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**ROLL NO:-SECOA115**

**ASSIGNMENT NO:-02**

**AIM:-** In second year computer engineering class of M students,set A of students play cricket and set B

of students play badminton,Write C++ program to find and display.

1. Set of students who play either cricket or badminton or both.

2. Set of students who play both cricket and badminton.

3. Set of students who play only cricket.

4. Set of students who play only badminton.

5. Number of students who play neither cricket nor badminton.

(NOTE:While realizing the set duplicate entries are to avoided).

**PROGRAM:-**

#include<iostream>

#include<cstring>

using namespace std;

class Student

{

int roll[50];

string name[50];

int total;

public:

Student()

{

total=0;

}

void accept();

void display();

void intersection(Student,Student);

int unionS(Student,Student);

void diff(Student,Student);

};

void Student::accept()

{

cout<<"\nENter Number of Students: ";

cin>>total;

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

{

cout<<"Enter Student roll no: ";

cin>>roll[i];

cout<<"Enter Student name: ";

cin>>name[i];

for(int j=0;j<i;j++)

{

if(roll[j]==roll[i])

{

cout<<"\nRepeatedRecord.Please Enter Again!!";

i--;

break;

}

}

}

}

void Student::display()

{ cout<<"{";

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

{

cout.width(5);

cout<<roll[i]<<"-"<<name[i];

if(i<total-1)

{

cout<<",";

}

}cout<<"}";

cout<<endl;

}

void Student::intersection(Student s1,Student s2)

{

for(int i=0;i<s1.total;i++)

{

for(int j=0;j<s2.total;j++)

{

if(s1.roll[i]==s2.roll[j])

{

roll[total]=s1.roll[i];

name[total]=s1.name[i];

total++;

break;

}

}

}

}

void Student::diff(Student s1,Student s2)

{

int flag=1;

for(int i=0;i<s1.total;i++)

{

for(int j=0;j<s2.total;j++)

{

if(s1.roll[i]==s2.roll[j])

{

flag=0;

break;

}

else flag=1;

}

if(flag==1)

{

roll[total]=s1.roll[i];

name[total]=s1.name[i];

total++;

}

}

}

int Student::unionS (Student s1,Student s2)

{

int flag=0;

int i=0;

for(i=0;i<s1.total;i++)

{

roll[total]=s1.roll[i];

name[total]=s1.name[i];

total++;

}

for(int j=0;j<s2.total;j++)

{

flag=0;

for(i=0;i<s1.total;i++)

{

if(s1.roll[i]==s2.roll[j])

{

flag=1;

break;

}

}

if(flag==0)

{

roll[total]=s2.roll[j];

name[total]=s2.name[i];

total++;

}

}

return total;

}

int main()

{

Student cric,bad,sunion,onlycric,onlybad,inter;

int class\_total,union\_total;

cout<<"\nENter Number of Students in a class : ";

cin>>class\_total;

cout<<"\nEnter INFO FOR Students who play cricket: \n";

cric.accept();

cout<<"\nEnter INFO FOR Students who play Badminton: \n";

bad.accept();

cout<<"Cricket Set :";

cric.display();

cout<<"\nBadminton Students Set: ";

bad.display();

int ch;

char z;

do

{ cout<<"1-union \t 2-intersection \t 3-ony cricket \t 4-only bad \t 5-ninor"<<endl;

cout<<"enter ur choice"<<endl;

cin>>ch;

switch(ch)

{ case 1:

cout<<"\nCricket or badminton or both Students set: ";

union\_total= sunion.unionS(cric,bad);

sunion.display();

break;

case 2:

cout<<"\nStudents play Both Cricket and Badminton Set: ";

inter.intersection(cric,bad);

inter.display();

break;

case 3:

cout<<"\nStudents play only cricket set: ";

onlycric.diff(cric,bad);

onlycric.display();

break;

case 4:

cout<<"\nStudents play only badminton set: ";

onlybad.diff(bad,cric);

onlybad.display();

break;

case 5:

cout<<"\nTotal Number of students who play neither cricket nor badminton: "<<class\_total-union\_total;

break;

default:

cout<<"invalid choice";

break;

}cout<<"any other choice?(y/n)"<<endl;

cin>>z;

}while(z=='y' || z=='Y');

return 0;

}

**OUTPUT:-**

Enter the total Number of Students in class : 10

Enter INFO FOR Students who play cricket:

Enter Number of Student : 4

Enter Student roll no: 1

Enter Student name: riya

Enter Student roll no: 2

Enter Student name: priya

Enter Student roll no: 3

Enter Student name: suriya

Enter Student roll no: 4

Enter Student name: tiya

Enter INFO FOR Students who play Badminton:

Enter Number of Student : 5

Enter Student roll no: 1

Enter Student name: riya

Enter Student roll no: 5

Enter Student name: jiya

Enter Student roll no: 3

Enter Student name: suriya

Enter Student roll no: 4

Enter Student name: tiya

Enter Student roll no: 8

Enter Student name: mina

Cricket Set :{ 1-riya, 2-priya, 3-suriya, 4-tiya}

Badminton Set :{ 1-riya, 5-jiya, 3-suriya, 4-tiya, 8-mina}

1-union 2-intersection 3-only cricket 4-only bad 5-ni nor

enter ur choice

1

Cricket or badminton or both Students set: { 1-riya, 2-priya, 3-suriya, 4-tiya, 5-jiya, 8-mina}

Any other choice?(y/n)

Y

1-union 2-intersection 3-only cricket 4-only bad 5-ni nor

enter ur choice

2

Students playing both Cricket and badminton Set : { 1-riya, 3-suriya, 4-tiya,}

Any other choice?(y/n)

Y

1-union 2-intersection 3-only cricket 4-only bad 5-ni nor

enter ur choice

3

Students play only cricket set: { 2-priya}

Any other choice?(y/n)

Y

1-union 2-intersection 3-only cricket 4-only bad 5-ni nor

enter ur choice

4

Students play only badminton set: { 5-jiya, 8-mina}

Any other choice?(y/n)

Y

1-union 2-intersection 3-only cricket 4-only bad 5-ni nor

enter ur choice

5

Total Number of students who play neigther cricket nor badminton: 4

Any other choice?(y/n)

n