OOP LABORATORY 2

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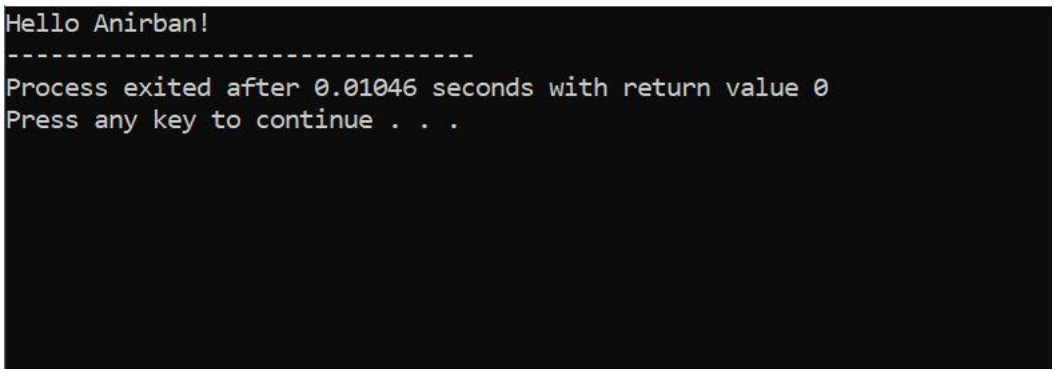
1) WAP to display the message "hello" followed by your name on screen.

PROGRAM CODE:-

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

int main()
{
	cout<<"Hello Anirban!"<<endl;
	return 0;
}
```

OUTPUT:-



2) Create a class which stores name, roll number and total marks for a student. Input the data for a student and display it.

PROGRAM CODE:-

```
#include <iostream>
using namespace std;

class student
{
	string name;
	int roll;
	int marks;
	public:
		void getinfo()
		{
			cout<<"Enter Name: ";
			cin>>name;
			cout<<"Enter Roll Number: ";
			cin>>roll;
			cout<<"Enter Marks: ";
			cin>>marks;
			}
		void display()
		{
			cout<<"\nTHE DETAILS OF THE STUDENT ARE:\n”;
			cout<<"NAME OF THE STUDENT: "<<name<<endl;
			cout<<"Roll Number: "<<roll<<endl;
			cout<<"Marks: "<<marks<<endl;

			}
};

int main()
{
	student s1;
	s1.getinfo();
	s1.display();
	return 0;
}
```

OUTPUT:-

```
Enter Name: Robin
Enter Roll Number: 643
Enter Marks: 95


THE DETAILS OF THE STUDENT ARE:
NAME OF THE STUDENT: Robin
Roll Number: 643
Marks: 95

--------------------------------
```

3) Modify the program 2) to store marks in 5 subjects. Calculate the total marks and percentage of a student
and display it.

PROGRAM CODE:-

```
#include <iostream>
using namespace std;

class student
{
        string name;
        int roll;
        int marks[5];
        int tot_marks=0;
        double percentage;
        public:
                void getinfo()
                {
                        cout<<"Enter Name: ";
                        cin>>name;
                        cout<<"Enter Roll Number: ";
                        cin>>roll;
                        cout<<"Enter Marks in 5 different subjects:\n ";
                        for(int i=0; i<5; i++)
                        {
                                cout<<"Enter Marks of Subject "<<i+1<<" : ";
                                cin>>marks[i];
                                tot_marks= tot_marks+ marks[i];
                        }
                        }
                void display()
                {
                        cout<<"\n\nTHE DETAILS OF THE STUDENT ARE :\n"<<endl;
                        cout<<"Student's Name: "<<name<<endl;
                        cout<<"Roll Number: "<<roll<<endl;
                        for(int i=0; i<5; i++)
                        {
                                cout<<"Marks of Subject "<<i+1<<" : ";
```

```
                cout<<marks[i]<<endl;
            }
            cout<<"Total Marks: "<<tot_marks<<endl;
            cout<<"Percentage : "<<tot_marks/5<<"%"<<endl;
            }
};

int main()
{
    student ob;
    ob.getinfo();
    ob.display();
    return 0;
}
```

OUTPUT:-

```
Enter Name: Dushyant
Enter Roll Number: 643
Enter Marks in 5 different subjects:
 Enter Marks of Subject 1 : 89
Enter Marks of Subject 2 : 98
Enter Marks of Subject 3 : 99
Enter Marks of Subject 4 : 75
Enter Marks of Subject 5 : 91


THE DETAILS OF THE STUDENT ARE :

Student's Name: Dushyant
Roll Number: 643
Marks of Subject 1 : 89
Marks of Subject 2 : 98
Marks of Subject 3 : 99
Marks of Subject 4 : 75
Marks of Subject 5 : 91
Total Marks: 452
Percentage : 90%
```

4) Create a class complex which stores real and imaginary part of a complex number. Input 10 complex numbers and display them.

PROGRAM CODE :-

```
#include <iostream>
using namespace std;
class complex
{
        int real;
        int img;
public:
void getdata(int i)
    {
        cout<<"Enter Real portion of the Number"<<i+1<<":";
        cin>>real;
        cout<<"Enter Imaginary portion of the number"<<i+1<<":";
        cin>>img;
    }
void display(int i)
    {

        cout<<"Number "<<i+1<<" : "<<real<<"+"<<img<<"i"<<endl;
    }

};

int main()
{
complex ob[10];
for(int i=0; i<10; i++)
{
        ob[i].getdata(i);
}
cout<<"\n\n"<<endl;
for(int i=0; i<10; i++)
    {
        ob[i].display(i);
    }
        return 0;
}
```

OUTPUT:-

```
Enter Real portion of the Number1:1
Enter Imaginary portion of the number1:2
Enter Real portion of the Number2:3
Enter Imaginary portion of the number2:4
Enter Real portion of the Number3:5
Enter Imaginary portion of the number3:6
Enter Real portion of the Number4:7
Enter Imaginary portion of the number4:8
Enter Real portion of the Number5:9
Enter Imaginary portion of the number5:9
Enter Real portion of the Number6:8
Enter Imaginary portion of the number6:7
Enter Real portion of the Number7:6
Enter Imaginary portion of the number7:5
Enter Real portion of the Number8:4
Enter Imaginary portion of the number8:3
Enter Real portion of the Number9:2
Enter Imaginary portion of the number9:1
Enter Real portion of the Number10:3
Enter Imaginary portion of the number10:7



Number 1 : 1+2i
Number 2 : 3+4i
Number 3 : 5+6i
Number 4 : 7+8i
Number 5 : 9+9i
Number 6 : 8+7i
Number 7 : 6+5i
Number 8 : 4+3i
Number 9 : 2+1i
Number 10 : 3+7i
```

5) Create a class distance which stores a distance in feet and inches. Input 2 distance values in objects, add them, store the resultant distance in and object and display it.Write the above program in two ways.
a) store the resultant distance in the calling object:C3.add(C1,C2)
b) return the resultant object C3=C1.add(C2)

PROGRAM CODE:-

```
#include <iostream>
using namespace std;
class dist
{
	double feet;
	double inches;
	public:
		void getinfo()
		{
			cout<<"Enter Feet and Inches: ";
			cin>>feet>>inches;
			}
		void display()
		{
			cout<<feet<<"'"<<inches<<"""<<endl;

			}
		void add(dist a, dist b)
		{
			inches=a.inches+b.inches;
			feet=a.feet+b.feet;
		}
		dist add(dist b)
		{
			dist temp;
			temp.inches=inches+b.inches;
			temp.feet=feet+b.feet;
			return temp;
		}
};


int main()
{
	dist c1,c2,c3,c4;

	c1.getinfo();
	c2.getinfo();

	cout<<"Distance 1: ";
	c1.display();
	cout<<"Distance 2: ";
```

```
        c2.display();
        c3.add(c1,c2);

        cout<<"Result for c3.add(c1,c2): "<<endl;
        c3.display();
        c4=c1.add(c2);
        cout<<"Result for c4=c1.add(c2): "<<endl;
        c4.display();

        return 0;
}
```

OUTPUT:-

```
Enter Feet and Inches: 5
6
Enter Feet and Inches: 6
3
Distance 1: 5'6''
Distance 2: 6'3''
Result for c3.add(c1,c2):
11'9''
Result for c4=c1.add(c2):
11'9''
```

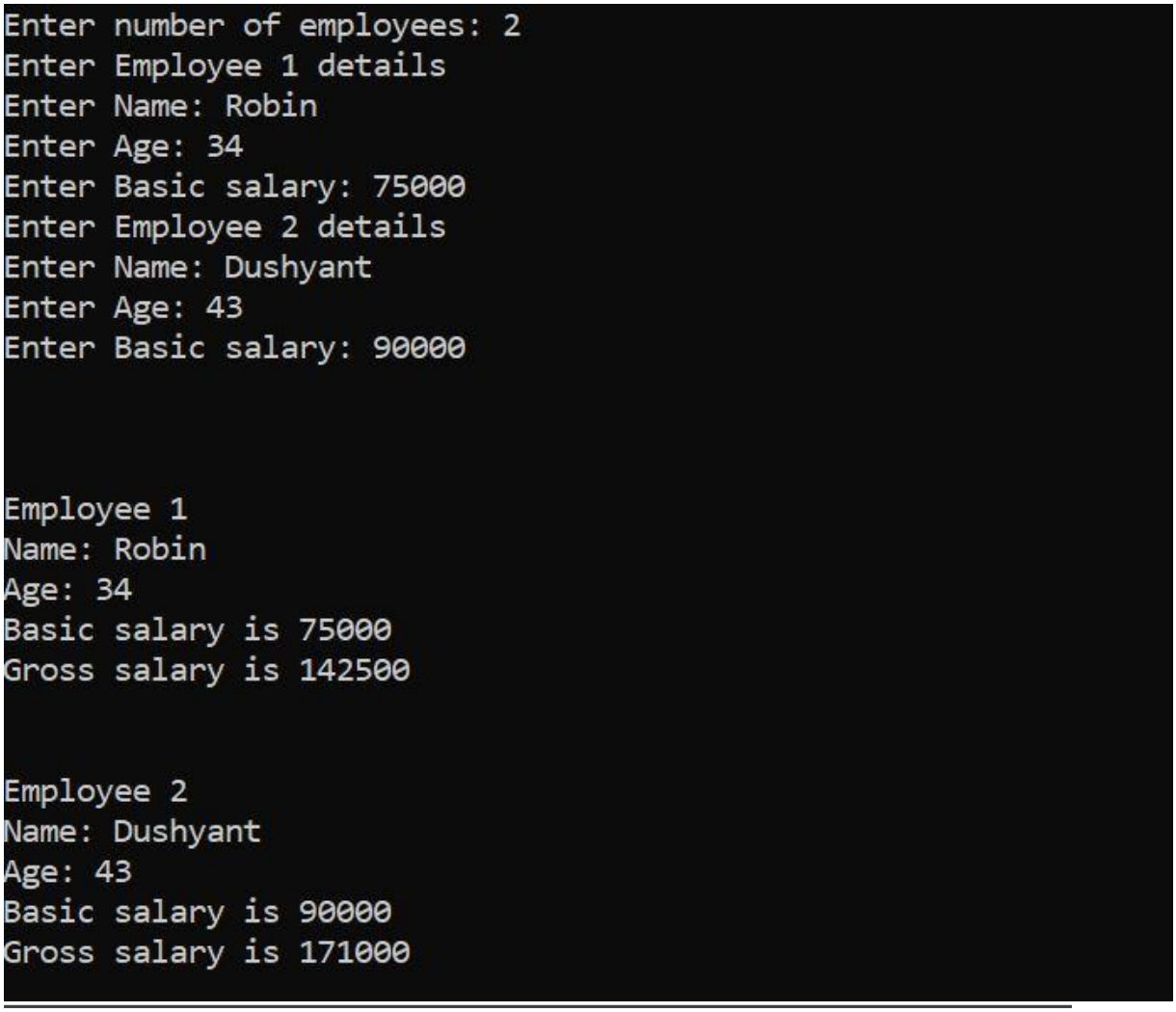
6) Create a class which stores id, name, age and basic salary of an employee. Input data for
n number of employees. Calculate the gross salary of all the employees and display it
along with all other details in a tabular form. [Gross salary= Basic salary + DA + HRA, DA = 80% of Basic salary
HRA=10% of Basic salary]

PROGRAM CODE:-

```
#include <iostream>
using namespace std;

class employee
{
        string name;
        int age,basic,DA,HRA;
        double gross;
public:
void getinfo()
    {
        cout<<"Enter Name: ";
        cin>>name;
        cout<<"Enter Age: ";
        cin>>age;
        cout<<"Enter Basic salary: ";
        cin>>basic;
        DA=0.8*basic;
        HRA=0.1*basic;
        gross=basic+DA+HRA;
    }
void display()
    {
        cout<<"Name: "<<name<<endl;
        cout<<"Age: "<<age<<endl;
        cout<<"Basic salary is "<<basic<<endl;
        cout<<"Gross salary is "<<gross<<endl;
    }

};

int main()
{
        int n=0;
        cout<<"Enter number of employees: ";
        cin>>n;
employee obj[n];
for(int i=0; i<n; i++)
    {
        cout<<"Enter Employee "<<i+1<<" details"<<endl;
        obj[i].getinfo();
```

```
    }
        cout<<"\n\n"<<endl;
for(int i=0; i<n; i++)
{
        cout<<"Employee "<<i+1<<endl;
        obj[i].display();
        cout<<"\n"<<endl;
}
    return 0;
}
```

OUTPUT:-

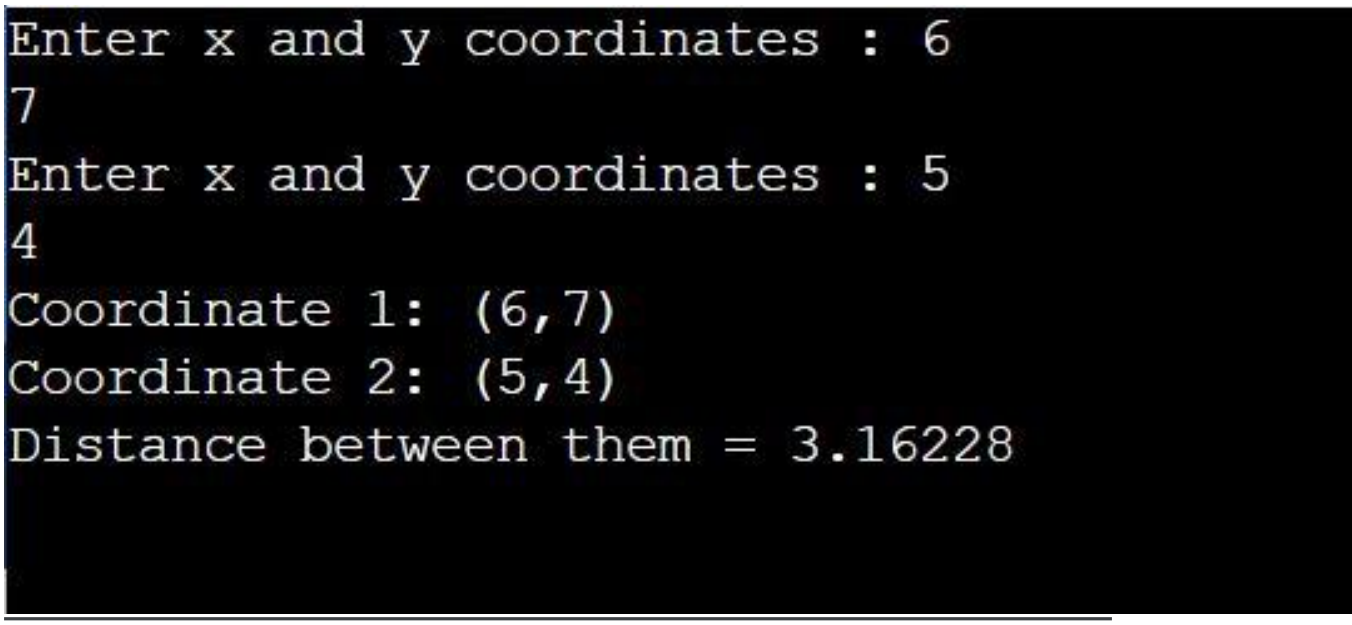


7) Create a class which stores x and y coordinates of a point. Calculate distance between two given points and display it.

PROGRAM CODE:-

```
#include <iostream>
#include<math.h>
using namespace std;
class dist
{
	int x,y;
	public:
		void getinfo()
		{
			cout<<"Enter x and y coordinates : ";
			cin>>x>>y;
			}
		void display()
		{
			cout<< "(" << x << "," << y << ")" <<endl;

			}
		double add(dist a, dist b)
		{
			 return sqrt(pow(b.y - a.y, 2) +  pow(b.x - a.x, 2));
		}

};

int main()
{
	dist c1,c2;

	c1.getinfo();
	c2.getinfo();

	cout<<"Coordinate 1: ";
	c1.display();
	cout<<"Coordinate 2: ";
	c2.display();
	c1.add(c1,c2);

	cout<<"Distance between them = "<<c1.add(c1,c2)<<endl;

	return 0;
}
```

OUTPUT:-


Enter x and y coordinates : 6
7
Enter x and y coordinates : 5
4
Coordinate 1: (6,7)
Coordinate 2: (5,4)
Distance between them = 3.16228