1)Read a directory path from user and list the contents of that directory sorted by file name.

```
# import OS module

import os

# Get the list of all files and directories

path = "C://Users//Vanshi//Desktop//gfg"

dir_list = os.listdir(path)

print("Files and directories in '", path, "' :")

# prints all files

print(dir_list)
```

Output:->

```
In [19]: runfile('C:/Users/Vanshi/Desktop/gfg/untitled5.py', wdir='C:/Users/Vanshi/
Desktop/gfg')
Files and directories in ' C://Users//Vanshi//Desktop//gfg ' :
['bestsellers.csv', 'country_wise_latest.csv', 'covid_19_clean_complete.csv',
'cumulative.csv', 'day_wise.csv', 'full_grouped.csv', 'GFG.png', 'gfgcopy.txt',
'my_pdf.pdf', 'output_folder', 'temperature_dataframe_editUS.csv', 'test.txt',
'test1.txt', 'titanic_train.csv', 'untitled5.py', 'usa_county_wise.csv',
'worldometer_data.csv']
```

2)Write the program to read and multiply two matrices of given size.

Code:->

```
# Program to multiply two matrices using nested loops

# take a 3x3 matrix

A = [[12, 7, 3],

        [4, 5, 6],

        [7, 8, 9]]

# take a 3x4 matrix

B = [[5, 8, 1, 2],

        [6, 7, 3, 0],
```

```
        [4, 5, 9, 1]]
result = [[0, 0, 0, 0],
                [0, 0, 0, 0],
                [0, 0, 0, 0]]
# iterating by row of A
for i in range(len(A)):
        # iterating by column by B
        for j in range(len(B[0])):
                # iterating by rows of B
                for k in range(len(B)):
                        result[i][j] += A[i][k] * B[k][j]
for r in result:
        print(r)
```

Output:->

```
[114, 160, 60, 27]
[74, 97, 73, 14]
[119, 157, 112, 23]
```

3)Create a sample log file and demonstrate Rotating of files.

```
import logging    # first of all import the module

logging.basicConfig(filename='std.log', filemode='w', format='%(name)s - %(levelname)s -
%(message)s')
logging.warning('This message will get logged on to a file')
```

Output:->

root - ERROR - This message will get logged on to a file

```
#importing the module
import logging

#now we will Create and configure logger
logging.basicConfig(filename="std.log",format='%(asctime)s %(message)s',filemode='w')

#Let us Create an object
logger=logging.getLogger()

#Now we are going to Set the threshold of logger to DEBUG
logger.setLevel(logging.DEBUG)

#some messages to test
logger.debug("This is just a harmless debug message")
logger.info("This is just an information for you")
logger.warning("OOPS!!!Its a Warning")
logger.error("Have you try to divide a number by zero")
logger.critical("The Internet is not working....")
```

Output:->

```
2020-06-19 12:48:00,449 - This is just harmless debug message
2020-06-19 12:48:00,449 - This is just an information for you
2020-06-19 12:48:00,449 - OOPS!!!Its a Warning
2020-06-19 12:48:00,449 - Have you try to divide a number by zero
2020-06-19 12:48:00,449 - The Internet is not working...
```

4)Write a function to print prime number in the given range n1 to n2 (use default 1 for parameter n1).

```
# Python program to display all the prime numbers within an interval

lower = 900
upper = 1000

print("Prime numbers between", lower, "and", upper, "are:")

for num in range(lower, upper + 1):
   # all prime numbers are greater than 1
   if num > 1:
      for i in range(2, num):
         if (num % i) == 0:
            break
      else:
         print(num)
```

Output:->

Prime numbers between 900 and 1000 are:

907

911

919

929

937

941

947

953

967

971

977

983

991

997

5)Write the program to demonstrate lambda and filter.

```
# Python program to demonstrate
# lambda functions
string ='GeeksforGeeks'
# lambda returns a function object
print(lambda string : string)
```

Output

<function <lambda> at 0x7f65e6bbce18>

6)Demonstrate List and Dictionary with its important function (minimum 4).

```
# Python3 code to demonstrate working of
# Finding min value keys in dictionary
# Using min() + list comprehension + values()

# initializing dictionary
test_dict = {'Gfg' : 11, 'for' : 2, 'CS' : 11, 'geeks':8, 'nerd':2}

# printing original dictionary
print("The original dictionary is : " + str(test_dict))

# Using min() + list comprehension + values()
# Finding min value keys in dictionary
temp = min(test_dict.values())
```

```
res = [key for key in test_dict if test_dict[key] == temp]


# printing result
print("Keys with minimum values are : " + str(res))
```

Output:

The original dictionary is : {'nerd': 2, 'Gfg': 11, 'geeks': 8, 'CS': 11, 'for': 2}
Keys with minimum values are : ['nerd', 'for']

7)Write the program to demonstrate lambda and map.

```
sequences = [10,2,8,7,5,4,3,11,0, 1]
filtered_result = map (lambda x: x*x, sequences)
print(list(filtered_result))
```

Output:

[100, 4, 64, 49, 25, 16, 9, 121, 0, 1]

8)Write a function to find Sum of digits a given number which produce single number (e.g. 99721 = 1)

```
// C++ program to find sum of
// digits of a number until
// sum becomes single digit.
#include<bits/stdc++.h>

using namespace std;

int digSum(int n)
{
```

```
        int sum = 0;

        // Loop to do sum while
        // sum is not less than
        // or equal to 9
        while(n > 0 || sum > 9)
        {
                if(n == 0)
                {
                        n = sum;
                        sum = 0;
                }
                sum += n % 10;
                n /= 10;
        }
        return sum;
}

// Driver program to test the above function
int main()
{
        int n = 1234;
        cout << digSum(n);
        return 0;
}
```

Output :

1

9)Write a program to read list of n elements (Strings). Remove duplicate elements from list

```
# Python code to remove duplicate elements
def Remove(duplicate):
    final_list = []
    for num in duplicate:
        if num not in final_list:
            final_list.append(num)
    return final_list

# Driver Code
duplicate = [2, 4, 10, 20, 5, 2, 20, 4]
print(Remove(duplicate))
```

Output:

[2, 4, 10, 20, 5]

10)Demonstrate exception handling with minimum 3 types of exception

```
try:
    a=5
    b=0
    print (a/b)
except TypeError:
    print('Unsupported operation')
except ZeroDivisionError:
    print ('Division by zero not allowed')
print ('Out of try except blocks')
```

Output

Division by zero not allowed
Out of try except blocks

11)Create a dictionary by adding the key value pair from user. Check for duplicate before adding. Display the value of key given by user.

```
# Python code to demonstrate
# finding duplicate values from a dictionary

# initialising dictionary
ini_dict = {'a':1, 'b':2, 'c':3, 'd':2}

# printing initial_dictionary
print("initial_dictionary", str(ini_dict))

# finding duplicate values
# from dictionary
# using a naive approach
rev_dict = {}

for key, value in ini_dict.items():
        rev_dict.setdefault(value, set()).add(key)

result = [key for key, values in rev_dict.items() if len(values) > 1]

# printing result
print("duplicate values", str(result))
```

Output:

initial_dictionary {'c': 3, 'b': 2, 'd': 2, 'a': 1}

duplicate values [2]

```
# Python code to demonstrate
# finding duplicate values from dictionary

# initialising dictionary
ini_dict = {'a':1, 'b':2, 'c':3, 'd':2}

# printing initial_dictionary
print("initial_dictionary", str(ini_dict))
```

```
# finding duplicate values
# from dictionary using flip
flipped = {}

for key, value in ini_dict.items():
        if value not in flipped:
                flipped[value] = [key]
        else:
                flipped[value].append(key)

# printing result
print("final_dictionary", str(flipped))
```

Output:->

```
initial_dictionary {'a': 1, 'c': 3, 'd': 2, 'b': 2}
final_dictionary {1: ['a'], 2: ['d', 'b'], 3: ['c']}
```

```
# Python code to demonstrate
```

finding duplicate values from dictionary

```
from itertools import chain

# initialising dictionary
ini_dict = {'a':1, 'b':2, 'c':3, 'd':2}

# printing initial_dictionary
print("initial_dictionary", str(ini_dict))

# finding duplicate values
```

```
# from dictionary using set
rev_dict = {}
for key, value in ini_dict.items():
        rev_dict.setdefault(value, set()).add(key)


result = set(chain.from_iterable(
            values for key, values in rev_dict.items()
            if len(values) > 1))

# printing result
print("resultant key", str(result))
```

Output:->

```
initial_dictionary {'b': 2, 'd': 2, 'c': 3, 'a': 1}
resultant key {'d', 'b'}
```

12)Write and demonstrate program to read an integer and functions to check given number is Armstrong or not.

```
# Python program to check if the number is an Armstrong number or not

# take input from the user
num = int(input("Enter a number: "))

# initialize sum
sum = 0

# find the sum of the cube of each digit
temp = num
```

```
while temp > 0:
   digit = temp % 10
   sum += digit ** 3
   temp //= 10

# display the result
if num == sum:
   print(num,"is an Armstrong number")
else:
   print(num,"is not an Armstrong number")
```

Output 1

```
Enter a number: 663

663 is not an Armstrong number
```

Output 2

```
Enter a number: 407

407 is an Armstrong number
```

13)Write a program to read a filename along with its path and create it (directories and file) if it does not exists.

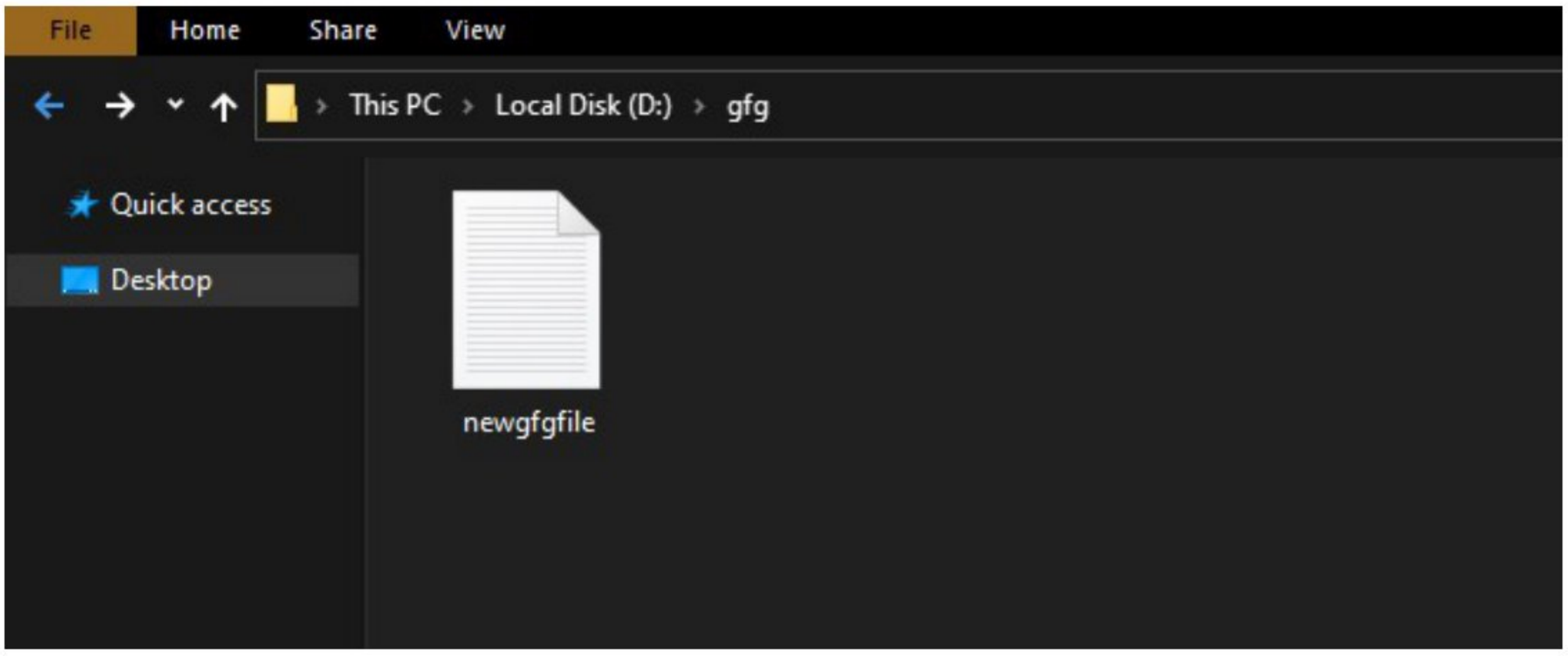
```
# path of this script
directory = "D:\gfg\\"

# get fileName from user
filepath = directory + input("Enter filename: ")

# Creates a new file
with open(filepath, 'w+') as fp:
        pass
```

Output:

Enter filename: newgfgfile.txt



14)Write and demonstrate program to read an integer and functions to find factorial of a given number.

```
# Python program to find the factorial of a number provided by the user.

# change the value for a different result

num = 7

# To take input from the user

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

factorial = 1

# check if the number is negative, positive or zero

if num < 0:

   print("Sorry, factorial does not exist for negative numbers")

elif num == 0:

   print("The factorial of 0 is 1")

else:

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

       factorial = factorial*i
```

```
print("The factorial of",num,"is",factorial)
```

Output

The factorial of 7 is 5040

15)Read a file and findout-
i)Total Number of lines and display all lines.

```
# Python program to count the
# number of lines in a text file

# Opening a file
file = open("gfg.txt","r")
Counter = 0

# Reading from file
Content = file.read()
CoList = Content.split("\n")

for i in CoList:
        if i:
                Counter += 1

print("This is the number of lines in the file")
print(Counter)
```

Output:->

This is the number of lines in the file

4

ii)Total Number of words and display all words.

```
file = open("C:\data.txt", "rt")

data = file.read()

words = data.split()

print('Number of words in text file :', len(words))
```

Output:->

Number of words in text file : 14

iii)Separate and display each sentence from the file.

```
# Python program to read

# file word by word


# opening the text file

with open('GFG.txt','r') as file:


        # reading each line
        for line in file:


            # reading each word

            for word in line.split():


                # displaying the words

                print(word)
```

Output:->

```
Geeks

4

geeks
```

16)Write a program to demonstrate class, object, Inheritance

```
# A Python program to demonstrate inheritance

# Base or Super class. Note object in bracket.

# (Generally, object is made ancestor of all classes)

# In Python 3.x "class Person" is

# equivalent to "class Person(object)"
```

```
class Person(object):

        # Constructor
        def __init__(self, name):
                self.name = name

        # To get name
        def getName(self):
                return self.name

        # To check if this person is an employee
        def isEmployee(self):
                return False


# Inherited or Subclass (Note Person in bracket)
class Employee(Person):

        # Here we return true
        def isEmployee(self):
                return True

# Driver code
emp = Person("Geek1") # An Object of Person
print(emp.getName(), emp.isEmployee())

emp = Employee("Geek2") # An Object of Employee
print(emp.getName(), emp.isEmployee())
```

Output:

Geek1 False

Geek2 True

17)Write and demonstrate program to read an integer and functions to display first n terms of Fibonacci series

```
# Program to display the Fibonacci sequence up to n-th term


nterms = int(input("How many terms? "))

# first two terms
n1, n2 = 0, 1
count = 0

# check if the number of terms is valid
if nterms <= 0:
   print("Please enter a positive integer")
# if there is only one term, return n1
elif nterms == 1:
   print("Fibonacci sequence upto",nterms,":")
   print(n1)
# generate fibonacci sequence
else:
   print("Fibonacci sequence:")
   while count < nterms:
      print(n1)
      nth = n1 + n2
      # update values
      n1 = n2
```

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

Output

```
How many terms? 7
Fibonacci sequence:
0
1
1
2
3
5
8
```