KALINGA INSTITUTE OF INDUSTRIAL TECHNOLOGY (KIIT)

Deemed to be University U/S 3 of UGC Act, 1956

OBJECT ORIENTED PROGRAMMING
LAB 4

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- Branch :CSE

```cpp
//Q1.WAP to swap private data_025 member of two different classes.
//[The classes have no relation with each other].
#include <iostream>
using namespace std;
class xyz;
class abc
{
    int data_025;
    friend void swap(abc &, xyz &);

public:
    void input()
    {
        cin >> data_025;
    }
    void display()
    {
        cout << data_025 << " ";
```

```cpp
    }
};

class xyz
{
    int data_025;
    friend void swap(abc &, xyz &);

public:
    void input()
    {
        cin >> data_025;
    }
    void display()
    {
        cout << data_025 << " ";
    }
};

void swap(abc &a_025, xyz &x)
{
    int temp = a_025.data_025;
    a_025.data_025 = x.data_025;
    x.data_025 = temp;

int main()
{
    abc a_025;
    xyz b_025;
    cout << "enter value in 2 class \n";
    a_025.input();
    b_025.input();

    cout << "before swap th e values of class1 and class  is 2 \n";
    a_025.display();
    b_025.display();

    swap(a_025, b_025);

    cout << "\nAfter swap the values of class1 and class 2 is \n";
    a_025.display();
    b_025.display();
```

```cpp
    return 0;
}
```

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

PS D:\my codes\OOPS\LAB4_FRIEND+STATIC> cd "d:\my codes\OOPS\LAB4_FRIEND+STATIC\" ; if ($?) { g++ q1_swap_2class.cpp -o q1
_swap_2class } ; if ($?) { .\q1_swap_2class }
enter value in 2 class
23
43
before swap th e values of class1 and class  is 2
23 43
After swap the values of class1 and class 2 is
43 23
PS D:\my codes\OOPS\LAB4_FRIEND+STATIC>
```

```cpp
//Q2.Create two classes which stores distance in feet_025, inches_0
25 and meter,
//centimeter format respectively. Write a function which compares d
istance
//in object of these classes and displays the larger one.
#include <bits/stdc++.h>
using namespace std;
class db_025;
class dm_025
{

    int m_025;
    int cm_025;

public:
    void input()
    {

        cin >> m_025 >> cm_025;
    }
    friend void compare(db_025, dm_025);
};
```

```cpp
class db_025
{

    int feet_025;
    int inches_025;

public:
    void input()
    {

        cin >> feet_025 >> inches_025;
    }
    friend void compare(db_025, dm_025);
};

void compare(db_025 a, dm_025 b)
{
    int tm, tfim;
    tm = b.m_025 + b.cm_025 / 100;
    tfim = (a.feet_025 * 0.3) + ((a.inches_025 / 12) * 0.3);
    if (tfim > tm)

        cout << "\nthe larget one is feet one and the value is " <<
 a.feet_025 << " feet " << a.inches_025 << "inches"
            << "which is equal to " << tfim<<" metre";
    else
        cout << "\nthe larget one is meter one and the value is " <<
< b.m_025 << "meter" << b.cm_025 << "cm_025";
}
int main()
{
    db_025 a;
    dm_025 b;
    cout << "\nenter the value of m and cm ";
    b.input();
    cout << "\nenter the value of feet and inches ";
    a.input();
    compare(a, b);

    return 0;
}
```

```
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PS D:\my codes\OOPS\LAB4_FRIEND+STATIC> cd "d:\my codes\OOPS\LAB4_FRIEND+STATIC\" ; if ($?) { g++ q2_compare_distance.cpp
-o q2_compare_distance } ; if ($?) { .\q2_compare_distance }

enter the value of m and cm 23
43

enter the value of feet and inches 21
43

the larget one is meter one and the value is 23meter43cm_025
PS D:\my codes\OOPS\LAB4_FRIEND+STATIC>
```

```cpp
/* Q3.Create a class with an integer data member. Include functions
 for
input and output in_025 class. Count the number of times each funct
ion is
called and display it.*/
#include <iostream>
using namespace std;
class inout
{
    int data_025;

public:
    static int in_025;
    static int out_025;
    void input()
    {

        in_025++;
    }
    void output()
    {

        out_025++;
    }
    static void count()
```

```cpp
    {
        cout << "the no.of time input and output fun called is ";
        cout << in_025 <<" "<< out_025;
    }
};
int inout::in_025;
int inout::out_025;

int main()
{
    class inout a,b;
    a.input();
    a.output();
    b.input();
    a.output();
    b.input();
    a.output();
    inout::count();

    return 0;
}
```

 OUTPUT–Q3

/* Q4.Create a class which stores name_025, roll_025 number and oop
 marks_025 for a

student. Input data for n students. Find the average marks_025 scor
ed by
n students, store it as a data member of the class and display it u
sing

```cpp
a function which may be called without object.*/
#include <bits/stdc++.h>
using namespace std;
class stud
{

    char name_025[10];
    int roll_025, marks_025;
    static float avg;

public:
    void input()
    {

        cin >> name_025 >> roll_025 >> marks_025;
    }
    static void avrg(stud a[], int n)
    {
        int sum = 0;

        for (int i = 0; i < n; i++)
        {
            sum = sum + a[i].marks_025;
        }
        avg = sum / n;
        cout << "average of the data is" << avg;
    }
};
float stud::avg;
int main()
{
    stud a[5];
    int n;
    cout << "how many students u have";
    cin >> n;
    cout<<"enter the name roll and oop marks\n";
    for (int i = 0; i < n; i++)
    {
        a[i].input();
    }
    stud::avrg(a, n);
```

```
        return 0;
```

```
}
```

```
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PS D:\my codes\OOPS\LAB4_FRIEND+STATIC> cd "d:\my codes\OOPS\LAB4_FRIEND+STATIC\" ; if ($?) { g++ q4_static_marks.cpp -o q
4_static_marks } ; if ($?) { .\q4_static_marks }
how many students u have3
enter the name roll and oop marks
hitu
25
99
rahul
34
87
isha
18
96
average of the data is94
PS D:\my codes\OOPS\LAB4_FRIEND+STATIC>
```

```cpp
/*Q5.Create a class which stores name_025, author_025 and price_025
 of a book. Store

information for n number of books. Display information of all the
books in a given price_025 range using friend function in a tabular
format.*/
#include <bits/stdc++.h>
using namespace std;
class book
{
    char name_025[10], author_025[10];
    int price_025;

public:
    void input()
    {
        cin >> name_025 >> author_025 >> price_025;
    }
    friend void range(book a[], int n, int upl_025, int lowl_025);
};

void range(book a[], int n, int upl_025, int lowl_025)
```

```cpp
{
    for (int i = 0; i < n; i++)
    {
        if (a[i].price_025 >= lowl_025 && a[i].price_025 <= upl_025)
        {
            cout << a[i].name_025 << "\t" << a[i].author_025 << "\t" << a[i].price_025;
        }
        cout << "\n";
    }
}
int main()
{
    int n, upl_025, lowl_025;
    book a[4];
    cout << "how many books u have";
    cin >> n;
    cout << "\nenter the name_025 author_025 and price_025 of each book ";
    for (int i = 0; i < n; i++)
    {
        a[i].input();
    }
    cout << "enter lower limit and enter the upper one";
    cin >> lowl_025 >> upl_025;
    range(a, n, upl_025, lowl_025);
    return 0;
}
```

OUTPUT-Q5

```
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PS D:\my codes\OOPS\LAB4_FRIEND+STATIC> cd "d:\my codes\OOPS\LAB4_FRIEND+STATIC\" ; if ($?) { g++ q5_books_range.cpp -o q5
_books_range } ; if ($?) { .\q5_books_range }
how many books u have3

enter the name_025 author_025 and price_025 of each book hitu
dontknow
300
rsagrwal
marhs
200
jjsharma
les
250
enter lower limit and enter the upper one200
250

rsagrwal        marhs   200
jjsharma        les     250
PS D:\my codes\OOPS\LAB4_FRIEND+STATIC>
```

```cpp
/*Q6Write a program to find out the greatest between two numbers
defined in two different classes by using friend function.
[using friend of one and member of the other class]*/
//#include <bits/stdc++.h>
#include <iostream>
using namespace std;
class b_025;
class a_025
{
    int no1_025;

public:
    void input()
    {
        cin >> no1_025;
    }



    void greatest(b_025);
};
class b_025
{
    int no2_025;

public:
    void input()
    {
```

```cpp
            cin >> no2_025;
    }
    friend void a_025::greatest(b_025);
};
void a_025::greatest(b_025 obj)
{
    if (no1_025 > obj.no2_025)
        cout << "greatest no. is " << no1_025;
    else
        cout << "greatest no. is " << obj.no2_025;
}
int main()
{
    a_025 obj1;
    b_025 obj2;
    cout << "enter the value in 2 different class";
    obj1.input();
    obj2.input();
    obj1.greatest(obj2);

    return 0;
};
```

<div align="center">OUTPUT-Q6</div>

```
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PS D:\my codes\OOPS\LAB4_FRIEND+STATIC> cd "d:\my codes\OOPS\LAB4_FRIEND+STATIC\" ; if ($?) { g++ q6_greatest_in_2_Class.c
pp -o q6_greatest_in_2_Class } ; if ($?) { .\q6_greatest_in_2_Class }
enter the value in 2 different class23
43
greatest no. is 43
PS D:\my codes\OOPS\LAB4_FRIEND+STATIC>
```

```
/*Q7.Create two classes DM and DB which store the value of distance
s.

DM stores distances in meters and centimeters and DB in feet_025 an
d
```

```cpp
inches_025. Write a program that can read values for the class obje
cts and
add one object of Dm with another object of DB. Use friend function
to carry out the operation. The object that stores the results may
be a
DM object or DB object, depending on the units in which the results
are required. The display should in the format of feet_025 and inch
es_025 or
meters and centimeters depending on the object on display.*/

#include <bits/stdc++.h>
using namespace std;
class db;
class dm
{

    int m_025;
    int cm_025;

public:
    void input()
    {

        cin >> m_025 >> cm_025;
    }
    friend void add(db, dm);
};
class db
{

    int feet_025;
    int inches_025;

public:
    void input()
    {

        cin >> feet_025 >> inches_025;
    }
    friend void add(db, dm);
};
```

```cpp
void add(db a, dm b)
{
    b.m_025 = b.m_025 + 0.3 * a.feet_025;
    b.cm_025 = b.cm_025 + (0.3 / 12 * a.inches_025);
    cout << "\nadded value of feet and meter is " << b.m_025 << "m
" << b.cm_025 << "cm ";
}
int main()
{
    db a;
    dm b;
    cout << "\nenter the value of m and cm ";
    b.input();
    cout << "\nenter the value of feet and inches";
    a.input();
    add(a, b);

    return 0;
}
```

OUTPUT–Q7

```
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PS D:\my codes\OOPS\LAB4_FRIEND+STATIC> cd "d:\my codes\OOPS\LAB4_FRIEND+STATIC\" ; if ($?) { g++ q7_add_feet_m_of_2_class
.cpp -o q7_add_feet_m_of_2_class } ; if ($?) { .\q7_add_feet_m_of_2_class }

enter the value of m and cm 32
42

enter the value of feet and inches42
23

added value of feet and meter is 44m 42cm
PS D:\my codes\OOPS\LAB4_FRIEND+STATIC>
```