Objectives

- ❏ To understand the use of loops in Python.
- ❏ To perform digit manipulation and basic mathematical operations using loops.

Outcomes

After completing this week, the students would be able to:

- ❏ Extract digits from numbers and perform calculations.
- ❏ Use loops to iterate through numbers and lists.

Problems

1. Write a program to extract each digit from an integer in reverse order.

```
# Extracting each digit from a number

num = int(input("Enter a number: "))

num1 = num

rev = 0

while num1 != 0:

    r = num1 % 10

    num1 //= 10 # use integer division

    print(r, end=" ")
```

```
Enter a number: 321
1 2 3
PS C:\Users\hp\Documents\Suhel\3rd - Sem\Lab-Manual-III>
```

2. Write a program to count the total number of digits in a number using a while loop.

```
# counting no. of digit from a number

num = int(input("Enter a number: "))

num1 = num

count = 0

while num1 != 0:

    r = num1 % 10
```

```python
    num1 //= 10 # use integer division

    count += 1

print("Total no. of digits are: ", count)
```

```
Enter a number: 321
Total no. of digits are:  3
PS C:\Users\hp\Documents\Suhel\3rd - Sem\Lab-Manual-III>
```

3. Write a program to display all prime numbers within a range.

```python
# Printing prime numbers

print("Enter a range (start, end):")

start = int(input())

end  = int(input())

def is_prime(num):

   if num == 1:

      return False

   for i in range(2, num):

      if (num % i) == 0:

         return False

   return True

for i in range(start, end+1):

   if is_prime(i):

      print(i, end=" ")
```

```
Enter a range (start, end):
1
10
2 3 5 7
PS C:\Users\hp\Documents\Suhel\3rd - Sem\Lab-Manual-III>
```

4. Write a program to use a loop to find the factorial of a given number.

```python
# factorial using loop

num = int(input("Enter a number : "))

fact = 1

for i in range(1, num+1):

   fact = fact * i

print("Factorial of", num, "is: ", fact)
```

```
Enter a number : 5
Factorial of 5 is:   120
PS C:\Users\hp\Documents\Suhel\3rd - Sem\Lab-Manual-III>
```

5. Write a program to find the sum of the digits of a supplied integer.

Sum of digits of a number

num = int(input("Enter a number: "))

num1 = num

sum = 0

while num1 != 0:

  r = num1 % 10

  num1 //= 10 # use integer division

  sum += r

print("Sum of digits of", num, "is: ", sum)

```
Enter a number: 123
Sum of digits of 123 is:  6
PS C:\Users\hp\Documents\Suhel\3rd - Sem\Lab-Manual-III>
```