# Tutorial – 3

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**1. Draw a real picture for class and object. Differentiate class and object in terms of diagram only.**

**Perform following tasks.**

```
using System;
namespace _24SOECE13043_Dharmraj_sodha.LAB3
{
    class Car
    {
        private string brand;
        private string model;
        private int price;
        public Car(string b, string m, int p)
        {
            brand = b;
            model = m;
            price = p;
        }
        public void DisplayInfo()
        {
            Console.WriteLine("Brand: " + brand);
            Console.WriteLine("Model: " + model);
            Console.WriteLine("Price: " + price);
        }
        public void IncreasePrice(int amount)
        {
            price += amount;
            Console.WriteLine("Price increased by " + amount);
        }
    }
    class Demo
```

```
    {
        public static void Main(string[] args)
        {
            Car car1 = new Car("BMW", "X5", 7500000);
            Car car2 = new Car("Tesla", "Model S", 8500000);
            Console.WriteLine("\nCar 1 Info:");
            car1.DisplayInfo();
            car1.IncreasePrice(50000);
            car1.DisplayInfo();
            Console.WriteLine("\nCar 2 Info:");
            car2.DisplayInfo();
            car2.IncreasePrice(100000);
            car2.DisplayInfo();
            Console.ReadKey();
        }
    }
}
```

**Output :**

```
C:\Users\dharm\source\repos\24SOECE13043_Dharmraj_sodha\LAB3>Q1

Car 1 Info:
Brand: BMW
Model: X5
Price: 7500000
Price increased by 50000
Brand: BMW
Model: X5
Price: 7550000

Car 2 Info:
Brand: Tesla
Model: Model S
Price: 8500000
Price increased by 100000
Brand: Tesla
Model: Model S
Price: 8600000
```

**2.Define a class Clock with three *private* integer data members hour, min and sec…**

```
using System;

namespace _24SOECE13043_Dharmraj_sodha.LAB3
{
    class Clock
    {
        private int hour, min, sec;

        public Clock()
        {
            hour = 12; min = 0; sec = 0;
        }

        public Clock(int h, int m, int s)
        {
            hour = h; min = m; sec = s;
        }

        public void Tick()
        {
            sec++;
            if (sec == 60) { sec = 0; min++; }
            if (min == 60) { min = 0; hour++; }
            if (hour == 24) { hour = 0; }
        }

        public void Display()
        {
            Console.WriteLine($"{hour:D2}:{min:D2}:{sec:D2}");
        }

        public int getHour() => hour;
        public int getMinute() => min;
        public int getSeconds() => sec;
```

```
    }

    class TestClock
    {
        static void Main()
        {
            Clock c1 = new Clock();
            Clock c2 = new Clock(10, 59, 58);

            c1.Display();
            c2.Display();

            c2.Tick();
            c2.Display();

            Console.ReadKey();
        }
    }
}
```

**Output:**

```
C:\Users\dharm\source\repos\24SOECE13043_Dharmraj_sodha\LAB3>Q2
12:00:00
10:59:58
10:59:59
```

**3. Define a Student class with appropriate data members, property, constructors, methos etc….**

```
using System;

namespace _24SOECE13043_Dharmraj_sodha.LAB3
{
    class Student
    {
        private int enrolmentNo;
        private string name;
        private int age;

        public Student(int e, string n, int a)
        {
            enrolmentNo = e;
            name = n;
            age = a;
        }

        public void Display()
        {
            Console.WriteLine($"EnrolmentNo: {enrolmentNo}, Name:
{name}, Age: {age}");
        }
    }
    class TestStudent
    {
        public static void Main(string[] args)
        {
            Student s1 = new Student(101, "Aarav", 20);
            s1.Display();

            Console.ReadKey();
        }
    }
}
```

**output :**

```
C:\Users\dharm\source\repos\24SOECE13043_Dharmraj_sodha\LAB3>Q3
EnrolmentNo: 101, Name: Aarav, Age: 20
```

**4.Use above program classes and create objects for 5 students and demonstrate the use student class.**

```
using System;

namespace _24SOECE13043_Dharmraj_sodha.LAB3
{
    class Student
    {
        private int enrolmentNo;
        private string name;
        private int age;

        public Student(int e, string n, int a)
        {
            enrolmentNo = e;
            name = n;
            age = a;
        }

        public void Display()
        {
            Console.WriteLine($"EnrolmentNo: {enrolmentNo}, Name:
{name}, Age: {age}");
        }
    }

    class TestStudent
    {
        public static void Main(string[] args)
        {
            Student s1 = new Student(101, "Aarav", 20);
```

```
            Student s2 = new Student(102, "Meera", 21);
            Student s3 = new Student(103, "Ravi", 22);
            Student s4 = new Student(104, "Isha", 20);
            Student s5 = new Student(105, "Dev", 23);

            s1.Display();
            s2.Display();
            s3.Display();
            s4.Display();
            s5.Display();

            Console.ReadKey();
        }
    }
}
```

**Output :**

```
C:\Users\dharm\source\repos\24SOECE13043_Dharmraj_sodha\LAB3>Q4
EnrolmentNo: 101, Name: Aarav, Age: 20
EnrolmentNo: 102, Name: Meera, Age: 21
EnrolmentNo: 103, Name: Ravi, Age: 22
EnrolmentNo: 104, Name: Isha, Age: 20
EnrolmentNo: 105, Name: Dev, Age: 23
```

**5. Rearrange the given code to get the desired output.**

```
using System;

namespace _24SOECE13043_Dharmraj_sodha.LAB3
{
    class Product
    {
        int pcode;
        String pname, mname;

        public Product(int pcd, String pnm, String mnm)
        {
            pcode = pcd;
            pname = pnm;
            mname = mnm;
        }

        public void Display()
        {
            Console.WriteLine("\nProduct Code:= " + pcode);
            Console.WriteLine("\nProduct Name:= " + pname);
            Console.WriteLine("\nManufacturer Name:= " + mname);
        }
    }

    public class TestProduct
    {
        public static void Main(string[] args)
        {
            if (args.Length < 3)
            {
                Console.WriteLine("Syntax Error\n");
                Console.WriteLine("Must Have THREE Arguments\n");
                Console.WriteLine("Please, Write as [csc TestProduct
ProductCode ProductName Manufacturer] \n");
            }
```

```
            else
            {
                int pcd = Convert.ToInt32(args[0]);
                String pnm = args[1];
                String mnm = args[2];

                Product p = new Product(pcd, pnm, mnm);
                p.Display();

                Console.Read();
            }
        }
    }
}
```

**Output :**

```
C:\Users\dharm\source\repos\24SOECE13043_Dharmraj_sodha\LAB3>Q5 234 hope hell

Product Code:= 234

Product Name:= hope

Manufacturer Name:= hell
```

**6. Complete the following code that will generate the given output**

```
using System;

namespace _24SOECE13043_Dharmraj_sodha.LAB3
{
    class Line
    {
        private double length;

        public Line()
        {
            Console.WriteLine("Object is being created, length =
10");
            length = 10;
        }

        public void setLength(double len)
        {
            length = len;
        }

        public double getLength()
        {
            return length;
        }
    }

    class TestLine
    {
        static void Main(string[] args)
        {
            Line line = new Line();
            Console.WriteLine("Length of line : {0}",
line.getLength());

            line.setLength(6);
```

```
            Console.WriteLine("Length of line : {0}",
line.getLength());

            Console.ReadKey();
        }
    }
}
```

**Output :**

```
C:\Users\dharm\source\repos\24SOECE13043_Dharmraj_sodha\LAB3>Q6
Object is being created, length = 10
Length of line : 10
Length of line : 6
```

**7. Define EnrolmentNo and Name properties for the Student class and demonstrate use of these properties along with required data members, methods and constructors.**

```
using System;

namespace _24SOECE13043_Dharmraj_sodha.LAB3
{
    class Student
    {
        private int enrolmentNo;
        private string name;

        public int EnrolmentNo
        {
            get { return enrolmentNo; }
            set { enrolmentNo = value; }
        }

        public string Name
        {
```

```
            get { return name; }
            set { name = value; }
        }

        public Student(int e, string n)
        {
            enrolmentNo = e;
            name = n;
        }

        public void Display()
        {
            Console.WriteLine($"EnrolmentNo: {EnrolmentNo}, Name:
{Name}");
        }
    }
    class TestStudent
    {
        static void Main()
        {
            Student s1 = new Student(201, "Karan");
            Student s2 = new Student(202, "Pooja");

            Console.WriteLine("Before update:");
            s1.Display();

            s1.Name = "Karan Patel";

            Console.WriteLine("After update:");
            s1.Display();

            s2.Display();
            Console.ReadKey();
        }
    }
}
```

**Output:**

```
C:\Users\dharm\source\repos\24SOECE13043_Dharmraj_sodha\LAB3>Q7
Before update:
EnrolmentNo: 201, Name: Karan
After update:
EnrolmentNo: 201, Name: Karan Patel
EnrolmentNo: 202, Name: Pooja
```