odd number.")
    # Nested condition to check if the number is divisible by 5
    if number % 5 == 0:
        print(f"{number} is divisible by 5.")
    else:
        print(f"{number} is not divisible by 5.")
```

Practice Time

- 1. Make a Simple Calculator.
- 2. Write a Python program to check if a number is positive, negative, or zero.
- Create a program that checks if a person is eligible to vote (age >= 18).
- 4. Write a program to find the largest of three numbers using conditionals.

Solution of Calculator

```
num 1 = int(input("Enter the first number: "))
num 2 = int(input("Enter the second number: "))
operation = input("Enter the operation (+, -, *, /): ")
if operation == "+":
    result = num 1 + num 2
elif operation == "-":
    result = num 1 - num 2
elif operation == "*":
    result = num 1 * num 2
else:
    result = num 1 / num 2
print(f"The result of {num 1} {operation} {num 2} is: {result}")
```

Assignment: Conditionals

- 1. Write a Python program to classify a given number as small (< 10), medium (10-100), or large (> 100).
- 2. Create a program that asks the user for their marks and prints the grade (A, B, C, D, F) based on the following rules:
 - A: Marks >= 90
 - B: Marks 80-89
 - C: Marks 70-79
 - o D: Marks 60-69
 - F: Marks < 60
- 3. Write a program to calculate the electricity bill:
 - o First 100 units: \$0.5/unit
 - Next 100 units: \$0.75/unit
 - o Above 200 units: \$1/unit

Summary of Class 4

- Learned about conditional statements: if, if-else, if-elif-else.
- Explored nested conditionals.
- Practiced real-world examples.

Thank You