Jaypee University of Engineering and Technology, Guna

Department of Computer Science and Engineering

Object Oriented Programming Lab (18B17CI271)

Lab Exercise-4

(Classes and friend functions)

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1.The annual examination results of 100 students are tabulated as follows:

Roll No. Subject 1 Subject 2 Subject 3............

Write a program to read the data and determine the following:a) Total marks obtained by each student.b) The highest marks in each subject and the Roll No. of the students who secured it.c) The student who obtained the highest total marks.

```cpp
#include <iostream>

using namespace std;

class student
{
public:
    int roll_no;
    float sub1, sub2, sub3;
    float total;

    void input()
    {
        cout << "Enter the roll number,sub1,sub2,subj3" << endl;
        cin >> roll_no >> sub1 >> sub2 >> sub3;
        total = sub1 + sub2 + sub3;
    }
};
int main()
{

    student st[5];
    for (int i = 0; i < 5; i++)
    {
        st[i].input();
    }


    int high = 0;
    for (int i = 0; i < 5; i++)
    {

        if (st[i].sub1 > st[high].sub1)
        {
            high = i;
        }
    }
    cout << "Student who got highest in subject 1" << endl;
    cout<<"ROLL NO . :"<<st[high].roll_no<<'\t'<<"Marks : "<<st[high].sub1<<endl;
    high = 0;
    for (int i = 0; i < 5; i++)
    {

        if (st[i].sub2 > st[high].sub2)
        {
            high = i;
        }
    }
    cout << "Student who got highest in subject 2" << endl;
    cout<<"ROLL NO . :"<<st[high].roll_no<<'\t'<<"Marks : "<<st[high].sub2<<endl;
    high = 0;
    for (int i = 0; i < 5; i++)
    {
```

```cpp
        if (st[i].sub3 > st[high].sub3)
        {
            high = i;
        }
    }
    cout << "Student who got highest in subject 3" << endl;
    cout<<"ROLL NO . :"<<st[high].roll_no<<'\t'<<"Marks : "<<st[high].sub3<<endl;
    high = 0;
    for (int i = 0; i < 5; i++)
    {

        if (st[i].total > st[high].total)
        {
            high = i;
        }
    }
    cout<<"The student who obtained the highest total marks"<<endl;
    cout<<"ROLL NO . :"<<st[high].roll_no<<'\t'<<"Marks : "<<st[high].total<<endl;


    return 0;
}
```

OUTPUT:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\hp\Desktop\lab4> cd "c:\Users\hp\Desktop\lab4\" ; if ($?) { g++ que1.cpp -o que1 } ; if ($?) { .\que1 }
Enter the roll number,sub1,sub2,subj3
1
45
96
87
Enter the roll number,sub1,sub2,subj3
2
14
68
75
Enter the roll number,sub1,sub2,subj3
3
48
65
96
Enter the roll number,sub1,sub2,subj3
4
78
52
64
Enter the roll number,sub1,sub2,subj3
5
14
99
78
Student who got highest in subject 1
ROLL NO . :4    Marks : 78
Student who got highest in subject 2
ROLL NO . :5    Marks : 99
Student who got highest in subject 3
ROLL NO . :3    Marks : 96
The student who obtained the highest total marks
ROLL NO . :1    Marks : 228
PS C:\Users\hp\Desktop\lab4>
```

Share ⓘ CMake: [Debug]: Ready ✂ No Kit Selected ⚙ Build [all] ⚙ ▷ ▶ Run C++   Ln 72, Col 5   Spaces: 4   UTF-8   CRLF   C++   ⊙ Go Live   Win32

2.Define a class to represent a bank account, including the following data members:

#Name of thedepositors

#Account number

#Type of account

#Balance amount in the account

 and member functions:

#To assign initial values

#To deposit an amount

 #To withdraw an amount after checking the balance

 #To display the name and balance Write a main program to test the program.

```cpp
#include <iostream>
#include<string.h>
using namespace std;

class account
{
    char name[20];
    long long int acc_num;
    char type[20];
    float bal_amt;

public:
    void assign();
    void credit();
    void debit();
    void detail();
};
void account ::assign()
{
    strcpy(name, "Palash");
    acc_num = 7999268563;
    strcpy(type, "CURRENT");
    bal_amt = 15000;
}
void account ::credit()
{
    float amount;
    cout << "\nEnter the amount to be Credited\n";
    cin >> amount;
    bal_amt += amount;
}
void account ::debit()
{
    float amount;
    cout << "\n Current Balance : " << bal_amt;
    cout << "\nEnter the amount to be Debited\n";
    cin >> amount;
    if (bal_amt - amount >= 0)
        bal_amt -= amount;
    else
        cout << "\nNOT ENOUGH BALANCE \n";
}
void account ::detail()
{
```

```cpp
        cout << "\nNAME : " << name;
        cout << "\nBALANCE : " << bal_amt;
}

int main()
{
    account acc;
    acc.assign();
    acc.credit();
    acc.debit();
    acc.detail();

    return 0;
}
```

OUTPUT:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\hp\Desktop\lab4> cd "c:\Users\hp\Desktop\lab4\" ; if ($?) { g++ que2.cpp -o que2 } ; if ($?) { .\que2 }

Enter the amount to be Credited
5000

 Current Balance : 20000
Enter the amount to be Debited
12000

NAME : Palash
BALANCE : 8000
PS C:\Users\hp\Desktop\lab4>
```

3.Create two classes DM and DB which store the value of the distances. DM stores distances in meters and centimeters and DB in feet and inches. Write a program that can read values for the class objects and add one object of DM withanother object of DB.Use a friend

```cpp
#include<conio.h>
#include<iostream>
using namespace std;
class DM
{   public:
    float meter;
    void getdata()
        {cout<< "Enter Distance in Meters and Centimeters :" ;
            cin>> meter  ;
        }
    friend void _add();
};

class DB
{   public:
    float inch;
    void getdata()
        {cout<< "Enter Distance in Feets and Inches :" ;
            cin>> inch  ;
        }
    friend void _add();
};

void _add()
{   float temp,res;
    temp=dm.meter*39.37;
    res=temp+db.inch;
        cout<< " Total inches = " << res <<endl;
    temp=db.inch/39.37;
    res=temp+dm.meter;
        cout<< " Total meters = " << res ;
}
main()
{   DM dm;
    DB db;
    dm.getdata();
    db.getdata();
    _add();
    getch();
    return 0;

}
```

OUTPUT: