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Assignment on tuples and searching

Program 1

Q1. Complete all the shell functions and programs given in the material. Write down your observations(1 line each).

>>> x=(1,2,3,4)

>>> #creating a tuple

>>> print(type(x))

<class 'tuple'>

>>> #printing type of x

>>> print(x)

(1, 2, 3, 4)

#printing the tuple

>>> print(x[::-1])

(4, 3, 2, 1)

>>> #printing tuple in reverse order

>>> print(x.index(3))

2

>>>finding index of element in tuple

>>> print(max(x))

4

>>>finding max of all elements in tuple

>>> print(min(x))

1

>>>finding min of all elements in tuple

Q2. Write a program in Python to do searching either linear or binary. The choice will be provided by the user.

**Program 2**

print("Enter 1 for linear search")

print("Enter 2 for binary search")

n1 = int(input("Enter choice "))

if(n1 == 1):

    print("Enter list elements of integer type")

    l = tuple(list(map(int, input().split())))

    n = int(input("Enter number you want to search "))

    fl = -1

    for index, item in enumerate(l):

        if item == n:

            fl = index

            break

    if fl == -1:

        print(f"Number {n} not found")

    else:

        print(f"Number {n} found at {fl} index ")

elif(n1 == 2):

    from copy import deepcopy

*#for copying an array by value*

    print("Enter list elements of integer type")

    a=(list(map(int,input().split())))

    copy=deepcopy(a)

    n=int(input("Enter number you want to search "))

    a.sort()

    fl=-1

    l=0

    h=len(a)-1

    while l<=h:

        mid=((l+h)>>1)

        if(a[mid]==n):

            fl=mid

            break

        elif(a[mid]>n):

            h=mid-1

        elif(a[mid]<n):

            l=mid+1

    if fl==-1:

        print("Number not found ")

    else:

        i=copy.index(a[fl])

        print(f"Number {n} found at index {i} of original list ")

else:

    print("Wrong choice ")

**Output for program 2**

Enter 1 for linear search

Enter 2 for binary search

Enter choice 2

Enter list elements of integer type

-1 -8 0 5 2 9 10

Enter number you want to search 2

Number 2 found at index 4 of original list