Name : Neha Dumane

Roll no: 2201046

Div: A

1. Write a program to demonstrate Nested function

Code:

```
def f1():
    s = 'Outer function'
    def f2():
        s = 'Nested function'
        print(s)
    f2()
    print(s)
f1()
```

Output:

Nested function

Outer function

2. Write a program to calculate factorial of a given number using recrursion

Code:

```
def factorial(n):
```

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

Output:

```
number :  5
Factorial :  120
```

3. Write a program to create decorators and generators

Code:

```
#decorators
def decor(func):
   def inner():
      print("I got decorated")
      func()
   return inner
@decor
def func1():
   print("Function 1")
```

```
func1()
```

Output:

```
I got decorated
Function 1
```

Code:

```
#generators
def generatorExample():
  yield "P"
  yield "Y"
  yield "T"
  yield "H"
  yield "O"
  yield "N"
result = generatorExample()
for k in result:
  print(k)
```

Output:

```
P
Y
T
H
O
```

N

4. Create two different user defined modules and access respective functions from one file to another

Code:

```
#File_1.py

def func1():

   print("This function of file 1")

name = "First_file"


#File_2.py

def func2():

   print("This function of file 2")

name = "Second_file"


#main_py

import File_1,File_2

File_1.func1()

print("Creator:", File_1.name)

File_2.func2()

print("Creator:", File_2.name)
```

Output:

```
This function of file 1
```

Creator: First_file

This function of file 2

Creator: Second_file

5. write a program to access buil in functions available in math, random and datetime modules

Code:

```
import math

print("Math module:")


print("Print square root of given num:",math.sqrt(9))


print( "The value of pi is ", math.pi )


x = 4.346

print("The ceiling value of 4.346 is:",math.ceil(x))

print("The floor value of 4.346 is:",math.floor(x),"\r")


import random

print("Random module:")


num=random.random()
```

```
print("Random num:",num)


num=random.randint(1,500)
print("Random num in given range:",num)


random_str = random.choice('Random Module')
print("Prints random letter from string:",random_str,"\r")


from datetime import date,time,datetime
print("Datetime module:")


my_date = date(1887,12,4)
print("Date passed as argument is", my_date)


Time = time(11, 34, 56)
print("hour =", Time.hour)
print("minute =", Time.minute)


today = datetime.now()
print("Current date and time is", today)
```

Output:

Math module:

Print square root of given num: 3.0

The value of pi is 3.141592653589793

The ceiling value of 4.346 is: 5

The floor value of 4.346 is: 4

Random module:

Random num: 0.3356552494116489

Random num in given range: 177

Prints random letter from string: o

Datetime module:

Date passed as argument is 1887-12-04

hour = 11

minute = 34

Current date and time is 2023-05-05 14:23:57.416763