**Code:**

class sets:

    """Implementation using list"""

    def \_\_init\_\_(self) -> None:

        self.data = []

    def get\_iter(self) -> iter:

        return iter(self.data)

    def extend(self, lst: any) -> None:

        data = list(lst)

        for elmt in data:

            if (elmt not in self.data):

                self.data.append(elmt)

    def add(self, elmt: any) -> None:

        if (elmt not in self.data):

            self.data.append(elmt)

    def remove(self, elmt: any) -> bool:

        if (elmt in self.data):

            self.data.remove(elmt)

            return True

        else:

            return False

    def contains(self, elmt: any) -> bool:

        return (elmt in self.data)

    def size(self) -> int:

        l = 0

        iter1 = self.get\_iter()

        for elmt in iter1:

            l += 1

        return l

    def intersection(self, input\_set: any) -> list:

        ans = []

        set1 = list(input\_set)

        for elmt in set1:

            if (elmt in self.data):

                ans.append(elmt)

        return ans

    def union(self, input\_set: any) -> list:

        ans = self.data.copy()

        set1 = list(input\_set)

        for elmt in set1:

            if (elmt not in self.data):

                ans.append(elmt)

        return ans

    def difference(self, input\_set: any) -> list:

        ans = self.data.copy()

        set1 = list(input\_set)

        for elmt in set1:

            if elmt in ans:

                ans.remove(elmt)

        return ans

    def subset(self, input\_set: any) -> bool:

        for e in input\_set:

            if e not in self.data:

                return False

        return True

    def display(self) -> None:

        str\_set = str(self.data)

        print(str\_set.replace('[', '{').replace(']', '}'))

def input\_set() -> set:

    ans = set()

    n = int(input("Enter number of elements in set:"))

    for i in range(n):

        ans.add(int(input(f"Enter element {i+1}:")))

    return ans

def print\_set(lst: list) -> None:

    str\_set = str(lst)

    print(str\_set.replace('[', '{').replace(']', '}'))

def menu():

    print("MENU")

    print("1.Add new element")

    print("2.Remove element")

    print("3.Search element")

    print("4.Display Size of Set")

    print("5.Intersection of Sets")

    print("6.Union of Sets")

    print("7.Difference of Sets")

    print("8.Check if subset of Set")

    print("9.Display Set")

    print("10. exit")

    print("0.Display Menu")

def main() -> None:

    s1 = sets()

    choice = 1

    menu()

    while (choice != 10):

        choice = int(input("Enter Your Choice(0 for MENU):"))

        match (choice):

            case (1):

                n = int(input("Enter Number to add:"))

                s1.add(n)

                print("Element added sucessfully")

            case (2):

                n = int(input("Enter Number to Remove:"))

                if (s1.remove(n)):

                    print("Element Removed sucessfully")

                else:

                    print("Element Not present in set")

            case (3):

                n = int(input("Enter Number to Find:"))

                if (s1.contains(n)):

                    print("Element Present in set")

                else:

                    print("Element Not present in set")

            case (4):

                print("Size of the set is ", s1.size())

            case (5):

                s = input\_set()

                print("Intersection of sets is ", end="")

                print\_set(s1.intersection(s))

            case (6):

                s = input\_set()

                print("Union of sets is ", end="")

                print\_set(s1.union(s))

            case (7):

                s = input\_set()

                print("Difference of sets is ", end="")

                print\_set(s1.difference(s))

            case (8):

                s = input\_set()

                if (s1.subset(s)):

                    print("Set is Subset")

                else:

                    print("Set is Not subset")

            case (9):

                s1.display()

            case (10):

                print("Thank You!")

            case (0):

                menu()

            case default:

                print("Invalid Choice")

if \_\_name\_\_ == "\_\_main\_\_":

    main()

**Output:**

PS D:\Coding\College-code-sem4> python .\DSAL\dsal\_a4\_setOperations.py

MENU

1.Add new element

2.Remove element

3.Search element

4.Display Size of Set

5.Intersection of Sets

6.Union of Sets

7.Difference of Sets

8.Check if subset of Set

9.Display Set

10. exit

0.Display Menu

Enter Your Choice(0 for MENU):1

Enter Number to add:9

Element added sucessfully

Enter Your Choice(0 for MENU):1

Enter Number to add:8

Element added sucessfully

Enter Your Choice(0 for MENU):1

Enter Number to add:7

Element added sucessfully

Enter Your Choice(0 for MENU):9

{8, 9, 7}

Enter Your Choice(0 for MENU):2

Enter Number to Remove:7

Element Removed sucessfully

Enter Your Choice(0 for MENU):9

{8, 9}

Enter Your Choice(0 for MENU):3

Enter Number to Find:8

Element Present in set

Enter Your Choice(0 for MENU):3

Enter Number to Find:66

Element Not present in set

Enter Your Choice(0 for MENU):0

MENU

1.Add new element

2.Remove element

3.Search element

4.Display Size of Set

5.Intersection of Sets

6.Union of Sets

7.Difference of Sets

8.Check if subset of Set

9.Display Set

10. exit

0.Display Menu

Enter Your Choice(0 for MENU):4

Size of the set is 2

Enter Your Choice(0 for MENU):5

Enter number of elements in set:3

Enter element 1:8

Enter element 2:6

Enter element 3:7

Intersection of sets is {8}

Enter Your Choice(0 for MENU):6

Enter number of elements in set:3

Enter element 1:6

Enter element 2:8

Enter element 3:4

Union of sets is {8, 4, 6}

Enter Your Choice(0 for MENU):0

MENU

1.Add new element

2.Remove element

3.Search element

4.Display Size of Set

5.Intersection of Sets

6.Union of Sets

7.Difference of Sets

8.Check if subset of Set

9.Display Set

10. exit

0.Display Menu

Enter Your Choice(0 for MENU):9

{8, 9}

Enter Your Choice(0 for MENU):8

Enter number of elements in set:1

Enter element 1:8

Set is subset

Enter Your Choice(0 for MENU):7

Enter number of elements in set:1

Enter element 1:9

Difference of sets is {8}

Enter Your Choice(0 for MENU):6

Enter number of elements in set:2

Enter element 1:1

Enter element 2:6

Union of sets is {8, 9, 1, 6}

Enter Your Choice(0 for MENU):5

Enter number of elements in set:1

Enter element 1:8

Intersection of sets is {8}

Enter Your Choice(0 for MENU):10

Thank You!

PS D:\Coding\College-code-sem4>