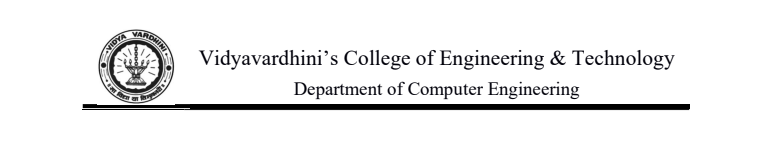
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**Experiment No. 2**

**Title: To implement Conditional Statements and Loop in Python**

**Aim**: To study, and implement Conditional Statements and Loop in Python

**Objective:** To introduce Conditional Statements and Loop in Python

**Theory:**

1. Conditional Statements

There comes situations in real life when we need to do some specific tasks, and based on some specific conditions, we decide what should we do next. Similarly, there comes a situation in programming where a specific task is to be performed if a specific condition is True. In such cases, conditional statements can be used. The following are the conditional statements provided by Python.

- if Statement

If the simple code block is to be performed if the condition holds true, then the if statement is used. Here, the condition mentioned holds true, then the code block runs; otherwise, it does not.

- if..else Statement

In the conditional if statement, the additional block of code is merged as an else statement which is performed when the if condition is false.

- Nested if Statement

The if statement can also be checked inside another if statement. This conditional statement is called a nested if statement. This means that the inner if condition will be checked only if the outer if condition is true, and by this, we can see multiple conditions to be satisfied.

- if-elif Statement

The if-elif statement is a shortcut of the if..else chain. While using the if-elif statement, at the end else block is added which is performed if none of the above if-elif statements is true.

2. Looping in Python

Python programming language provides the following types of loops to handle looping requirements. Python provides three ways for executing the loops. While all the ways provide similar basic functionality, they differ in their syntax and condition checking time.

- While Loop:

In Python, a while loop is used to execute a block of statements repeatedly until a given condition is satisfied. And when the condition becomes false, the line immediately after the loop in the program is executed.

- for in Loop:

For loops are used for sequential traversal. For example: traversing a list or string or array, etc. In Python, there is no C style for loop, i.e., for (i=0; i<n; i++). There is a "for in" loop which is similar to the for-each loop in other languages. Let us learn how to use the for in loop for sequential traversals.

**\*\* Code: \*\***

# if statement

num1 = int(input("Enter the first number: "))

if num1 > 0:

print(f"{num1} is a positive number.")

# if-else statement

num2 = int(input("Enter the second number: "))

if num2 % 2 == 0:

print(f"{num2} is an even number.")

else:

print(f"{num2} is an odd number.")

# Nested if statements

num3 = int(input("Enter the third number: "))

if num3 > 0:

print(f"{num3} is a positive number.")

if num3 % 2 == 0:

print(f"{num3} is also an even number.")

else:

print(f"{num3} is an odd number.")

elif num3 == 0:

print("You entered zero.")

else:

print(f"{num3} is a negative number.")

# if-elif statements

num4 = int(input("Enter the fourth number: "))

num5 = int(input("Enter the fifth number: "))

num6 = int(input("Enter the sixth number: "))

if num4 > num5 and num4 > num6:

print(f"{num4} is the largest number.")

elif num4 > num5 and num4 > num6:

print(f"{num4} is the largest number.")

else:

print(f"{num6} is the largest number.")

# For loop

print("\n\nCounting from 1 to 10 using a for loop:")

for i in range(10):

print(i)

print("\nEven-Odd\n")

num7=int(input("Enter the number 8 : "))

if num7%2==0:

print(f"{num7} is even")

else:

print(f"{num7} is odd")

**Output:**

A computer screen shot of a computer

Description automatically generated

**Conclusion:**

Conclusion: The experiment successfully introduced and implemented conditional statements (if, if-else, nested if, if-elif) and loops (while loop, for in loop) in Python. These fundamental programming constructs provide the ability to control the flow of the program and execute repetitive tasks efficiently.