LAB 2

OBJECTIVE:

To perform various set operations in C programming.

THEORY:

In Maths, sets are a collection of well-defined objects or elements. A set is represented by a capital letter symbol and the number of elements in the finite set is represented as the cardinal number of a set in a curly bracket {…}. For example, set A is a collection of all the natural numbers, such as A = {1,2,3,4,5,6,7,8,…..∞}.

In a set theory, there are three major types of operations performed on sets, such as: Union of sets (∪) Intersection of sets (∩) Difference of sets (−)

PROGRAM:

```c
#include<stdio.h>
void display(int arr[],int size){
        int i;
        for(i=0;i<size;i++)
                printf("%d ",arr[i]);
        printf("\n");
}
void Union(int a[],int b[],int m,int n){
        int i,j,k;
        int common[50],c_len=0,count=0;
        int u[50];
        for(i=0;i<m;i++)
                u[count++] = a[i];
        for(i=0;i<n;i++){
                for(j=0;j<count;j++){
                        if(b[i] == u[j]) break;
                }
                if(j==count) u[count++] = b[i];
        }
        printf("\n A U B : ");
        display(u,count);
}
void Intersection(int a[],int b[],int m,int n){
        int i,j,count=0;
        int intr[50];
        for(i=0;i<m;i++){
                for(j=0;j<n;j++){
                        if(a[i]==b[j]){
                                intr[count++]=a[i];
                                break;
                        }       }       }
        printf("\n A n B : ");
        display(intr,count);
}
void Difference(int a[], int b[],int m, int n){
        int result[50],count = 0;
        int isEqual = 0;
```

```c
        int i,j;
        for(i=0;i<m;i++){
                for(j=0;j<n;j++){
                        if(a[i] != b[j]){
                                isEqual = 0;
                        }else{
                                isEqual = 1;
                                break;
                        }
                }
                if(!isEqual) result[count++] = a[i];
        }
        printf("\n A - B : ");
        display(result,count);
}
int main(){
        int a[50],b[50];
        int m,n,i,j;

        printf("Enter the size of A and B:"); scanf("%d%d",&m,&n);

        printf("\nEnter elements of A:\n");
        for(i=0;i<m;i++)
                scanf("%d",&a[i]);
        printf("\nEnter elements of B:\n");
        for(i=0;i<n;i++)
                scanf("%d",&b[i]);
        Intersection(a,b,m,n);
        Union(a,b,m,n);
        Difference(a,b,m,n);

        return 0;
}
```
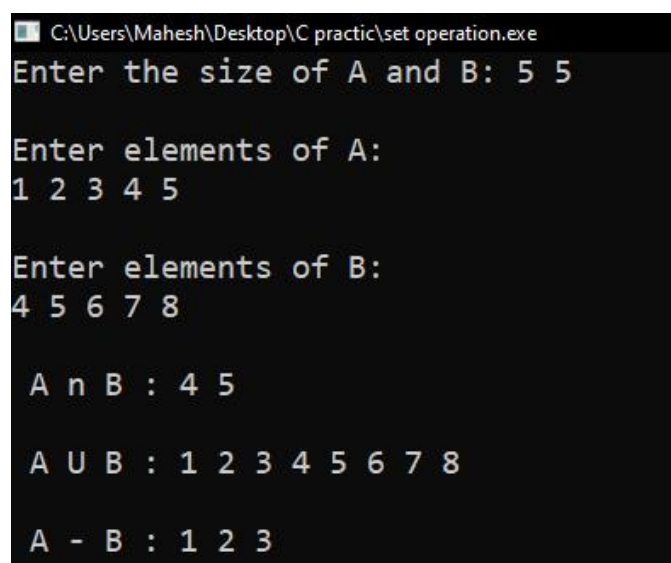
Output:

RESULTS AND DISCUSSION:

The experiment was successful to different set operatins in C programming. This program helps in C programming language.

CONCLUSION:

This laboratory exercise provided a hands-on experience in C program. Students gained practical knowledge of implementing algorithms in C programming and are now better equipped to undertake more complex programming tasks in the future.