

EXPERIMENT 6

Aim : Write a program to accept the student detail such as name and 3 different marks by get_data() method and display the name and average of marks using display() method. Define a friend class for calculating the average of marks using the method mark_avg().

Theory :

Friend Class - A friend class can access private and protected members of other class in which it is declared as friend. It is sometimes useful to allow a particular class to access private members of other class.

Following are some important points about friend functions and classes:

1. Friends should be used only for limited purpose. If too many functions or external classes are declared as friends of a class with protected or private data, it lessens the value of encapsulation of separate classes in object-oriented programming.
2. Friendship is not mutual. If a class A is friend of B, then B doesn't become friend of A automatically.
3. Friendship is not inherited

Code :

```
#include <iostream>
using namespace std;
class avg;
class student;

class avg{
public:
    float mark_avg(student);
};

class student{
    int marks[3];
    string name;
public:
    void get_data(){
        cout<<"Enter name : ";
        cin>>name;
        cout<<"Enter marks in 3 subjects : ";
        cin>>marks[0]>>marks[1]>>marks[2];
        cout<<endl;
    }

    void display(){
        avg a;
        cout<<"Name : "<<name<<endl;
```

```

        cout<<"Average Marks : "<<a.mark_avg(*this)<<endl;
    }
    friend class avg;

};

float avg::mark_avg(student s){
    return (s.marks[0] + s.marks[1] + s.marks[2])/3.0;
}

int main() {
    student s1;
    s1.get_data();
    s1.display();
}

```

Output :

```

[djsinghnegi:desktop djsinghnegi$ g++ p6.cpp
[djsinghnegi:desktop djsinghnegi$ ./a.out
Enter name : dhananjay
Enter marks in 3 subjects : 95 96 97

Name : dhananjay
Average Marks : 96
djsinghnegi:desktop djsinghnegi$

```

Discussion :

Here we created a friend class avg to the student class. The friend class consists of a single member function marks_avg() which returns the average marks. This class can access all members of student class. Therefore the function calculates the average using the data members of object of class student.