*Name - Akriti Choudhary*
*Roll number - 2005776*
*Lab2*
*Subject - OOP lab*
*Class - B14*
*Branch - CSE*
*Date- 5/08/2021*

## *Question1- WAP to display the message “hello” followed by your name on screen.*

```
#include <iostream>
#include <string>

using namespace std;

int main(){
   string name;
   cout<<"Enter name :"<<endl;
   cin>>name;
   cout<<"Hello World "<<name<<endl;
   return 0;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021> ./display
Enter name :
Akriti
Hello World Akriti
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021>
```

## *Question2 - Create a class which stores name,roll number and total marks for a student .Input the data for a student and display it.*

```
#include <iostream>
#include <string>
using namespace std;
class student
{
   public:
   string name;
   int roll;
   int marks[5];
   int total;
};

 student input(student s1){

   cout<<"Enter the name of the student : "<<endl;
   getline(cin,s1.name);

    cout<<"Enter the roll number of the student : "<<endl;
   cin>>s1.roll;

    cout<<"Enter the marks  of the student : "<<endl;
    for(int i = 0 ; i < 5 ; ++i){
       cout<<"Enter the marks of subject"<<i+1<<endl;
       cin>>s1.marks[i];
    }
    int sum = 0;
     for(int i = 0 ; i < 5 ; ++i){
       sum += s1.marks[i];
    }
    s1.total = sum;
    return s1;

}
void display(student s1){
cout<<"The name of the student : "<<s1.name<<endl;

    cout<<"The roll number of the student : "<<s1.roll<<endl;

    for(int i = 0 ; i < 5 ; ++i){
       cout<<"The marks of subject"<<i+1<<" is : "<<s1.marks[i]<<endl;
    }
    cout<<"Total marks of the student : "<<s1.total<<endl;
}
int main(){
    student s1;

   //input the details of the student
   s1 = input(s1);

   //display the details of the student
   display(s1);

   return 0;
}
```

```
Enter number of students
2

Enter name :
Akriti
Enter roll number :
2005776
Enter marks of subject1 :
100
Enter marks of subject2 :
90
Enter marks of subject3 :
98
Enter marks of subject4 :
99
Enter marks of subject5 :
95

Enter name :
Someone
Enter roll number :
2005777
Enter marks of subject1 :
100
Enter marks of subject2 :
98
```

```
Enter marks of subject3 :
98
Enter marks of subject4 :
99
Enter marks of subject5 :
95

Enter name :
Someone
Enter roll number :
2005777
Enter marks of subject1 :
100
Enter marks of subject2 :
98
Enter marks of subject3 :
78
Enter marks of subject4 :
98
Enter marks of subject5 :
77
name :Akriti
roll number :2005776
marks of subject1 : 100
marks of subject2 : 90
marks of subject3 : 98
```

```
78
Enter marks of subject4 :
98
Enter marks of subject5 :
77
name :Akriti
roll number :2005776
marks of subject1 : 100
marks of subject2 : 90
marks of subject3 : 98
marks of subject4 : 99
marks of subject5 : 95
Total marks :482
Percentage :96.4%

name :Someone
roll number :2005777
marks of subject1 : 100
marks of subject2 : 98
marks of subject3 : 78
marks of subject4 : 98
marks of subject5 : 77
Total marks :451
Percentage :90.2%

PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021>
```

## *Question3- Modify the program in question 2 to store marks in 5 subjects.Calculate the total marks and percentage of a student and display it.*

```
#include <iostream>

using namespace std;

class student1
{
public:
   char name[20];
   int roll;
   int marks[5];
   int total;
   float percent;
};

student1 *input(student1 *s)
{
   cout << "Enter name : " << endl;
   cin >> s->name;
   cout << "Enter roll number :" << endl;
   cin >> s->roll;
   for (int i = 0; i < 5; ++i)
   {
      cout << "Enter marks of subject" << i + 1 << " : " << endl;
      cin >> s->marks[i];
   }
}

void totPer(student1 *s)
{
   int sum = 0;
   for (int i = 0; i < 5; ++i)
   {
      sum += s->marks[i];
   }
   s->total = sum;
   s->percent = (sum / 500.0) * 100;
}

void display(student1 *s)
{
   cout << "name :" << s->name << endl;
   cout << "roll number :" << s->roll << endl;
   for (int i = 0; i < 5; ++i)
   {
      cout << "marks of subject" << i + 1 << " : " << s->marks[i] << endl;
   }
   cout << "Total marks :" << s->total << endl;
   cout << "Percentage :" << s->percent << "%" << endl;
}

int main()
{
   int n;
   cout << "Enter number of students" << endl;
   cin >> n;
   student1 arr[n];

   for (int i = 0; i < n; ++i)
   {
      cout << endl;
```

```
    input(&arr[i]);
    totPer(&arr[i]);
  }

  for (int i = 0; i < n; ++i)
  {
    display(&arr[i]);
    cout << endl;
  }

  return 0;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021> ./student1
Enter number of students
2

Enter name :
A
Enter roll number :
2005
Enter marks of subject1 :
100
Enter marks of subject2 :
90
Enter marks of subject3 :
98
Enter marks of subject4 :
99
Enter marks of subject5 :
97

Enter name :
```

```
Enter name :
B
Enter roll number :
2009
Enter marks of subject1 :
14
Enter marks of subject2 :
16
Enter marks of subject3 :
87
Enter marks of subject4 :
99
Enter marks of subject5 :
45
name :A
roll number :2005
marks of subject1 : 100
marks of subject2 : 90
marks of subject3 : 98
marks of subject4 : 99
marks of subject5 : 97
```

```
marks of subject1 : 100
marks of subject2 : 90
marks of subject3 : 98
marks of subject4 : 99
marks of subject5 : 97
Total marks :484
Percentage :96.8%

name :B
roll number :2009
marks of subject1 : 14
marks of subject2 : 16
marks of subject3 : 87
marks of subject4 : 99
marks of subject5 : 45
Total marks :261
Percentage :52.2%

PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021>
```

## *Question 4 - Create a class complex which stores real and imaginary part of a complex number. Input n complex numbers and display them.*

```
#include <iostream>

using namespace std;
class complex
{
public:
   int real;
   int img;

   void input()
   {
      cout << "Enter real part : " << endl;
      cin >> real;
      cout << "Enter imaginary part :" << endl;
      cin >> img;
   }

   void display()
   {
      if (img > 0)
      {
         cout << real << " + i" << img << endl;
      }
      else
         cout << real << " - i" << -img << endl;
   }
};
int main()
{
   int n;
   cout << "Enter number of complex numbers to be entered :" << endl;
   cin >> n;
   complex arr[n];
   for (int i = 0; i < n; ++i)
   {
      cout << "Enter the " << i + 1 << " complex number :" << endl;
      arr[i].input();
   }

   for (int i = 0; i < n; ++i)
   {
      arr[i].display();
   }
   return 0;
}
```

```
Enter number of complex numbers to be entered :
10
Enter the 1 complex number :
Enter real part :
1
Enter imaginary part :
2
Enter the 2 complex number :
Enter real part :
-1
Enter imaginary part :
2
Enter the 3 complex number :
Enter real part :
1
Enter imaginary part :
-2
Enter the 4 complex number :
Enter real part :
1
Enter imaginary part :
```

```
Enter imaginary part :
3
Enter the 5 complex number :
Enter real part :
89
Enter imaginary part :
67
Enter the 6 complex number :
Enter real part :
45
Enter imaginary part :
34
Enter the 7 complex number :
Enter real part :
-2
Enter imaginary part :
-45
Enter the 8 complex number :
Enter real part :
-09
Enter imaginary part :
```

```
-09
Enter imaginary part :
7
Enter the 9 complex number :
Enter real part :
45
Enter imaginary part :
-89
Enter the 10 complex number :
Enter real part :
2
Enter imaginary part :
5
1 + i2
-1 + i2
1 - i2
1 + i3
89 + i67
45 + i34
-2 - i45
-9 + i7
```

```
1 + i2
-1 + i2
1 - i2
1 + i3
89 + i67
45 + i34
-2 - i45
-9 + i7
45 - i89
2 + i5
PS D:\KIIT NOTES\2nd year sem 3\OOP lab\5 8 2021>
```

## *Question 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 the object and display them.*

```
#include <stdio.h>
#include <iostream>
using namespace std;
class dist
{
   int d_feet;
   double d_inch;

public:
   void input()
   {
      cin>>d_feet>>d_inch;
   }

   void add(dist d1,dist d2){
   d_feet = d1.d_feet + d2.d_feet;
   d_inch = d1.d_inch + d2.d_inch;

   while (d_inch >= 12)
   {
      d_inch = d_inch - 12;
      d_feet = d_feet + 1;
   }


   }

   void display()
   {
      cout<<"Distance in feet :"<<d_feet<<" \nDistance in feet :"<<d_inch;
   }
};
int main()
{
   dist d1, d2, d3;
      puts("Enter the distance in feet and inch for distance  :");
      d1.input();
      puts("Enter the distance in feet and inch for distance  :");
      d2.input();
      d3.add(d1,d2);
      d3.display();

   return 0;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021> ./q5
Enter the distance in feet and inch for distance  :
2
45
Enter the distance in feet and inch for distance  :
4
5
Distance in feet :10
Distance in feet :2
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021>
```

***Question 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]***

```
#include <iostream>
#include <string>

using namespace std;

class employee
{
private:
   int id;
   string name;
   int age;
   double basicSal;
   double grossSal;

public:
   void input()
   {

      cout << "Enter the name of the employee : ";
      cin >> name;
      cout << endl;

      cout << "Enter the employee id : ";
      cin >> id;
      cout << endl;

      cout << "Enter the employee age : ";
      cin >> age;
      cout << endl;

      cout << "Enter the employee basic salary : ";
      cin >> basicSal;
      cout << endl;
   }

   void calculate()
   {
      double DA, HRA;
      DA = 0.8 * basicSal;
      HRA = 0.1 * basicSal;
      grossSal = basicSal + DA + HRA;
   }

   void display()
   {

      cout << name << " \t" << id << " \t" << age << " \t" << basicSal << " \t\t" << grossSal << endl;
   }
};

int main()
{

   int n;
   cout << "Enter the number of employees : ";
```

```
    cin >> n;
    cout << endl;
    employee arr[n];
    for (int i = 0; i < n; ++i)
    {
        arr[i].input();
        arr[i].calculate();
    }
    cout << "Displaying the details of the employees :" << endl;

    cout << "-------------------------------------------------------------------------" << endl;
    cout << "Name\t"
         << "ID\t"
         << "Age\t"
         << "Basic Salary\t"
         << "Gross Salary" << endl;
    for (int i = 0; i < n; ++i)
    {
        arr[i].display();
    }
    cout << "-------------------------------------------------------------------------" << endl;
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021> ./employee
Enter the number of employees : 2

Enter the name of the employee : Neha

Enter the employee id : 20

Enter the employee age : 34

Enter the employee basic salary : 20000

Enter the name of the employee : Aman

Enter the employee id : 38

Enter the employee age : 29

Enter the employee basic salary : 30000
```

```
Enter the employee basic salary : 30000

Displaying the details of the employees :
-------------------------------------------------------------------------
Name    ID      Age     Basic Salary    Gross Salary
Neha    20      34      20000           38000
Aman    38      29      30000           57000
-------------------------------------------------------------------------
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021>
```

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

```
#include <iostream>
#include <math.h>
using namespace std;
class Distance
{
   int x;
   int y;

public:
   void input()
   {
      cout << "enter x" << endl;
      cin >> x;
      cout << "enter y" << endl;
      cin >> y;
   }
   void calculate(Distance point2)
   {
      cout << sqrt((x - point2.x) * (x - point2.x) + (y - point2.y) * (y - point2.y)) << endl;
   }
};
int main()
{
   Distance point1;
   Distance point2;

   cout << "Enter the coordinates of point1 :" << endl;
   point1.input();
   cout << "Enter the coordinates of point2 :" << endl;
   point2.input();

   cout << "Distance between point1 and point2 :" << endl;
   point1.calculate(point2);
}
```

```
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021> g++ distance.cpp -odistance
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021> ./distance
Enter the coordinates of point1 :
enter x
12
enter y
35
Enter the coordinates of point2 :
enter x
3
enter y
9
Distance between point1 and point2 :
27.5136
PS D:\KIIT_NOTES\2nd year sem_3\OOP_lab\5_8_2021>
```