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S1 = []
S2 = []
A = int(input("Enter the number of elements you want to insert in S1: "))
for i in range(A):
    ele = int(input("Enter element: "))
    if ele not in S1:
        S1.append(ele)
A = int(input("Enter the number of elements you want to insert in S2: "))
for i in range(A):
    ele = int(input("Enter element: "))
    if ele not in S2:
        S2.append(ele)
def add(s):
    ele = int(input("Enter number to be added: "))
    s.insert(0, ele)
def display(s):
    print(s)
def remove(s):
    ele = int(input("Enter the element you want to remove: "))
    s.remove(ele)
def check(s):
    ele = int(input("Enter element you want to check in set: "))
    print(ele in s)
def size(s):
    print(len(s))
def union(a, b):
    result = []
    for i in a:
        result.append(i)
    for i in b:
        if i not in result:
            result.append(i)
    return result
def intersection(a, b):
    result = []
    for i in a:
        for j in b:
            if i == j:
                result.append(i)
    return result
def difference(a, b):
    result = []
    for i in a:
        if i not in b:
            result.append(i)
    return result
def subset(a, b):
    for i in a:
        if i not in b:
            return False
    return True
def propersubset(a, b):

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    return subset(a, b) and len(b) > len(a)
while True:
    print("""
    Menu:
    1. Add element to set S1
    2. Add element to set S2
    3. Display set S1
    4. Display set S2
    5. Remove from set
    6. Check element in set S2
    7. Size of set S1
    8. Size of set S2
    9. Union of sets
    10. Intersection of set S1
    11. Difference of set S1 from set S2
    12. Check if S2 is subset of S1
    13. Check if S2 is proper subset of S1
    0. Exit
    """)
    choice = int(input("Enter your choice(0-13): "))
    if choice == 1:
        add(S1)
    elif choice == 2:
        add(S2)
    elif choice == 3:
        display(S1)
    elif choice == 4:
        display(S2)
    elif choice == 5:
        remove(S1)
    elif choice == 6:
        check(S2)
    elif choice == 7:
        size(S1)
    elif choice == 8:
        size(S2)
    elif choice == 9:
        print(union(S1, S2))
    elif choice == 10:
        print(intersection(S1, S2))
    elif choice == 11:
        print(difference(S1, S2))
    elif choice == 12:
        print(subset(S2, S1))
    elif choice == 13:
        print(propersubset(S2, S1))
    elif choice == 0:
        break
    else:
        print("Invalid choice")

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