```
def LinearSearch():
    for i in range(len(student_list)):
        if key == student_list[i]:
            print("The Student was present at Training program!! at position",i+1)
            break
    else:
        print("The student was Absent in Training Program")
#Binary_search
def Binary_search():


    low=0
    high=len(student_list)-1


    Found=False
    while low<=high  and not Found:
        mid=(low+high)//2          #gives integer no.
        if key==student_list[mid]:
            Found=True
        elif key>student_list[mid]:
            low=mid+1
        else:
            high=mid-1
    if Found==True:
        print("The student was  present in Training Program!!! at position",mid+1)
    else:
        print("The student was  Absent in Training Program!!!")
```

```
#for Sorting


def SelectionSort():


   for i in range(0,len(student_list)-1):        # Outer for loop is used larger iterations of indexes
      minIndex = i


      for j in range(i+1 ,len(student_list) ):    # Inner for loop is used for comparison in each larger iteration
         if(student_list[j] < student_list[minIndex]):
            minIndex = j


      if(minIndex != i):
         student_list[i],student_list[minIndex] = student_list[minIndex],student_list[i]


   print("The Sorted list is:",student_list)
#Fibonacci search


def fibonacci_search():
   F=[]
   f0=0
   f1=1
   f2=1
   F.append(f0)
```

```
    F.append(f1)
    F.append(f2)
    while(f2<len(student_list)):
        f0=f1
        f1=f2
        f2=f0+f1
        F.append(f2)
    print("Required Fibonacci series is: ",F)

    offset=-1
    k=len(F)
    while(f2>1 and k>=0):
        index=min(offset+F[k-2], n-1)
        if (key>student_list[index]):
            k=k-1
            offset=index
        elif(key<student_list[index]):
            k=k-2
        elif(key==student_list[index]):
            print(key," Roll number was present for the program and found at position: ",index+1)
            return index
    else:
        print(key," Roll number was absent")
def Sentinel_search():
    key=int(input("Enter the roll number of student to check his/her presence: "))
    for i in range(len(student_list)-1):
```

```
        if(student_list[i]==key):
            print(key, " Roll number was present for the program found at: ",i)
            break
    else:
        temp=0
        temp=student_list[n-1]
        student_list[n-1]=key
        print(key, " Roll number was replaced with last roll number ")
        print("Roll number list after replacing last roll number: ",student_list)
        student_list[n-1]=temp

n=int(input("Enter the no of Students in class:"))
global student_list,key
student_list=[]
print("Enter the Roll No. of students:")
for i in range(n):

    roll_no=int(input())
    student_list.append(roll_no)
print(student_list)

while(1):
    search=print(" 1.linear search\n 2.Binary search \n 3.Fibonacci Search \n 4.Sentinel Search \n 0.Exit")
    option=int(input("Enter your Choice:"))
    if(option==1):
```

```
    key=int(input("Enter the Roll No. you want to search:"))
    LinearSearch()
  elif(option==2):
    key=int(input("Enter the Roll No. you want to search:"))
    SelectionSort()
    Binary_search()
  elif(option==3):
    key=int(input("Enter the Roll No. you want to search:"))
    SelectionSort()
    fibonacci_search()
  elif(option==4):
    key=int(input("Enter the Roll No. you want to search:"))
    Sentinel_search()
  elif(option==0):
    print("Exited!!")
    break
```

OUTPUT

```
Enter the no of Students in class:5 3
Enter the Roll No. of students:
25553
25554
25555
```

[25553, 25554, 25555]

1.linear search

2.Binary search

3.Fibonacci Search

4.Sentinel Search

0.Exit

Enter your Choice:1

Enter the Roll No. you want to search:25554

The Student was present at Training program!! at position 2

1.linear search

2.Binary search

3.Fibonacci Search

4.Sentinel Search

0.Exit

Enter your Choice:2

Enter the Roll No. you want to search:2555

The Sorted list is: [25553, 25554, 25555]

The student was Absent in Training Program!!!

1.linear search

2.Binary search

3.Fibonacci Search

4.Sentinel Search

0.Exit

Enter your Choice:3

Enter the Roll No. you want to search:25553

The Sorted list is: [25553, 25554, 25555]

Required Fibonacci series is: [0, 1, 1, 2, 3]

25553 Roll number was present for the program and found at position: 1

1.linear search

2.Binary search

3.Fibonacci Search

4.Sentinel Search

0.Exit

Enter your Choice:4

Enter the Roll No. you want to search:500

Enter the roll number of student to check his/her presence: 500

500 Roll number was replaced with last roll number

Roll number list after replacing last roll number: [25553, 25554, 500]

1.linear search

2.Binary search

3.Fibonacci Search

4.Sentinel Search

0.Exit

Enter your Choice:0

Exited!!