1. Read a text file and display the number of vowels/consonants/uppercase/lowercase characters in the file.

```
file1=open('testfile.txt','r')
var1=file1.read()
vcount=0
concount=0
uppercount=0
lowercount=0
for word in var1:
    if word in ['a','e','i','o','u','A','E','I','O','U']:
        vcount+=1
    elif word.isalpha():
        concount+=1
for word in var1:
    if word.isupper():
        uppercount+=1
    if word.islower():
        lowercount+=1
print(vcount)
print(concount)
print(lowercount)
print(uppercount)
```

OUTPUT

```
Number of vowels: 22
Number of consonants: 36
Number of lowercase characters: 55
Number of uppercase characters: 3
```

2.Read a text file line by line and display each word separated by a #

```
file1=open('testfile.txt','r')
var1=file1.read()
okk=var1.split()
for i in okk:
    print(i,end='#')
```

OUTPUT

```
India#defeated#Pakistan#by#20#wickets#
in#T25#international#cricket#match#
```

Testfile.txt

```
India defeated Pakistan by 20 wickets
in T25 international cricket match
```

3. Write a program to check if a given year is leap year or not.

```
a=int(input("Enter any year"))
if a%400==0:
    print(a,"is leap year")
else:
    if a%4==0 and a%100!=0:
        print(a,"is leap year")
    else:
        print(a,"is not leap year")
```

OUTPUT

```
========== RESTART
Enter any year1900
1900 is not leap year

========== RESTART
Enter any year2020
2020 is leap year
```

4. Remove all the lines that contain the character 'a' in a file and write it to another file

```
file1=open('testfile1.txt','r')
file2=open('testfile1copy.txt','w')
lst1=file1.readlines()
lst2=[]
for i in lst1:
    for j in i:
        if j=='a':
            lst2.append(i)
            break
lst3 = list(set(lst1) - set(lst2))
file2.writelines(lst3)
file2.close()
```

OUTPUT

India defeated Pokiston by 20 wickets in T25 international cricket match in 1947	20 wickets in Pokiston by in 1947

5. Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message

```
import pickle
print('1.Write')
print('2.Search')
bye=int(input('Enter your choice:'))

if bye==1:
    file1=open('student.dat','wb')
    dict1={}
    che='y'
    while che=='y':
        name=input('Enter name of the student:')
        rollno=int(input('Enter roll number'))
        dict1['Name']=name
        dict1['RollNo']=rollno
        pickle.dump(dict1,file1)
        che=input('press y/n')
    file1.close()
    print('Written')

if bye==2:
    file1=open('student.dat','rb')
    a=int(input('Enter Roll no. of student to search:'))
    lst1=[]
    lst1.append(a)
    found=False
    try:
        while True:
            stu=pickle.load(file1)
            if stu['RollNo'] in lst1:
                print(stu)
                found=True
    except EOFError:
        if found==False:
            print('No record found')
        else:
            print('Search successful')
    file1.close()
```

OUTPUT

```
1.Write
2.Search
Enter your choice:1
Enter name of the student:Rohit
Enter roll number1
Press y to continue writingy
Enter name of the student:Arvind
Enter roll number2
Press y to continue writingn
Written
1.Write
2.Search
Enter your choice:2
Enter Roll no. of student to search:2
{'Name': 'Arvind', 'RollNo': 2}
Search successful
```

6. Write a program to check if the number is prime or not.

```
num=int(input("Enter the number"))
if num > 1:
    for i in range(2, num):
        if (num % i) == 0:
            print(num, "is not a prime number")
            break
    else:
        print(num, "is a prime number")
else:
    print(num, "is not a prime number")
```

OUTPUT

```
== RESTART: D:\Desktop\Su
Enter the number15
15 is not a prime number

== RESTART: D:\Desktop\Su
Enter the number17
17 is a prime number
```

7. Write a random number generator that generate random numbers between 1 and 6 (simulates a dice)

```
import random
def dice():
    Lst=[]
    a=random.randint(1,6)
    Lst.append(a)
    return Lst

n=1
while (n==1):
    n = int(input ("Enter 1 to roll a dice:"))
    print(dice())

    if n!=1:
        print('Game Over')
```

OUTPUT

```
Enter 1 to roll a dice:1
[2]
Enter 1 to roll a dice:1
[2]
Enter 1 to roll a dice:1
[3]
Enter 1 to roll a dice:1
[1]
Enter 1 to roll a dice:5
[1]
Game Over
```

8. Create a binary file with roll number, name and marks. Input a roll number and update the marks.

```
import pickle
print('1.Write')
print('2.Update')
print('3.Read')
bye=int(input('Enter choice'))
if bye==1:
    f=open('student5','wb')
    student={}
    ans='y'
    while ans=='y':
        rollno=int(input("Enter your rollno:"))
        name=input("Enter name:")
        marks=int(input("Enter marks:"))
        student['Rollno']=rollno
        student['Name']=name
        student['Marks']=marks
        pickle.dump(student,f)
        ans=input("Do you want to continue: y/n")
    f.close()

if bye==2:
    f=open('student5','rb+')
    stu={}
    lst1=[]
    rno=int(input('Enter Roll no:'))
    marks=int(input('Enter new marks:'))
    lst1.append(rno)
    found =False
    try:
        while True:
            rpos=f.tell()
            stu=pickle.load(f)
            if stu['Rollno'] in lst1:
                stu['Marks']=marks
                f.seek(rpos)
                pickle.dump (stu,f)
                found=True
```

```
    except EOFError :
        if found==False:
            print ("sorry ..no record found")
        else:
            print("Marks Updated Successfully")
    f.close()

if bye==3:
    f=open('student5','rb')
    try:
        while True:
            ab=pickle.load(f)
            print(ab)
    except EOFError:
        f.close()

else:
    print('Invalid Choice')
```

OUTPUT

```
1.Write
2.Update
3.Read
Enter choice3
{'Rollno': 1, 'Name': 'modi', 'Marks': 15}
{'Rollno': 2, 'Name': 'yogi', 'Marks': 12}
{'Rollno': 3, 'Name': 'werf', 'Marks': 55}
```

```
1.Write
2.Update
3.Read
Enter choice2
Enter Roll no:2
Enter new marks:66
Marks Updated Successfully
```

9. Create a CSV file by entering user-id and password, read and search the password for given user-id.

```
import csv
user_info = ['Username', 'Password']
user_database = "D:\\Desktop\\Sunny\\CS PRACTICAL\\usiptest.csv"

def display_menu():
    print('MENU')
    print("1. Write")
    print("2. Read")
    print("3. Search")
    print("4. Quit")

def add_user():
    print("Add User Information")
    global user_info
    global user_database

    user_data = []
    for i in user_info:
        value = input("Enter " + i + ": ")
        user_data.append(value)

    with open(user_database, "a") as f:
        writer = csv.writer(f)
        writer.writerows([user_data])

    print("Data saved successfully")
    input("Press any key to continue")
    return

def view_user():
    global user_info
    global user_database

    print("--- Records ---")
    with open(user_database, "r", encoding="utf-8") as f:
        reader = csv.reader(f)
        for i in user_info:
            print(i, end='\t |')
        print("\n---------------------------------")
        for row in reader:
            for item in row:
                print(item, end="\t |")
            print("\n")
    input("Press any key to continue")
```

```
def search_user():
    global user_info
    global user_database

    print("--- Search User ---")
    usrnm = input("Enter username to search: ")
    with open(user_database, "r", encoding="utf-8") as f:
        reader = csv.reader(f)
        for row in reader:
            if len(row) > 0:
                if usrnm == row[0]:
                    print("----- User Found -----")
                    print("Username: ", row[0])
                    print("Password: ", row[1])
                    break
        else:
            print("Username not found in our database")
    input("Press any key to continue")

while True:
    display_menu()

    choice = input("Enter your choice: ")
    if choice == '1':
        add_user()
    elif choice == '2':
        view_user()
    elif choice == '3':
        search_user()
    else:
        break
```

OUTPUT

```
MENU
1. Write
2. Read
3. Search
4. Quit
Enter your choice: 1
Add User Information
Enter Username: Modi123
Enter Password: 123456
Data saved successfully
Press any key to continue
```

```
MENU
1. Write
2. Read
3. Search
4. Quit
Enter your choice: 1
Add User Information
Enter Username: Abcd528
Enter Password: abc@875
Data saved successfully
Press any key to continue
```

```
MENU
1. Write
2. Read
3. Search
4. Quit
Enter your choice: 2
--- Records ---
Username          |Password        |
-----------------------------------
Modi123   |123456          |



Abcd528   |abc@875         |
```

```
MENU
1. Write
2. Read
3. Search
4. Quit
Enter your choice: 3
--- Search User ---
Enter username to search: Abcd528
----- User Found -----
Username:  Abcd528
Password:  abc@875
```

10. Write a program to input two numbers and perform all arithmetic operations.

```
print("Enter 2 numbers below")
a = int(input('Enter number 1:'))
b = int(input("Enter number 2:"))
ch = 0
while ch < 5:
    print("Calculator Menu")
    print("1. Add")
    print("2. Substract")
    print("3. Multiply")
    print("4.Divide")
    print("5. Exit")
# input choice
    ch = int(input("Enter Choice(1-5): "))
    if ch == 1:
        c = a + b
        print("Sum=",c)
    elif ch == 2:
        c = a - b
        print("Difference = ",c)
    elif ch == 3:
        c=a*b
        print("Product = ",c)
    elif ch == 4:
        c = a/b
        print("Quotient = ",c)
    elif ch == 5:
        break
    else:
        print("Invalid Choice")
```

OUTPUT

```
Enter 2 numbers below
Enter number 1:55
Enter number 2:5
Calculator Menu
1. Add
2. Substract
3. Multiply
4.Divide
5. Exit
Enter Choice(1-5): 1
Sum= 60
```

```
Calculator Menu
1. Add
2. Substract
3. Multiply
4.Divide
5. Exit
Enter Choice(1-5): 2
Difference =  50
```

```
Calculator Menu
1. Add
2. Substract
3. Multiply
4.Divide
5. Exit
Enter Choice(1-5): 4
Quotient =  11.0
```

```
Calculator Menu
1. Add
2. Substract
3. Multiply
4.Divide
5. Exit
Enter Choice(1-5): 4
Quotient =  11.0
```

11. Write a program to find number of times a given word occurs in a string.

```
line = input( "Enter line :")
sub = input( "Enter substring :")
length = len(line)
lensub = len(sub)
start = count = 0
end = length
while True :
    pos = line.find(sub, start, end)
    if pos != -1:
        count += 1
        start = pos + lensub
    else:
        break
    if start >= length:
        break
print ("No. of occurrences of", sub, ':', count)
```

OUTPUT

```
Enter line :Can a this a prg a count a ??
Enter substring :a
No. of occurrences of a : 5
```

12. Write a program to count the number of times an element appears in a list.

```
def counting(L, num):
    cnt = 0
    for x in L :
        if x == num :
            cnt = cnt +1
    return(cnt)
def inputlist(L,N):
    for i in range(N) :
        num = int(input("Enter the number : "))
        L.append(num)
def printlist(L) :
    for x in L :
        print(x, end = ",")
L1 = []
N = int(input("Enter total numbers in list : "))
inputlist(L1,N)
print("List is :\n")
printlist(L1)
item = int(input("Enter the number to be counted : "))
N1 = counting(L1, item)
print("No of times", item , " appears in list : ", N1)
```

OUTPUT

```
Enter total numbers in list : 5
Enter the number : 12
Enter the number : 15
Enter the number : 15
Enter the number : 55
Enter the number : 89
List is :

12,15,15,55,89,Enter the number to be counted : 15
No of times 15  appears in list :  2
```

13. Write a python program to print the ‘Diamond’ patterns using *.

```
def pattern_diamond(n):
    no = 0
    for i in range(1, n + 1):
        for j in range (1, (n - i) + 1):
            print(end = " ")
        while no != (2 * i - 1):
            print("*", end = "")
            no = no + 1
        no = 0
        print()
    k = 1
    no = 1
    for i in range(1, n):
        for j in range (1, k + 1):
            print(end = " ")
        k = k + 1
        while no <= (2 * (n - i) - 1):
            print("*", end = "")
            no = no + 1
        no = 1
        print()
num=int(input("Enter no or lines to print:"))
pattern diamond(num)
```

OUTPUT

```
Enter no or lines to print:5
     *
    ***
   *****
  *******
*********
  *******
   *****
    ***
     *
```

14. Write a python program to print the 'Butterfly' patterns using *.

```
def pattern_butterfly(n):
    for i in range(1, n + 1):
        for j in range(1, 2 * n + 1):
            if (i < j):
                print("", end = " ");
            else:
                print("*", end = "");
            if (i <= ((2 * n) - j)):
                print("", end = " ");
            else:
                print("*", end = "");
        print("");
    for i in range(1, n + 1):
        for j in range(1, 2 * n + 1):
            if (i > (n - j + 1)):
                print("", end = " ");
            else:
                print("*", end = "");
            if ((i + n) > j):
                print("", end = " ");
            else:
                print("*", end = "");
        print("");
num=int(input("Enter no or lines to print:"))
pattern_butterfly(num)
```

OUTPUT

```
Enter no or lines to print:6
*                     *
* *                   * *
* * *                 * * *
* * * *               * * * *
* * * * *             * * * * *
* * * * * *           * * * * * *
* * * * * * *         * * * * * * *
* * * * * * *         * * * * * * *
* * * * * *             * * * * * *
* * * * *               * * * * *
* * * *                 * * * *
* * *                   * * *
* *                     * *
*                       *
```

15. Write a program in python to read lines from a text file INDIA.TXT and to find a word "India".

```
def count_word():
    file = open("D:\\Desktop\\Sunny\\CS PRACTICAL\\INDIA.txt",'r')
    count = 0
    for line in file:
        words = line.split()
        for word in words:
            if word == 'India':
                count += 1
    print("No. of times 'India' occurs in text file:",count)
    file.close()

count_word()
```

INDIA.txt

```
India is the fastest growing economy.
India is looking for more investments around the globe.
The whole world is looking at India as a great market.
Most of the Indians can Foresee the heights that
India is capable of reaching.
```

OUTPUT

```
================ RESTART: D:/Desktop/Sunny/CS
No. of times 'India' occurs in text file: 4
```

16.Write a program to find the longest word in a text file.

```
def longest_words(filename):
    with open("LONGEST.txt",'r') as infile:
        words = infile.read().split()
    max_len = len(max(words, key=len))
    return [word for word in words if len(word) == max_len]

A=longest_words('LONGEST.txt')
print('Longest word:',A)
```

OUTPUT

```
================ RESTART: D:\Desktop\S
Longest word: ['investments']
```

LONGEST.txt

```
India is the fastest growing economy.
India is looking for more investments around the globe.
```