Course Outcome 2 (CO2)

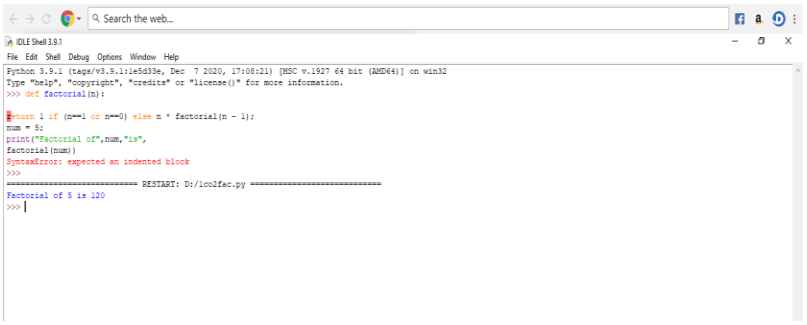
1. Program to find the factorial of a number

Program

```
def factorial(n):
    return 1 if (n==1 or n==0) else n * factorial(n - 1);
num = 5;
print("Factorial of",num,"is",
factorial(num))
```

Output

Factorial of 5 is 120



2. Generate Fibonacci series of N terms

Program:

```
nterms = int(input("How many terms? "))
 n1, n2 = 0, 1
count = 0
 if nterms <= 0:
   print("Please enter a positive integer")
elif nterms == 1:
   print("Fibonacci sequence upto",nterms,":")
```

```
  print(n1)
else:
  print("Fibonacci sequence:")
  while count < nterms:
     print(n1)
     nth = n1 + n2

     n1 = n2
     n2 = nth
     count += 1
```

Output

How many terms? 4

Fibonacci sequence:

0

1

1

2

3. Find the sum of all items in a list

Program:

```
lst = []
num = int(input('How many numbers: '))
for n in range(num):
   numbers = int(input('Enter number '))
   lst.append(numbers)
print("Sum of elements in given list is :", sum(lst))
```

Output

How many numbers: 7

Enter number 2

Enter number 3

Enter number 4

Enter number 5

Enter number 6

Enter number 7

Enter number 8

Sum of elements in given list is : 35

4. Generate a list of four digit numbers in a given range with all their digits even and the number is a perfect square.

Program:

```
def perfectSquares(l, r):
   for i in range(l, r + 1):


        if (i**(.5) == int(i**(.5))):
            print(i, end=" ")
  l = 2
r = 24

perfectSquares(l, r)
```

Output

4 9 16

5. Display the given pyramid with step number accepted from user.

Eg: N=4

1

2 4

3 6 9

4 8 12 16

Program:

```
>>> def pyr():
n=int(input("Enter the number : "))
i=1
for i in range(1,n+1):
j=1
for j in range(1,i+1):
temp=i*j;
print(temp,end="  ")
print("")


>>> pyr()
```

Output

Enter the number : 4

1

2 4

3 6 9

4 8 12 16

6. Count the number of characters (character frequency) in a string.

Program:

```
def char_frequency(str1):
    dict = {}
    for n in str1:
        keys = dict.keys()
        if n in keys:
            dict[n] += 1
        else:
            dict[n] = 1
    return dict
print(char_frequency('google.com'))
```

Output

{'g': 2, 'o': 3, 'l': 1, 'e': 1, '.': 1, 'c': 1, 'm': 1}

7. Add ‘ing’ at the end of a given string. If it already ends with ‘ing’, then add ‘ly’

Program:

```
def add_string(str1):
  length = len(str1)

  if length > 2:
    if str1[-3:] == 'ing':
      str1 += 'ly'
    else:
      str1 += 'ing'

  return str1
print(add_string('jee'))
```

```
print(add_string('jeena'))
print(add_string('string'))
```

Output

jeeing

jeenaing

stringly

8. Accept a list of words and return length of longest word.

Program:

```
def find_longest_word(words_list):
    word_len = []
    for n in words_list:
        word_len.append((len(n), n))
    word_len.sort()
    return word_len[-1][0], word_len[-1][1]
result = find_longest_word(["java", "mysql", "pythons"])
print("\nLongest word: ",result[1])
print("Length of the longest word: ",result[0])
```

Output

Longest word: pythons

Length of the longest word: 7

9. Construct following pattern using nested loop

*

* *

* * *

* * * *

* * * * *

Program:

```
n=5;
for i in range(n):
    for j in range(i):
        print ('* ', end="")
    print('')

for i in range(n,0,-1):
    for j in range(i):
        print('* ', end="")
    print('')
```

Output

**

**

** *

** * *

** * * *

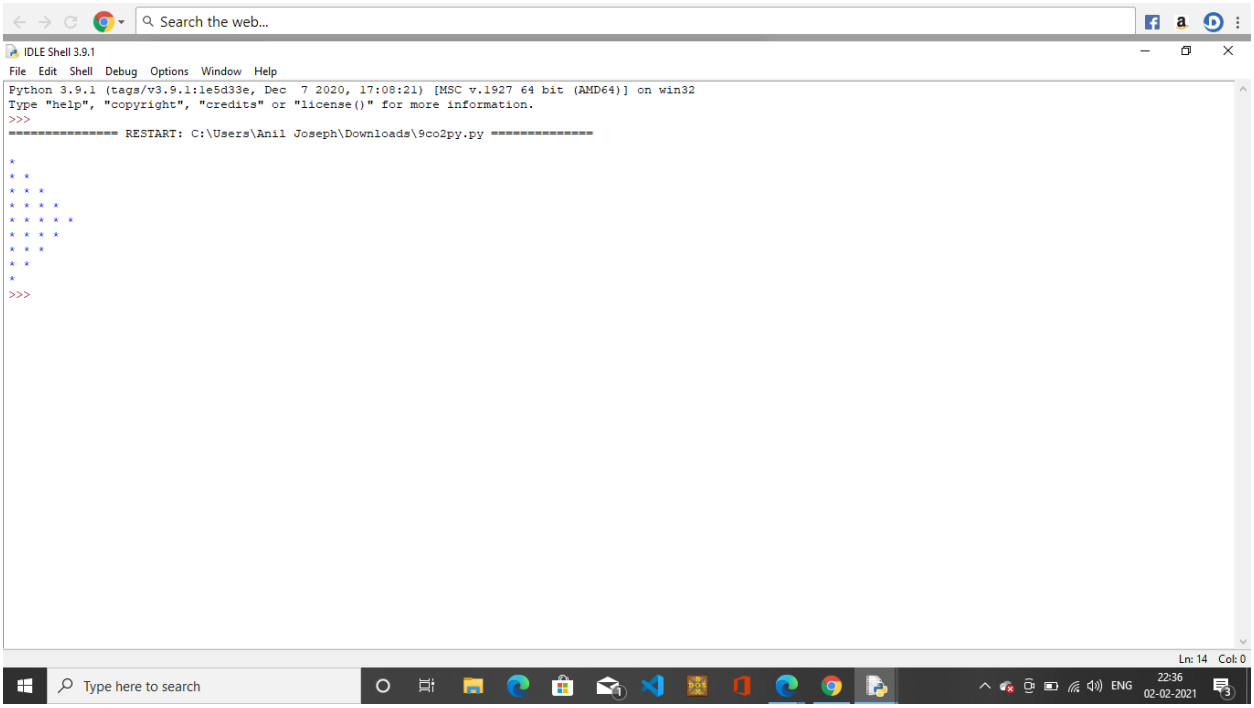
* * * * *

* * * *

* * *

* *

*



10. Generate all factors of a number.

Program:

```
def print_factors(x):
   print("The factors of",x,"are:")
   for i in range(1, x + 1):
       if x % i == 0:
           print(i)


num = 320
```

print_factors(num)

Output

The factors of 320 are:

1

2

4

5

8

10

16

20

32

40

64

80

160

320

11. Write lambda functions to find area of square, rectangle and triangle

Program:

import math

```
t_peri = lambda p,q,r : p + q + r
r_area = lambda len, ht : len*ht
c_peri = lambda rad : 2*math.pi*rad
c_area = lambda rad : math.pi*rad*rad
 print("Perimeter of Triangle (10,20,15) is:", t_peri(10,25,15))
print("Area of Rectangle (30,20) is:", r_area(25,30))
```

Output

Perimeter of Triangle (10,20,15) is: 50

Area of Rectangle (30,20) is: 750

20. From a list of integers, create a list removing even numbers.

Program:

```
list=[11,22,33,44,55,66]
print("original list")
print (list)
for i in list:
if(i%2==0):
list.remove(i)
print("list after removing an even numbers:")
print(list)
```

Output

original list

[11, 22, 33, 44, 55, 66]

list after removing an even numbers:

[11, 33, 44, 55, 66]

list after removing an even numbers:

[11, 33, 55, 66]

list after removing an even numbers:

[11, 33, 55]