1.Write a program to demonstrate list in python

```
list=[10,20,30,40]
print("Original list",list)
print("Length of list is",len(list))
list.insert(2,25)
print('After inserting a Search element at index 2',list)
list.append(30)
print("After appending 30 to the list",list)
print("Frequency of 30",list.count(30))
print("index of 40 in the list",list.index(40))
list.extend([15,35,50])
print("After extending the list",list)
list.sort()
print("Sorted list",list)
list.reverse()
print("Removing element 35 from the list",list)
list.pop(2)
print("Removing element from index 2",list)
del list[4]
print("Removing element using del",list)
```

Output:

Original list [10, 20, 30, 40]

Length of list is 4

After inserting a Search element at index 2 [10, 20, 25, 30, 40]

After appending 30 to the list [10, 20, 25, 30, 40, 30]

Frequency of 30 2

index of 40 in the list 4

After extending the list [10, 20, 25, 30, 40, 30, 15, 35, 50]

Sorted list [10, 15, 20, 25, 30, 30, 35, 40, 50]

Removing element 35 from the list [50, 40, 35, 30, 30, 25, 20, 15, 10]

Removing element from index 2 [50, 40, 30, 30, 25, 20, 15, 10]

Removing element using del [50, 40, 30, 30, 20, 15, 10]

[Program finished]

2.Write a program to demonstrate tuple in python

```
tup=(10,20,30,40)
print("Original tuple", tup)
print("Length of tuple in ",len(tup))
print("Frequency of 30 ",tup.count(30))
print("Index of 40 in the tuple ",tup.index(40))
print('sort tuple is ',sorted(tup))
```

output:

```
Original tuple (20, 10, 30, 40)
Length of tuple in  4
Frequency of 30  1
Index of 40 in the tuple  3
sort tuple is  [10, 20, 30, 40]
```

3.Write a program to count the number of characters in a String and store them in a dictionary data structure.

```
str=input("Enter a string: ")
n= len(str)
dict={}
for i in str:
        if i not in dict:
                dict.update({i:str.count(i)})
print(dict)
```

Output:

Enter a string: welcome

{'w': 1, 'e': 2, 'l': 1, 'c': 1, 'o': 1, 'm': 1}

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

```
import re
try:
    f1=open("Sample1.txt","r")
    f2=open("Sample2.txt","w+")
    for line in f1.readlines():
        text=re.search(r"\ba\b",line)
        if not text:
            f2.write(line)
    f2=open("Sample2.txt","r")
    print(f2.read())
except FileNotFoundError:
    print("File not found")
```

Output:

```
#Sample1 file
this is a python program
to demonstrate file operations
#Sample2 file
to demonstrate file operation
```

5.Write a Python function to evaluate exp(x) using taylor expansion series

```
import math
def taylor(x,n):
    sum=1
    for i in range(1,n+1):
        num = x**i
        den=math.factorial(i)
        value=num/den
        sum=sum+value
    return sum
x=int(input("Enter the value of x: "))
n=int(input("Enter the value of n: "))
s=taylor(x,n)
print(s)
```

Output:

```
Enter the value of x: 3
Enter the value of n: 4
16.375
```

6.Write a python program that generates random number between 1 and 6 (Stimulates a dice)

```
import random
ch='y'
while ch=='y' or ch=='Y':
        num=random.randrange(1,7)
        print(num)
        ch=input("Do you want to roll (y/n)?: ")
print("Exit")
```

Output:

```
2
Do you want to roll (y/n)?: y
3
Do you want to roll (y/n)?: y
3
Do you want to roll (y/n)?: n
Exit
```

7.Write a python program to implement a stack and queue using a list data structure.

```
#Stack.py
def push(list):
        ele=int(input("Enter ele: "))
        list.append(ele)
def pop(list):
        if len(list)==0:
                print("Empty")
                return
        list.pop()

#Queue.py
def insert(list):
        ele=int(input("Enter ele: "))
        list.append(ele)
def delete(list):
        if(len(list)==0):
                print("Empty")
                return
        list.pop(0)

#Demo.py
import Stack
import Queue
choice=int(input("1.Stack 2.Queue :"))
list=[]
if choice==1:
        while(1):
                ch2=int(input("1.Push 2.Pop 3.Exit :"))
                if ch2==1:
                        Stack.push(list)
                        print(list)
                elif ch2==2:
                        Stack.pop(list)
                        print(list)
                else:
```

```
                    break
elif choice==2:
        while(1):
                ch2=int(input("1.insert 2.delete 3.Exit :"))
                if ch2==1:
                        Queue.insert(list)
                        print(list)
                elif ch2==2:
                        Queue.delete(list)
                        print(list)
                else:
                        break
else:
        print("Invalid choice")
import Stack
import Queue
choice=int(input("1.Stack 2.Queue :"))
list=[]
if choice==1:
        while(1):
                ch2=int(input("1.Push 2.Pop 3.Exit :"))
                if ch2==1:
                        Stack.push(list)
                        print(list)
                elif ch2==2:
                        Stack.pop(list)
                        print(list)
                else:
                        break
elif choice==2:
        while(1):
                ch2=int(input("1.insert 2.delete 3.Exit :"))
                if ch2==1:
                        Queue.insert(list)
                        print(list)
                elif ch2==2:
                        Queue.delete(list)
```

```
                print(list)
            else:
                break
else:
    print("Invalid choice")
```

Output:

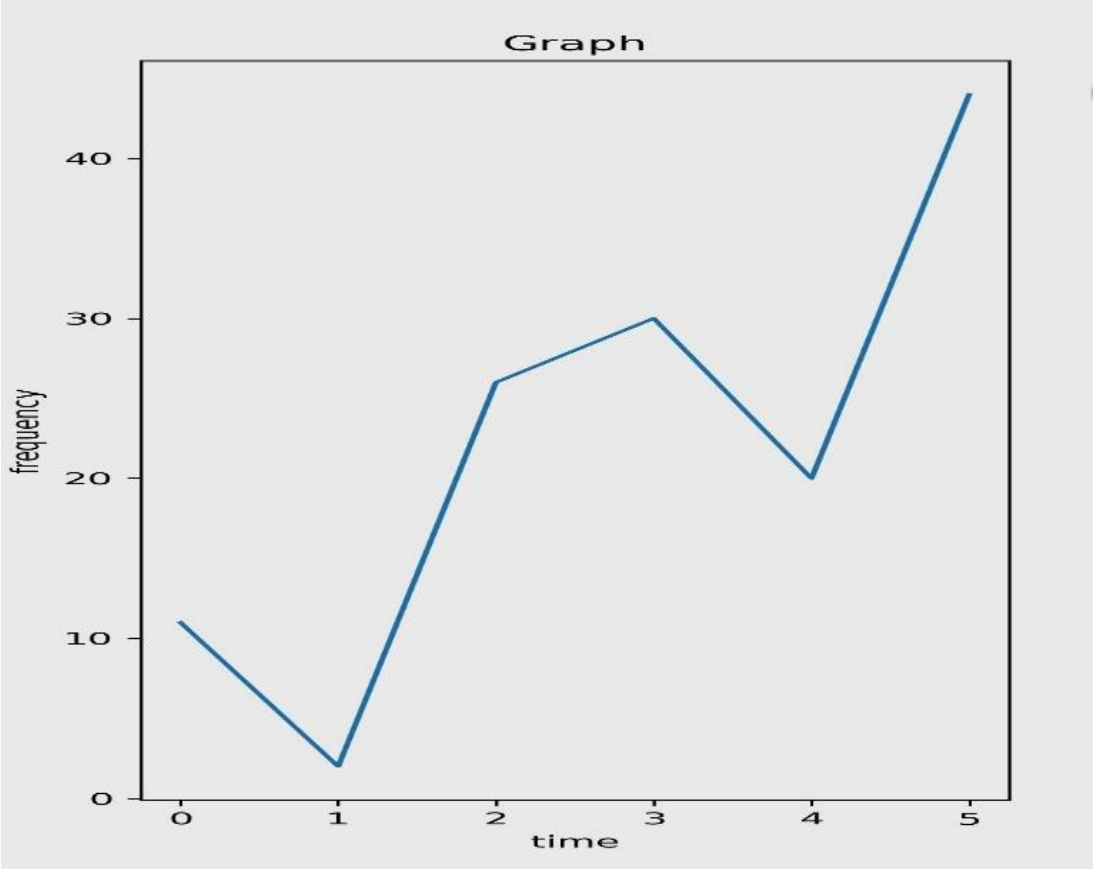
```
1.Stack 2.Queue :1
1.Push 2.Pop 3.Exit :1
Enter ele: 23
[23]
1.Push 2.Pop 3.Exit :1
Enter ele: 34
[23, 34]
1.Push 2.Pop 3.Exit :2
[23]
1.Push 2.Pop 3.Exit :3

1.Stack 2.Queue :2
1.insert 2.delete 3.Exit :1
Enter ele: 23
[23]
1.insert 2.delete 3.Exit :1
Enter ele: 34
[23, 34]
1.insert 2.delete 3.Exit :2
[34]
1.insert 2.delete 3.Exit :3
```

8.Write a python program to create a line plot.

```
import matplotlib.pyplot as plt
data=[11,2,26,30,20,44]
plt.plot(data)
plt.xlabel("time")
plt.ylabel("frequency")
plt.title("Graph")
plt.show()
```

Output:



9.Write a python program to copy odd lines from one file to another file in python.

```
f=open("Sample1.txt","r")
content=f.readlines()
le=len(content)
f2=open("Sample2.txt","w")
for i in range(0,le,2):
   f2.write(content[i])
f2.close()
f2=open("Sample2.txt","r")
print(f2.read())
```

Output:

```
this is a python program
some odd line are moved
```

```
#Sample1 file
this is a python program
to demonstrate file operations
some odd line are moved
to another file
```

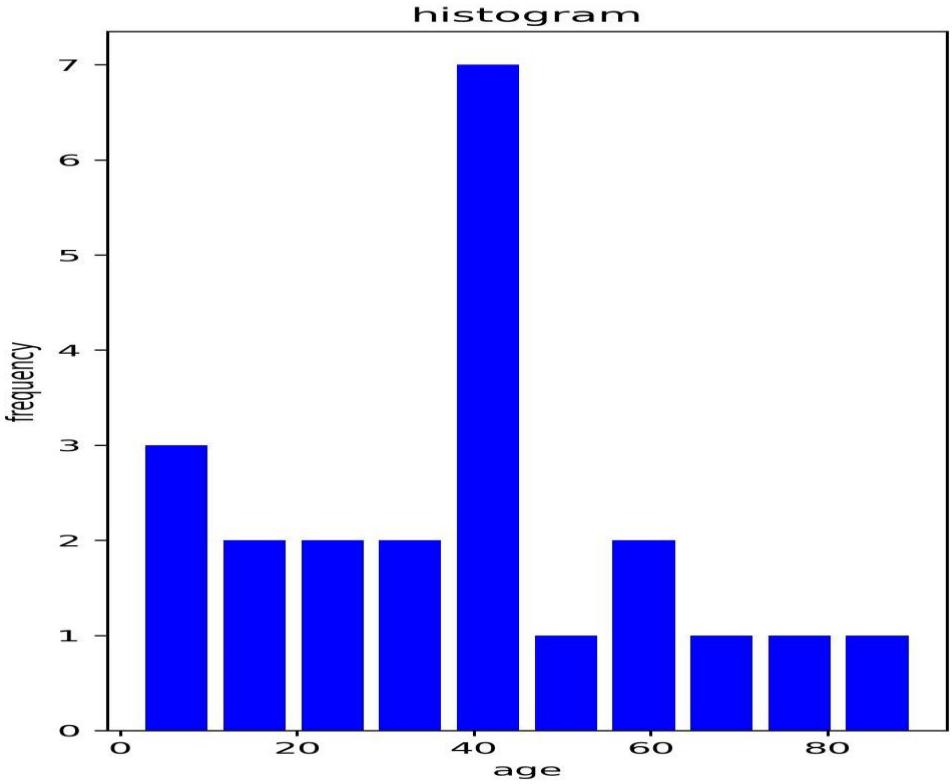
```
#Sample2 file
this is a python program
some odd line are moved
```

10.Write a python program to create histogram using pylab in python

```
import pylab

import matplotlib.pyplot as plot
data=[2,5,70,40,30,45,50,45,43,40,44,60,7,13,57,18,90,77,32,21,20,40]
plot.hist(data,color="blue",histtype="bar",rwidth=0.8)
plot.title("histogram")
plot.xlabel("age")
plot.ylabel("frequency")
plot.show()
```

Output:



11.Write a python program to create an Employee table, insert 5 tuples and delete a particular employee from the table

```
import mysql.connector as conn
db=conn.connect(user='root',password='root',host='localhost')

cu=db.cursor()
sql0="drop database db3;"
sql1="create database db3;"
sql2="use db3;"
sql3="create table employee(empid interger,ename varchar(20),dept varchar(20),salary integer);"
sql4="insert into employee values(001,'sagar','sales dept',15000);"
sql5="insert into employee values(002,'rizwan','finance dept',16000);"
sql6="insert into employee values(003,'surya','marketing dept',17000);"
sql7="insert into employee values(004,'areeb','accounts dept',18000);"
sql8="insert into employee values(005,'sathish','resource dept',19000);"
sql9="select * from employee;"
cu.execute(sql0)
cu.execute(sql1)
cu.execute(sql2)
cu.execute(sql3)
cu.execute(sql4)
cu.execute(sql5)
cu.execute(sql6)
cu.execute(sql7)
```

```
cu.execute(sql8)
cu.execute(sql9)
for i in cu.fetchall():
        print(i)
```

Output:

```
(2,'rizwan','finance dept',16000)
(3,'surya','marketing dept',17000)
(4,'areeb','accounts dept',18000)
(5,'sathish','resource dept',19000)
```

12.Write a python program to create student table and find the min,max,sum and average of the marks in a student mark table.

```
import mysql.connector as conn
db=conn.connect(user='root',password='root',host='localhost')
cu=db.cursor()
sql0="drop database db;"
sql1="create database db;"
sql2="use db;"
sql3="create table student( s_id varchar(10),name varchar(20),dept varchar(10),marks varchar(10));"

sql4="insert into student values('001','sagar','bca','78');"
sql5="insert into student values('002','rizwan','bca','88');"
sql6="insert into student values('003','surya','bca','98');"
cu.execute(sql0)
cu.execute(sql1)
cu.execute(sql2)
cu.execute(sql3)
cu.execute(sql4)
cu.execute(sql5)
cu.execute(sql6)
db.commit()
sql7="select max(marks) from student"
cu.execute(sql7)
max1=cu.fetchall()
```

```
print("maximum is ",max1)

sql8="select min(marks) from student"
cu.execute(sql8)
min1=cu.fetchall()
print("manimum is ",min1)

sql9="select avg(marks) from student"
cu.execute(sql9)
avg1=cu.fetchall()
print("avg is",avg1)

sql10="select sum(marks) from student"
cu.execute(sql10)
sum=cu.fetchall()
print("sum is",sum)
```

Output:

```
maximum is  [('98',)]
minimum is  [('78',)]
avg is [(88.0,)]
sum is [(264.0,)]
```

13.Write a python program to create customer table and find the total number of customers from each country in the table (customer ID, customer name, country)using group by.

```
import mysql.connector as conn
db=conn.connect(user='root',password='root',host='localhost')
cu=db.cursor()
sql0="drop database db;"
sql1="create database db;"
sql2="use db;"
sql3="create table customer(customer_id varchar(10),cname varchar(20),age varchar(10),country varchar(10));"
sql4="insert into student values('001','sagar','19','india');"
sql5="insert into student values('002','rizwan','20','pakistan');"
sql6="insert into student values('003','surya','21','nepal');"
cu.execute(sql0)
cu.execute(sql1)
cu.execute(sql2)
cu.execute(sql3)
cu.execute(sql4)
cu.execute(sql5)
cu.execute(sql6)
db.commit()
sql7="select count(customer_id),country from customer group by  country"
cu.execute(sql7)
details=cu.fetchall()
```

```
for i in details:
    print(i)
db.close()
```

Output:

```
(1, 'india')
(1, 'pakistan')
(1, 'nepal')
```