**PYTHON LAB - Reverse a Given Number**

**Objective**

The goal of this program is to reverse a given integer input by extracting its digits one by one and reconstructing the number in reverse order.

**Program**

number = int(input("Enter the given number:"))

reverse\_number = 0

while number > 0:

digit = number % 10

reverse\_number = reverse\_number \* 10 + digit

number = number // 10

print("The reverse of given number is:", reverse\_number)

**Explanation of Code**

1. **Input Handling (int(input(...))):**
   * The program starts by taking an integer input from the user.
   * int(input("Enter the given number:")) ensures that the input is treated as an integer.
2. **Initialization:**
   * reverse\_number is initialized to 0 to store the reversed number.
3. **While Loop (while number > 0):**
   * The loop continues executing as long as the number is greater than zero.
4. **Extracting Digits (digit = number % 10):**
   * The last digit of number is obtained using the modulus operator (% 10).
5. **Building the Reversed Number (reverse\_number = reverse\_number \* 10 + digit):**
   * The extracted digit is added to the reversed number after shifting its existing digits left by one position (\* 10).
6. **Reducing the Original Number (number = number // 10):**
   * The last digit of number is removed by performing integer division (// 10).
7. **Printing the Result:**
   * After the loop ends, the reversed number is displayed using print().

**Concepts Used in the Program**

* **Looping (while loop):** Iterates through each digit of the number.
* **Modulus Operator (%):** Extracts the last digit of the number.
* **Integer Division (//):** Removes the last digit after processing.
* **Mathematical Operations (\* 10):** Helps construct the reversed number.

**Example Execution**

**Input:**

Enter the given number: 1234

**Processing:**

| **Iteration** | **Number** | **Digit Extracted** | **Reverse Number** |
| --- | --- | --- | --- |
| 1 | 1234 | 4 | 4 |
| 2 | 123 | 3 | 43 |
| 3 | 12 | 2 | 432 |
| 4 | 1 | 1 | 4321 |
| End | 0 | - | 4321 |

**Output:**

The reverse of given number is: 4321

**Alternative Approach Using String Manipulation**

Another way to achieve the same result is by converting the number to a string and reversing it using slicing.

number = input("Enter the given number:")

reverse\_number = number[::-1]

print("The reverse of given number is:", reverse\_number)

This approach is simpler but works only for positive integers.

**Conclusion**

This program effectively demonstrates number reversal using mathematical operations and loops. Understanding loops, modulus, and integer division is crucial for manipulating numerical data in Python.