PRACTICAL NO.1

**The code is:**

#include <iostream>

using namespace std;

int main() {

int i, j;

// UNIVERSAL SET

int total;

cout<<"How many students are there in the Universal Set? ";

cin>>total;

int U[total];

cout << "Enter roll numbers of all students:\n";

for(i = 0; i < total; i++) {

cin >> U[i];

}

// DRAMA CLUB

int d;

cout<<"Number of students in Drama Club: ";

cin>>d;

int Drama[d];

cout<<"Enter roll numbers of Drama Club members:\n";

for(i=0;i<d;i++) {

cin>>Drama[i];

}

// SCIENCE CLUB

int sc;

cout<<"Number of students in Science Club: ";

cin>>sc;

int Science[sc];

cout<<"Enter roll numbers of Science Club members:\n";

for(i=0;i<sc;i++) {

cin>>Science[i];

}

// DISPLAY INPUTS

cout<<"Universal Set (All Students): ";

for(i=0;i<total;i++) cout<<U[i]<< " ";

cout<<"\nDrama Club Members: ";

for(i=0;i<d;i++) cout<<Drama[i]<<" ";

cout<<"\nScience Club Members: ";

for(i=0;i<sc;i++) cout<<Science[i] << " ";

// UNION

int unionSet[total], uCount = 0;

for(i=0;i<d;i++) {

unionSet[uCount++]=Drama[i];

}

for(i=0;i<sc;i++) {

bool present=false;

for(j =0;j<d;j++) {

if(Science[i]==Drama[j]) {

present = true;

break;

}

}

if(!present) {

unionSet[uCount++] = Science[i];

}

}

cout<<"\nStudents in at least one club (Union A ∪ B):\n";

for(i =0;i<uCount;i++) cout<<unionSet[i] << " ";

// INTERSECTION

cout<<"\n\nStudents common in both clubs (A ∩ B):\n";

for(i=0;i<d;i++) {

for(j=0;j<sc;j++) {

if(Drama[i] == Science[j]) {

cout<<Drama[i]<< " ";

break;

}

}

}

// DIFFERENCE

cout<<"\n\nDrama Club only (A - B):\n";

for(i=0;i<d;i++) {

bool flag = false;

for(j=0;j<sc;j++) {

if(Drama[i] == Science[j]) {

flag = true;

break;

}

}

if(!flag) cout<< Drama[i]<< " ";

}

cout<<"\n\nScience Club only (B - A):\n";

for(i=0;i<sc;i++) {

bool flag = false;

for(j=0;j<d;j++) {

if(Science[i] == Drama[j]) {

flag = true;

break;

}

}

if(!flag)

cout<<Science[i] << " ";

}

//COMPLEMENT

cout << "\n\nStudents who are not in any club (U - (A ∪ B)):\n";

for(i=0;i<total;i++) {

bool inside=false;

for(j=0;j<uCount;j++) {

if(U[i] == unionSet[j]) {

inside = true;

break;

}

}

if(!inside)

cout<<U[i] << " ";

}

return 0;

}

**OUTPUT**

How many students are there in the Universal Set? 9

Enter roll numbers of all students:

9

1

8

2

7

3

6

4

5

Number of students in Drama Club: 5

Enter roll numbers of Drama Club members:

1

2

3

4

5

Number of students in Science Club: 6

Enter roll numbers of Science Club members:

2

3

9

8

1

6

Universal Set (All Students): 9 1 8 2 7 3 6 4 5

Drama Club Members: 1 2 3 4 5

Science Club Members: 2 3 9 8 1 6

Students in at least one club (Union A ∪ B):

1 2 3 4 5 9 8 6

Students common in both clubs (A ∩ B):

1 2 3

Drama Club only (A - B):

4 5

Science Club only (B - A):

9 8 6

Students who are not in any club (U - (A ∪ B)):

7

=== Code Execution Successful ===