## 2. OOPs concepts in Java – 2

**a) Write a program to implement the concepts of Inheritance and Method overriding.**

```
class A
{
        void show( )
        {
                System.out.println("Base Class");
        }
}
class B extends A
{
 // Overriding Method of Base Class
        void show( )
        {
                System.out.println("Derieved Class");
        }
}
class Pr2a
{
        public static void main(String args[])
        {
                B s=new B( );
                s.show( );
        }
}
```

**Output :**

```
D:\NewJavaP>javac Pr2a.java

D:\NewJavaP>java Pr2a
Derieved Class
```

**Write a program to implement the concepts of Abstract classes and methods.**

```
// Abstract class
abstract class Shape
{
        // Abstract method for calculating area
        public abstract double area( );
}
// Concrete subclass - Circle
class Circle extends Shape
{
        private double radius;
```

```
        public Circle(double radius)
        {
            this.radius = radius;
        }
        @Override
        public double area( )
        {
            return Math.PI * radius * radius;
        }
    }
    public class Pr2b
    {
      public static void main(String[ ] args)
      {
            Circle circle = new Circle(10.0); // Create a Circle object
            // Calculate and display the area of the circle
            System.out.println("Circle Area: " + circle.area( ));
      }
    }
```

**Output :**

```
D:\NewJavaP>javac Pr2b.java

D:\NewJavaP>java Pr2b
Circle Area: 314.1592653589793
```

**c) Write a program to implement the concept of interfaces.**

```
// Define an interface
interface Shape
{
        // Abstract methods (implicitly public and abstract)
        double area( );
        double perimeter( );
}
// Implement the interface in a class
class Circle implements Shape
{
        private double radius;
        public Circle(double radius)
        {
            this.radius = radius;
        }
        @Override
```

```
        public double area( )
        {
            return Math.PI * radius * radius;
        }
        @Override
        public double perimeter( )
        {
            return 2 * Math.PI * radius;
        }
    }
    public class Pr2c
    {
        public static void main(String[ ] args)
        {
            Circle circle = new Circle(10.0);        // Create a Circle object
            // Calculate and display the area and perimeter of the circle
            System.out.println("Circle Area: " + circle.area( ));
            System.out.println("Circle Perimeter: " + circle.perimeter( ));
        }
    }
```

**Output :**

```
D:\NewJavaP>javac Pr2c.java

D:\NewJavaP>java Pr2c
Circle Area: 314.1592653589793
Circle Perimeter: 62.83185307179586
```