International Islamic University(IIUC)

Dept. Of CSE

C++ Lab seet solve

//Peramiterize constructor :

```
#include<iostream>
using namespace std;
class constructor
{
private :
   int a,b;
public:
   constructor (int x,int y) //:a(x),b(y){};
   {
      a=x;
      b=y;
   } void pera()
   {
      cout<<"A   = "<<a<<endl;
      cout<<"B   = "<<b<<endl;
      cout<<"SUM = "<<a+b<<endl;
      cout<<"a-b = "<<a-b<<endl;
      cout<<"a*b = "<<a*b<<endl;
   }
};
int main()
{
   constructor obj(10,15);
   obj.pera();
```

```
    return 0;
}
```

01--Create a class named 'Student' with a string variable 'name' and an integer variable 'roll_no'. Assign the value of roll_no as '2' and that of name as "Jamshed" by creating an object of the class Student

Code:

```
#include<iostream>
using namespace std;
class student
{
    public:
    int roll_no;
    string name;
};
int main()
{
    student obj;
    obj.roll_no = 2;
    obj.name = "jamshed";
    cout<<"Roll : "<<obj.roll_no<<endl<<"Name :"<<obj.name<<endl;
    return 0;
}
```

02- Assign and print the roll number, phone number and address of two students having names "Shofi" and "Jamshed" respectively by creating two objects of the class 'Student'

Code:

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

```
{
   public:
 string name;
   int roll_no;
   long long phone_no;
   string address;
};
int main()
{
   student obj1,obj2;
   obj1.name = "shofi";
   obj1.roll_no = 1;
   obj1.phone_no = 0160503460;
   obj1.address = "Dc Road";
   obj2.name = "jamshed";
   obj2.roll_no = 2;
   obj2.phone_no = 01060645660;
   obj2.address = "Chawkbazer";
   cout<<"Name : "<<obj1.name<<endl<<"Roll :"<<obj1.roll_no<<endl<<"Phone
:"<<obj1.phone_no<<endl<<"Adress :"<<obj1.address<<endl<<endl;
   cout<<"Name : "<<obj2.name<<endl<<"Roll :"<<obj2.roll_no<<endl<<"Phone
:"<<obj2.phone_no<<endl<<"Adress :"<<obj2.address<<endl<<endl;
   return 0;
}
```

3. Write a program to print the area and perimeter of a triangle having sides of 3, 4 and 5 units by creating a class named 'Triangle' with a function to print the area and perimeter.

Code :

```
#include<iostream>
#include<math.h>
using namespace std;
class Triangle
```

```
{
  public:
      int A,P;
      double s,d;
      void area (int a,int b,int c)
      {
         s=a+b+c;
         d = s/2;
         A = sqrt (d*(d-a)*(d-b)*(d-c));
         cout<<"Area = "<<A<<endl;
      }
      void perimeter (int a,int b,int c)
      {
         P =a+b+c;
         cout<<"Perimeter = "<<P;
      }
};
int main()
{
   Triangle t1,t2;
   t1.area(3,4,5);
   t2.perimeter(3,4,5);
   return 0;
}
```

4. Write a program to print the area and perimeter of a triangle having sides of 3, 4 and 5 units by creating a class named 'Triangle' with the constructor having the three sides as its parameters.

Code:

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

```
class Triangle{


    public:
        int A,P;
        double s,d;
        Triangle (int a,int b,int c)
        {
            S = a+b+c;
            d = s/2;
            A = sqrt (d*(d-a)*(d-b)*(d-c));
            cout<<"Area = "<<A<<endl;
            P =a+b+c;
            cout<<"Perimeter = "<<P;
        }
};
int main()
{
    Triangle t (3,4,5);
    return 0;
}
```

5. Write a program to print the area of two rectangles having sides (4, 5) and (5, 8) respectively by creating a class named 'Rectangle' with a function named 'Area' which returns the area. Length and breadth are passed as parameters to its constructor .

Code:

```
#include<iostream>
using namespace std;
class Rectangle
{
public :
    double ln;
    double bred;
```

```
    Rectangle (double l,double b)
    {
        ln = l;
        bred = b;
    }
    double area()
    {
        return ln*bred;
    }
};
int main()
{
    Rectangle rectangle1(4, 5);
    Rectangle rectangle2(5, 8);
    cout<<"Area of R1 = "<<rectangle1.area()<<endl;
    cout<<"Area of R2 = "<<rectangle2.area()<<endl;
    return 0;
}
```

6. Write a program to print the area of a rectangle by creating a class named 'Area' having two functions. First function named as 'setDim' takes the length and breadth of the rectangle as parameters and the second function named as 'getArea' returns the area of the rectangle. Length and breadth of the rectangle are entered through keyboard.

Code:

```
#include <iostream>
using namespace std;
class Area {
public:
    double length;
    double breadth;
    setDim (double l, double b) {
```

```
        length = l;
        breadth = b;
    }

    double getArea() {
        return length * breadth;
    }
};
int main() {
    Area Rectangle
    double l,b;
    cin >> l;
    cin >> b;
    Rectangle.setDim(l, b);
    cout << "Area of the rectangle: " << Rectangle.getArea() << endl;
    return 0;
}
```


7. Write a program to print the area of a rectangle by creating a class named 'Area' taking the values of its length and breadth as parameters of its constructor and having a function named 'returnArea' which returns the area of the rectangle. Length and breadth of the rectangle are entered through keyboard.

Code:

```
#include <iostream>
using namespace std;
class Area {
public:
    double length;
    double breadth;
    Area (double l, double b) {
        length = l;
        breadth = b;
```

```
    }
    double returnArea() {
        return length * breadth;
    }
};
int main() {
    double length,breadth;
    cin >> length;
    cin >> breadth;
    Area Rectangle(length,breadth);
    cout << "Area of the rectangle: " << Rectangle.returnArea() << endl;
    return 0;
}
```


8. Print the average of three numbers entered by the user by creating a class named 'Average' having a function to calculate and print the average without creating any object of the Average class.

Code :

```
#include <iostream>
using namespace std;
class Average {
public:
    static void calculateAverage(double num1, double num2, double num3) {
        double average = (num1 + num2 + num3) / 3.0;
        cout << "The average of the three numbers is: " << average << endl;
    }
};
int main() {
    double num1, num2, num3;
    cin >> num1 >> num2 >> num3;
    Average::calculateAverage(num1, num2, num3);
    return 0;
}
```

9. Print the sum, difference and product of two complex numbers by creating a class named 'Complex' with separate functions for each operation whose real and imaginary parts are entered by the user.

Code:

10. Write a program to print the volume of a box by creating a class named 'Volume' with an initialization list to initialize its length, breadth and height. (Just to make you fa miliar with initialization lists)

```
#include<bits/stdc++.h>
using namespace std;
class Volume {
public:
    double length,breadth,height;
    Volume(double l, double b, double h)
    {
        length= l;
        breadth =b;
        height =h;
    }
    void calculatePrintVolume() {
        double volume = length * breadth * height;
        cout << "Volume = " << volume <<endl;
    }
};
int main() {
    double length, breadth, height;
    cout << "length : ";
    cin >> length;
    cout << "breadth : ";
    cin >> breadth;
    cout << "height : ";
```

```
    cin >> height;
    Volume box(length, breadth, height);
    box.calculatePrintVolume();
    return 0;
}
```

11. Write a program that would print the information (name, year of joining, salary, address) of three employees by creating a class named 'Employee'.

The output should be as follows:

Name	Year of Joining	Address
Shamsu	1992	Chittagong
Soleman	1994	Chittagong
Kalam	1990	Dhaka

Code:

```
#include<bits/stdc++.h>
using namespace std;
class employee
{
public:
    string name,address;
    int yearOfJoining;
    double salary;

    employee(string n,int yr,double sl,string add)
    {
        name = n;
        address = add;
        yearOfJoining =yr;
        salary = sl;
    }
```

```
    void printfinfo()
    {
        cout<<name<<"\t\t";
        cout<<yearOfJoining<<"\t\t";
        cout<<address<<"\t\t";
        cout<<salary<<"\t\t"<<endl;
    }

};
int main()
{
    employee employee1("Shamsu", 1992,10000, "Chittagong");
    employee employee2("Soleman", 1994,12000, "Chittagong");
    employee employee3("Kalam", 1990,15000, "Dhaka");

    cout << "Name\t  Year of Joining\tAddress \tsalary" <<endl;

    employee1.printfinfo();
    employee2.printfinfo();
    employee3.printfinfo();

   return 0;
}
```

12.Write a program by creating an 'Employee' class having the following functions and print the final salary.

1 - ‘getInfo ()' which takes the salary, number of hours of work per day of employee as parameters

2 - 'AddSal()' which adds $10 to the salary of the employee if it is less than $500.

3 - ‘AddWork ()' which adds $5 to the salary of the employee if the number of hours of work per day is more than 6 hours.

```
#include <iostream>
using namespace std;
class Employee {
private:
    float salary;
    int hoursOfWork;
public:
    // Constructor to initialize salary and hoursOfWork
    Employee(float sal, int hours) {
        salary = sal;
        hoursOfWork = hours;
    }
    // Function to get salary and hours of work
    void getInfo(float sal, int hours) {
        salary = sal;
        hoursOfWork = hours;
    }
    // Function to add $10 to the salary if it's less than $500
    void AddSal() {
        if (salary < 500) {
            salary += 10;
        }
    }

    // Function to add $5 to the salary if hours of work per day is more than 6 hours
    void AddWork() {
        if (hoursOfWork > 6) {
            salary += 5;
        }
    }
```

```
    // Function to print final salary
    void printFinalSalary() {
        cout << "Final Salary: $" << salary << endl;
    }
};
int main() {
    // Creating an Employee object
    Employee emp(450, 8); // Example values for salary and hours of work
    // Adding salary and work bonus
    emp.AddSal();
    emp.AddWork();
    // Printing final salary
    emp.printFinalSalary();
    return 0;
}
```

13.Create a class called 'Matrix' containing constructor that initializes the number of rows and the number of columns of a new Matrix object. The Matrix class has the following information:

Solved By

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