Practical-2(A-4)

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

Code:

```
#include <iostream>

using namespace std;

class Set

{

   int a[100];int cnt;

   int no;

   public:

   Set()

   {

      cnt=0;

   }

   void add();

   void display();

   Set unionop(Set);

   int search(int);

   Set intersection(Set);

   Set Minus(Set);

   void remove();

   void subset(Set);

};


void Set :: add()

{

   cout<<"Enter how many number you want to enter "<<endl;

   cin>>no;

   for (int i=0; i<no; i++)

   {

      cout<<"Enter your number "<<i+1<<" :";

      cin>>a[cnt++];

   }
```

```
}

void Set :: display()
{
   for (int i=0;i<cnt;i++)
   {
      cout<<a[i]<<"  ";
   }
}
Set Set :: unionop(Set B)
{
   Set temp;
   for (int i = 0; i<cnt; i++)
   {
      temp.a[i] = a[i];
      temp.cnt++;
   }
   for (int i = 0; i<B.cnt;i++)
   {
      if(!temp.search(B.a[i]))
      {
         temp.a[temp.cnt++] = B.a[i];
      }
   }

   return temp;
}

int Set :: search(int s)
{
   for (int i = 0; i<cnt;i++)
   {
      if (s == a[i])
      {
         return 1;


      }
   }
   return 0;
```

```
}
Set Set :: intersection(Set B)
{
   Set temp;
   for (int i = 0; i<cnt; i++)
   {
      for (int j = 0; j<B.cnt ; j++)
      {
         if (a[i] == B.a[j])
         {
            temp.a[temp.cnt] = a[i];
            temp.cnt++;
         }
      }
   }
   return temp;
}
Set Set :: Minus (Set B)
{
   Set temp;
   int flag;
   for (int i = 0; i<cnt;i++)
   {
      flag = B.search(a[i]);
      if (flag == 0)
      {
         temp.a[temp.cnt++] = a[i];
      }
   }
   return temp;
}
void Set :: remove()
{
   int dnumber;
   int k = -1;
   cout<<"Enter number to be deleted :"<<endl;
   cin>>dnumber;

   for(int i = 0; i<cnt;i++)
```

```
    {
        if (a[i] == dnumber )
        {
                k =i;
                break;
        }
    }

    for (int j = k; j<cnt;j++)
    {
        a[j] = a[j+1];
    }
    cnt--;
}

void Set :: subset(Set B)
{
    int i;
    for (i=0;i<B.cnt;i++)
    {
        if(!search(B.a[i]))
        {
            cout<<"B is not subset of A"<<endl;
            break;
        }
    }

    if (i == B.cnt)
    {
        cout<<"B is subset of A"<<endl;
    }
}
int main()
{
    int ch;int snumber;
    Set obj;
    int ans;
    Set B;
    Set C;
```

```
Set D;
do{
   cout<<"\n----------------------------------------------------"<<endl;
   cout<<"\n1.Insert in the set A"<<endl;
   cout<<"2.Insert in the set B"<<endl;
   cout<<"3.Display"<<endl;
   cout<<"4.Search in the set"<<endl;
   cout<<"5.Union of two set "<<endl;
   cout<<"6.Intersection of two set "<<endl;
   cout<<"7.Minus of two set "<<endl;
   cout<<"8.Remove the element "<<endl;
   cout<<"9.Subset"<<endl;
   cout<<"10.Exit"<<endl;
   cout<<"\nEnter your choice "<<endl;
   cin>>ch;
   cout<<endl;

   switch(ch)
   {
      case 1:
      obj.add();
      break;
      case 2:
      B.add();
      break;
      case 3:
      obj.display();
      cout<<endl;
      B.display();
      break;
        case 4:
      cout<<"Enter the number to be searched "<<endl;
      cin>>snumber;
      ans = (obj.search(snumber) || B.search(snumber));
      if (ans == 1)
      {
         cout<<"Element found!!!!"<<endl;
         break;
      }
```

```
        else
        {
           cout<<"Element not found"<<endl;
           break;
        }
        case 5:
        C = obj.unionop(B);
        C.display();
        break;
        case 6:
        D = obj.intersection(B);
        D.display();
        break;
        case 7:
        C = obj.Minus(B);
        C.display();
        break;
        case 8:
        obj.remove();
        B.remove();
        break;
        case 9:
        obj.subset(B);
        break;
      }
   }while(ch!=10);
   return 0;
}
```

OUTPUT:

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

1

Enter how many number you want to enter

4

Enter your number 1 :5

Enter your number 2 :6

Enter your number 3 :7

Enter your number 4 :8

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

2

Enter how many number you want to enter

2

Enter your number 1 :4

Enter your number 2 :5

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

3

5 6 7 8

4 5

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

4

Enter the number to be searched

5

Element found!!!!

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

4

Enter the number to be searched

4

Element found!!!!

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

5

5 6 7 8 4

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

6

5

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

7

6 7 8

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

8

Enter number to be deleted :

5

Enter number to be deleted :

4

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

3

6 7 8

5

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

9

B is not subset of A

1.Insert in the set A

2.Insert in the set B

3.Display

4.Search in the set

5.Union of two set

6.Intersection of two set

7.Minus of two set

8.Remove the element

9.Subset

10.Exit

Enter your choice

10