**Problem Statement: To create ADT that implement the "set" concept.**

**a. Add (newElement) -> Place a value into the set**

**b. Remove (element) -> Remove the value**

**c. Contains (element) -> Return true if element is in collection**

**d. Size () -> Return number of values in collection**

**Iterator () -> Return an iterator used to loop over collection**

**e. Intersection of two sets**

**f. Union of two sets**

**g. Difference between two sets**

**h. Subset**

# BEGINNING OF CODE

SetA = []

SetB = []

def insert():

n1 = int(input("Number of elements in SET A:\t"))

for i in range(n1):

nm = int(input(f"Element {i+1} in SET A:\t"))

SetA.append(nm)

n1 = int(input("Number of elements in SET B:\t"))

for i in range(n1):

nm = int(input(f"Element {i+1} in SET B:\t"))

SetB.append(nm)

def display():

print("SET A:\t",SetA)

print("SET B:\t",SetB)

def union():

res=[]

for i in SetA:

res.append(i)

for i in SetB:

if i not in res:

res.append(i)

print("Union:\t",res)

def intersection():

res =[]

for i in SetA:

if i in SetB:

res.append(i)

print("Intersection:\t",res)

def difference():

res =[]

for i in SetA:

if i not in SetB:

res.append(i)

for i in SetB:

if i not in SetA:

res.append(i)

print("Difference:\t",res)

def find():

t = int(input("1. SET A\n2. SET B\nChoose an option (1/2):\t"))

s=False

s = int(input("Element to search:\t"))

if t==1:

for i in range(len(SetA)):

if s == SetA[i]:

s = True

if s == True:

print("Element exists.")

else:

print("Element does not exist.")

elif t==2:

for i in range(len(SetB)):

if s == SetB[i]:

s = True

if s == True:

print("Element exists.")

else:

print("Element does not exist.")

def remove():

t = int(input("1. SET A\n2. SET B\nChoose an option (1/2):\t"))

s=False

s1 = int(input("Element to be deleted:\t"))

if t==1:

for i in range(len(SetA)):

if s1 == SetA[i]:

s = True

if s == True:

print("Element exists.")

SetA.remove(s1)

print("After deletion:\t",SetA)

else:

print("Element does not exist in SET A.")

elif t==2:

for i in range(len(SetB)):

if s1 == SetB[i]:

s = True

if s == True:

print("Element exists.")

SetB.remove(s1)

print("After deletion:\t",SetB)

else:

print("Element does not exist in SET B.")

def size():

ct=0

for i in SetA:

ct+=1

print("Size of SET A:\t",ct)

ct=0

for i in SetB:

ct+=1

print("Size of SET B:\t",ct)

def subset():

set5 = []

flag=False

for i in SetA:

if i in SetB:

set5.append(i)

flag=True

if flag==True:

print("Subset",set5)

print("SET B is a subset of SET A.")

else:

print("SET B is NOT Subset of SET A.")

while True:

print("--- SET OPERATIONS ---")

print("1 -> Insert")

print("2 -> Display")

print("3 -> Union ")

print("4 -> Intersection")

print("5 -> Difference")

print("6 -> Size of Sets")

print("7 -> Find")

print("8 -> Delete an Element")

print("9 -> Subset")

print("0 -> Exit")

ch = int(input("Choose an option (0-9):\t"))

if ch==1:

insert()

elif ch==2:

display()

elif ch==3:

union()

elif ch==4:

intersection()

elif ch==5:

difference()

elif ch==6:

size()

elif ch==7:

find()

elif ch==8:

remove()

elif ch==9:

subset()

elif ch==0:

print("\n## END OF CODE\n")

break

else:

print("Please choose a valid option (0-9).")

# END OF CODE