

Discrete Structure & Logic Lab 2022-2023

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Lab 4:

Q: For instance you have two sets, write a program to perform symmetric difference operation between the sets in C.

//ABHISHEK RAJPUT
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```
#include<stdio.h>
int main()
{
    int a[100],b[100],c[100],d[100],m=0,k=0,n=0,n1,n2,l,i,j,SD[100];
    printf("Enter size of set A");
    scanf("%d",&n1);
    printf("Enter element of set");
    for( i=0;i<n1;i++)
        scanf("%d",&a[i]);
    printf("Enter size of set B");
    scanf("%d",&n2);
    printf("Enter element of set");
    for( i=0;i<n2;i++)
        scanf("%d",&b[i]);

    // logic for find A-B

    for( i=0;i<n1;i++){
        for(j=0;j<n2;j++){
            if(b[j]==a[i])
                break;
        }
        if(j==n2){
            for(l=0;l<k;l++){
                if(c[l]==a[i])
                    break;
            }
            if(l==k){
                c[k]=a[i];
                k++;
            }
        }
    }

    // logic for find B-A
    for( i=0;i<n2;i++){
        for(j=0;j<n1;j++){
            if(b[i]==a[j])
                break;
        }
    }
}
```

```

    }
    if(j==n1){
        for(l=0;l<m;l++){
            if(d[l]==b[i])
                break;
        }
        if(l==m) {
            d[m]=b[i];
            m++;
        }
    }
}
//logic for symmetric Difference
for(i=0;i<k;i++){
    SD[n]=c[i];
    n++;
}
for(i=0;i<m;i++){
    SD[n]=d[i];
    n++;
}
printf("\nsymmetric Difference of sets is:-\n");
for(i=0;i<n;i++)
    printf("%d ",SD[i]);
return 0;
}

```

Experiment \Rightarrow 4

Let Set A and Set B

(I) First we find $(A-B)$

(II) Second we find $(B-A)$

Then Symmetric difference

$$S.D. = (A-B) \cup (B-A)$$

Ex:-

$$A = \{2, 6, 8, 12, 19, 23, 27, 54\}$$

$$B = \{4, 5, 10, 24, 19, 27, 36, 49\}$$

$$A-B = \{2, 6, 8, 12, 23, 54\}$$

$$B-A = \{4, 5, 10, 24, 36, 49\}$$

$$S.D. = (A-B) \cup (B-A)$$

$$S.D. = \{2, 4, 5, 6, 8, 10, 12, 23, 24, 36, 49, 54\}$$

```

main.c
1 //ABHISHEK RAJPUT
2 //2100290120007
3
4 #include<stdio.h>
5 int main()
6 {
7     int a[100],b[100],c[100],d[100],m=0,k=0,n=0,n1,n2,l,i,j,SD[100];
8     printf("Enter size of set A : ");
9     scanf("%d",&n1);
10    printf("Enter element of set : ");
11    for( i=0;i<n1;i++)
12        scanf("%d",&a[i]);
13    printf("Enter size of set B : ");
14    scanf("%d",&n2);
15    printf("Enter element of set : ");
16    for( i=0;i<n2;i++)
17        scanf("%d",&b[i]);
18
19    // Logic for find A-B
20
21    for( i=0;i<n1;i++){
22        for(j=0;j<n2;j++){
23            if(b[j]==a[i])
24                break;
25        }
26        if(j==n2){
27            for(l=0;l<k;l++){
28                if(c[l]==a[i])
29                    break;
30            }
31            if(l==k){
32                c[k]=a[i];
33                k++;
34            }
35        }
36    }
37
38    // Logic for find B-A
39    for( i=0;i<n2;i++){
40        for(j=0;j<n1;j++){
41            if(b[i]==a[j])
42                break;
43        }
44        if(j==n1){
45            for(l=0;l<m;l++){
46                if(d[l]==b[i])
47                    break;
48            }
49            if(l==m) {
50                d[m]=b[i];
51                m++;
52            }
53        }
54    }
55
56    //Logic for symmetric Difference
57    for(i=0;i<k;i++){
58        SD[n]=c[i];
59        n++;
60    }
61    for(i=0;i<m;i++){
62        SD[n]=d[i];
63        n++;
64    }
65    printf("\nsymmetric Difference of sets is:-\n");
66    for(i=0;i<n;i++)
67        printf("%d ",SD[i]);
68    return 0;
69 }

```

```
Enter size of set A : 3
Enter element of set : 1
2
3
Enter size of set B : 2
Enter element of set : 5
7

symmetric Difference of sets is:-
1 2 3 5 7

...Program finished with exit code 0
Press ENTER to exit console.[]
```