OOP Assignment No.- 03

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Assignment No. (3)

AIM - Create two classes DM and DB which stores values of distances. DM stores distances in meters and centimeters and DB in feet and inches.
Write a program that can read values for the class object and add one object of dm with the obj of DB. Use a friend function to carry out addn operation.

Theory: →

(*) C++ Friend Functions

- A friend function of a class is defined outside that class scope but it has right to access all private and protected members of the class. Even though the prototypes of friend function appear in the class definition, friend are not member functions.

- If a function is defined as friend function then, the private and protected data can be accessed by using the function.

- Compiler knows the defined function is a friend function by the keyword friend.

- For accesing the data, the declaration of the friend function should be made into the body of the class.

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Program Code:

```
#include <iostream>
using namespace std;
class DB;
class DM
{
   float meter, centi;

public:
   void getdata()
   {
      cout << "SCOB86_Rudraksh Karpe\n";
      cout << "Enter the distance as (meter-centimeter) : ";
      cin >> meter >> centi;
   }
   void display()
   {
      cout << "\nThe distance is : ";
      cout << meter << " meters and " << centi << " centimeter";
   }
   friend void add(DM &, DB &);
};

class DB
{
   float inch, feet;
```

```
public:
   void getdata()
   {
      cout << "Please Enter the distance as (feet-inch) : ";
      cin >> feet >> inch;
   }
   void display()
   {
      cout << "\nThe distance is : ";
      cout << feet << " feet and " << inch << " inch";
   }
   friend void add(DM &, DB &);
};

void add(DM &a, DB &b)
{
   int ch;
   cout << "Please slect below for addition type\n";
   cout << "Press [1] for meter-centi OR ";
   cout << "Press [2] for feet-inch:\n";
   cout << "Enter your choice ----> ";
   cin >> ch;
   if (ch == 1)
   {
      DM d;
```

```
    int c = (a.meter * 100 + a.centi + b.feet * 30.48 + b.inch * 2.54);
    if (c >= 100)
    {
        d.meter = c / 100;
        d.centi = c % 100;
    }
    else
    {
        d.meter = 0;
        d.centi = c;
    }
    d.display();
}
else
{
    DB d;
    int i = (a.meter * 39.37 + a.centi * .3937008 + b.feet * 12 + b.inch);
    if (i >= 12)
    {
        d.feet = i / 12;
        d.inch = i % 12;
    }
    else
    {
        d.feet = 0;
        d.inch = i;
```

```
        }
        d.display();
    }
}

int main()
{
    DM a;
    DB b;
    a.getdata();
    b.getdata();
    add(a, b);
}
```

Output:

```
PS R:\GHRCEM\OOP LAB> cd "r:\GHRCEM\OOP LAB\" ; if ($?) { g++ LAB_3.cpp -o LAB_3 } ; if ($?) { .\LAB_3 }
SCOB86_Rudraksh Karpe
Enter the distance as (meter-centimeter) : 12-10
Please Enter the distance as (feet-inch) : 4-6
Please slect below for addition type
Press [1] for meter-centi OR Press [2] for feet-inch:
Enter your choice ----> 1

The distance is : 12 meters and 96 centimeter
PS R:\GHRCEM\OOP LAB> cd "r:\GHRCEM\OOP LAB\" ; if ($?) { g++ LAB_3.cpp -o LAB_3 } ; if ($?) { .\LAB_3 }
SCOB86_Rudraksh Karpe
Enter the distance as (meter-centimeter) : 4-3
Please Enter the distance as (feet-inch) : 8-1
Please slect below for addition type
Press [1] for meter-centi OR Press [2] for feet-inch:
Enter your choice ----> 2

The distance is : 20 feet and 11 inch
PS R:\GHRCEM\OOP LAB>
```