**PROGRAM:**

#include<iostream>

using namespace std;

class sets

{

int cric[100],badmin[100],inter[100],uni[200],ocric[100],obadmin[100],neith[100];

int numc,i,j,k,numb,total;

int cnt=0,ctt=0;

int count=0;

int flag=0,flag1=0;

int ct=0,c=0;

public:

int accept()

{

cout<<"\nenter total number of students in class:\n";

cin>>total;

cout<<"\n enter total number who play cricket\n";

cin>>numc;

cout<<"\n enter the roll numbers of students who play cricket\n";

for(i=0;i<numc;i++)

{

cin>>cric[i];

}

cout<<"\n enter total number who play badminton\n";

cin>>numb;

cout<<"\n enter the roll numbers of students who play badminton\n";

for(j=0;j<numb;j++)

{

cin>>badmin[j];

}

}

int intersect();

int Union();

int onlycric();

int onlybadmin();

int neither();

};

int sets::intersect()

{

cout<<"\nthe students playing both cricket and badminton are:\n{";

for(i=0;i<numb;i++)

{

for(j=0;j<numc;j++)

{

if(cric[j]==badmin[i])

{

flag=1;

break;

}

}

if(flag==1)

{

inter[count]=badmin[i];

count++;

}

flag=0;

}

for(i=0;i<count;i++)

cout<<inter[i]<<",";

cout<<"}"<<endl;

}

int sets::Union()

{

for(i=0;i<numc;i++)

{

uni[cnt]=cric[i];

cnt++;

}

for(i=0;i<numb;i++)

{

for(j=0;j<numc;j++)

{

if(cric[j]==badmin[i])

{

flag=1;

break;

}

}

if(flag==0)

{

uni[cnt]=badmin[i];

cnt++;

}

flag=0;

}

cout<<"\nthe students playing either cricket or badminton are:\n{";

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

cout<<uni[i]<<",";

cout<<"}"<<endl;

}

int sets::onlycric()

{

cout<<"\nthe students playing only cricket are:\n{";

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

{

for(j=0;j<numb;j++)

{

if(badmin[j]==uni[i])

{

flag=1;

break;

}

}

if(flag==0)

{

ocric[ct]=uni[i];

ct++;

}

flag=0;

}

for(i=0;i<ct;i++)

cout<<ocric[i]<<",";

cout<<"}"<<endl;

}

int sets::onlybadmin()

{

cout<<"\nthe students playing only badminton are:\n{";

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

{

for(j=0;j<numc;j++)

{

if(cric[j]==uni[i])

{

flag1=1;

break;

}

}

if(flag1==0)

{

obadmin[ctt]=uni[i];

ctt++;

}

flag1=0;

}

for(i=0;i<ctt;i++)

cout<<obadmin[i]<<",";

cout<<"}"<<endl;

}

int sets::neither()

{

cout<<"\nthe students not playing any game are:\n{";

for(i=1;i<=total;i++)

{

for(j=0;j<cnt;j++)

{

if(uni[j]==i)

{

flag1=1;

break;

}

}

if(flag1==0)

{

neith[c]=i;

c++;

}

flag1=0;

}

for(i=0;i<c;i++)

cout<<neith[i]<<",";

cout<<"}"<<endl;

}

int main()

{

char ans;

int choice;

sets obj;

obj.accept();

do

{

cout<<"\nenter 1 for getting students playing both cricket and badminton\n";

cout<<"enter 2 for getting students playing either cricket or badminton\n";

cout<<"enter 3 for getting students playing only cricket\n";

cout<<"enter 4 for getting students palying only badminton\n";

cout<<"enter 5 for getting students not playing any game\n";

cin>>choice;

switch(choice)

{

case 1: obj.intersect();break;

case 2: obj.Union();break;

case 3: obj.onlycric();break;

case 4: obj.onlybadmin();break;

case 5: obj.neither();break;

default:cout<<"\ninvalid choice..\\n..please try again\n";

}

cout<<"\ndo you want to continue(y/n)\n";

cin>>ans;

}

while(ans=='Y' || ans=='y');

return 0;

}

**OUTPUT:**

enter total number of students in class:

10

enter total number who play cricket

4

enter the roll numbers of students who play cricket

1

6

3

9

enter total number who play badminton

3

enter the roll numbers of students who play badminton

1

3

2

enter 1 for getting students playing both cricket and badminton

enter 2 for getting students playing either cricket or badminton

enter 3 for getting students playing only cricket

enter 4 for getting students palying only badminton

enter 5 for getting students not playing any game

enter 6 for getting all the sets

6

the students playing both cricket and badminton are:

{1,3,}

the students playing either cricket or badminton are:

{1,6,3,9,2,}

the students playing only cricket are:

{6,9,}

the students playing only badminton are:

{2,}

the students not playing any game are:

{4,5,7,8,10,}

do you want to continue(y/n)n