

Group B - Assignment 5

a) Write a python program to store roll numbers of student in array who attended training program in random order. Write function for searching whether particular student attended training program or not, using Linear search and Sentinel search.

"""

```
def accept_array(A):
    n = int(input("Enter the total no. of student : "))
    for i in range(n):
        x = int(input("Enter the roll no of student %d :"%(i+1)))
        A.append(x)
    print("Student Info accepted successfully\n\n")
    return n
```

```
def display_array(A,n):
    if(n == 0) :
        print("\nNo records in the database")
    else :
        print("Students Array : ",end=' ')
        for i in range(n) :
            print("%d "%A[i],end=' ')

        print("\n")
```

```
def Linear_Search(A,n,X) :
    for i in range(n) :
        if(A[i] == X) :
            return i    # found so returning the position i.e index
    return -1    # Not found
```

```
def Sentinel_Search(A,n,X) :
    # 0  1  2  3  4
    # 20 51 30 40 35
    last = A[n-1]    # last=35
    i = 0
    A[n-1] = X    # X->search key=51 ->A[n-1]=51
    while(A[i] != X) :    #20 51 30 40 51    last=35
        i = i+1
    A[n-1] = last    #A[n-1]=35
```

```
# 20 51 30 40 35
if( (i < n-1) or (X == A[n-1]) ) :
```

```

        return i    #roll_no found at location i
    else :
        return -1    # roll_no not found"

```

```

def Main() :
    A = []
    while True :
        print ("\t1 : Accept & Display Students info ")
        print ("\t2 : Linear Search")
        print ("\t3 : Sentinel Search")
        print ("\t4 : Exit")
        ch = int(input("Enter your choice : "))
        if (ch == 4):
            print ("End of Program")
            quit()
        elif (ch==1):
            A = []
            n = accept_array(A)
            display_array(A,n)
        elif (ch==2):
            X = int(input("Enter the roll_no to be searched : "))
            flag = Linear_Search(A,n,X)
            if(flag == -1) :
                print("\tRoll no to be Searched not Found\n")
            else :
                print("\tRoll no found at location %d"%(flag + 1))
        elif (ch==3):
            X = int(input("Enter the roll_no to be searched : "))
            flag = Sentinel_Search(A,n,X)
            if(flag == -1) :
                print("\tRoll no to be Searched not Found\n")
            else :
                print("\tRoll no found at location %d"%(flag + 1))
        else :
            print ("Wrong choice entered !! Try again")

```

Main()

'''Output:

```

1 : Accept & Display Students info
2 : Linear Search
3 : Sentinel Search

```

4 : Exit

Enter your choice : 1

Enter the total no. of student : 5

Enter the roll no of student 1 : 20

Enter the roll no of student 2 : 51

Enter the roll no of student 3 : 30

Enter the roll no of student 4 : 40

Enter the roll no of student 5 : 35

Student Info accepted successfully

Students Array : 20 51 30 40 35

1 : Accept & Display Students info

2 : Linear Search

3 : Sentinel Search

4 : Exit

Enter your choice : 2

Enter the roll_no to be searched : 30

Roll no found at location 3

1 : Accept & Display Students info

2 : Linear Search

3 : Sentinel Search

4 : Exit

Enter your choice : 3

Enter the roll_no to be searched : 51

Roll no found at location 2

1 : Accept & Display Students info

2 : Linear Search

3 : Sentinel Search

4 : Exit

Enter your choice :4 '''