**Python if else, for loop, and range() Exercises**

**This Python loop exercise include the following: –**

* **It contains 18 programs to solve using if-else statements and looping techniques.**
* **This exercise is nothing but an assignment to solve, where you can solve and practice different loop programs and challenges.**

**Exercise 1: Print First 10 natural numbers using while loop**

**Expected output:**

1

2

3

4

5

6

7

8

9

10

Ans

x=0

while x<10:

    x=x+1

    print(x)

**Exercise 2: Print the following pattern**

Write a program to print the following number pattern using a loop.

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

 Ans

for i in range (1,6):

    for j in range (1,i+1):

        print(j , end='')

    print('')

**Exercise 3: Calculate the sum of all numbers from 1 to a given number**

Write a program to accept a number from a user and calculate the sum of all numbers from 1 to a given number

For example, if the user entered **10** the output should be **55** (1+2+3+4+5+6+7+8+9+10)

**Expected Output**:

Enter number 10

Sum is:  55

Ans –

n=int(input('Enter the number: '))

sum = (n\*(n+1))/2

print(int(sum))

**Exercise 4: Write a program to print multiplication table of a given number**

For example, num = 2 so the output should be

2

4

6

8

10

12

14

16

18

20

Ans –

n= int(input('Enter the number: '))

for i in range (1,11):

    print(n\*i)

**Exercise 5: Display numbers from a list using loop**

Write a program to display only those numbers from a [list](https://pynative.com/python-lists/) that satisfy the following conditions

* The number must be divisible by five
* If the number is greater than 150, then skip it and move to the next number
* If the number is greater than 500, then stop the loop

**Given**:

8

**Expected output:**

75

150

145

 Ans

numbers = [12, 75, 150, 180, 145, 525, 50]

for i in numbers:

    if i>500:

        break

    elif i>150:

        pass

    elif i%5 ==0:

        print(i)

**Exercise 6: Count the total number of digits in a number**

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

For example, the number is **75869**, so the output should be **5**.

Ans

num=input('Enter the number: ')

count = 0

while num != 0:

    num //= 10

    count += 1

print("Number of digits: " + str(count))

**Exercise 7: Print the following pattern**

Write a program to use for loop to print the following reverse number pattern

5 4 3 2 1

4 3 2 1

3 2 1

2 1

1

Ans

rows = 5

for i in range(0, rows + 1):

    for j in range(rows - i, 0, -1):

        print(j, end=' ')

    print()

**Exercise 8: Print list in reverse order using a loop**

**Given**:

list1 = [10, 20, 30, 40, 50]

**Expected output:**

50

40

30

20

10

Ans

l = [10, 20, 30, 40, 50]

for i in range(4,-1,-1):

    print(l[i])

**Exercise 9: Display numbers from -10 to -1 using for loop**

**Expected output:**

-10

-9

-8

-7

-6

-5

-4

-3

-2

-1

Ans

for i in range(-10,0,1):

    print(i)

**Exercise 10: Use else block to display a message “Done” after successful execution of for loop**

For example, the following loop will execute without any error.

**Given**:

for i in range(5):

    print(i)

**Expected output:**

0

1

2

3

4

Done!

Ans   
for i in range(5):

    print(i)

else:

    print('Done!')

**Exercise 11: Write a program to display all prime numbers within a range**

**Note**: A Prime Number is a number that cannot be made by multiplying other whole numbers. A prime number is a natural number greater than 1 that is not a product of two smaller natural numbers

**Examples**:

* 6 is not a prime mumber because it can be made by 2×3 = 6
* 37 is a prime number because no other whole numbers multiply together to make it.

**Given**:

# range

start = 25

end = 50

**Expected output:**

Prime numbers between 25 and 50 are:

29

31

37

41

43

47

Ans

start = 25

end = 50

l=[]

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

     for i in range(2, int(num/2)+1):

        if (num % i) == 0:

            l.append(num)

            break

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

    if i not in l:

        print(i)

**Exercise 12: Display Fibonacci series up to 10 terms**

The Fibonacci Sequence is a series of numbers. The next number is found by adding up the two numbers before it. The **first two numbers are 0 and 1**.

For example, 0, 1, 1, 2, 3, 5, 8, 13, 21. The next number in this series above is 13+21 = 34.

**Expected output:**

Fibonacci sequence:

1. 1  1  2  3  5  8  13  21  34
2. Ans
3. N = int(input("Number of elements in Fibonacci Series, N, (N>=2) : "))
4. fibonacciSeries = [0,1]
5. if N>2:
6. for i in range(2, N):
7. nextElement = fibonacciSeries[i-1] + fibonacciSeries[i-2]
8. fibonacciSeries.append(nextElement)
9. print(fibonacciSeries)

**Exercise 13: Find the factorial of a given number**

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

The factorial (symbol: !) means to multiply all whole numbers from the chosen number down to 1.

**For example**: calculate the factorial of 5

5! = 5 × 4 × 3 × 2 × 1 = 120

**Expected output:**

120

Ans

n=int(input('Enter the number:'))

product =1

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

    product=product\*i

print(product)

**Exercise 14: Reverse a given integer number**

**Given**:

76542

**Expected output:**

24567

Ans

n=int(input('Enter the number:'))

k=str(n)

a=''

for i in range (len(k)-1,-1,-1):

    a=a+k[i]

print(a)

**Exercise 15: Use a loop to display elements from a given list present at odd index positions**

**Given:**

my\_list = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

**Note**: list index always starts at 0

**Expected output:**

20 40 60 80 100

Ans

my\_list = [10, 20, 30, 40, 50, 60, 70, 80, 90, 100]

for i in range (0,len(my\_list)):

    if i%2 !=0:

        print(my\_list[i],end=' ')

**Exercise 16: Calculate the cube of all numbers from 1 to a given number**

Write a program to rint the cube of all numbers from 1 to a given number

**Given**:

input\_number = 6

**Expected output:**

Current Number is : 1  and the cube is 1

Current Number is : 2  and the cube is 8

Current Number is : 3  and the cube is 27

Current Number is : 4  and the cube is 64

Current Number is : 5  and the cube is 125

Current Number is : 6  and the cube is 216

Ans

n=int(input('Enter the number:'))

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

    print('Current Number is : ',i,' and the cube is ',i\*\*3)

**Exercise 17: Find the sum of the series upto n terms**

Write a program to calculate the sum of series up to n term. For example, if n =5 the series will become 2 + 22 + 222 + 2222 + 22222 = 24690

**Given**:

# number of terms

n = 5

**Expected output:**

24690

Ans

n=int(input('Enter the number:'))

k='2'

sum=0

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

    sum=sum+int(k\*i)

print(sum)

**Exercise 18: Print the following pattern**

Write a program to print the following start pattern using the for loop

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

\* \* \* \*

\* \* \*

\* \*

\*

Ans

rows = 5

for i in range(0, rows):

    for j in range(0, i + 1):

        print("\*", end=' ')

    print("\r")

for i in range(rows, 0, -1):

    for j in range(0, i - 1):

        print("\*", end=' ')

    print("\r")