

Rajan Gautam

19BCP101

Div. II, CE 19

SOT, PDPU

Pandit Deendayal Energy University

School of Technology

Design Pattern and Thinking (20CP210P)

B. Tech - Computer Science & Engineering (Sem-IV)

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Lab 3 Assignment: Prototype Design Pattern for Car

AIM: To write a Java Program to implement Prototype Design Pattern Car

CODE:

RajanGautam_Car.java

```
1. package Rajan_19BCP101;
2.
3. import java.util.ArrayList;
4. import java.util.List;
5.
6. class Car implements Cloneable
7. {
8.     private List<String> carList;
9.
10.    public Car()
11.    {
12.        this.carList = new ArrayList<String>();
13.    }
14.
15.    public Car(List<String> list)
16.    {
17.        this.carList = list;
18.    }
19.
20.    public void insertData()
21.    {
22.        carList.add("Bugatti");
23.        carList.add("Rolls Royce");
24.        carList.add("Koenigsegg");
25.        carList.add("Lykan");
26.        carList.add("Lamborghini");
27.        carList.add("McLaren");
28.        carList.add("Aston Martin");
29.    }
30.
31.    public List<String> getCarList()
32.    {
33.        return this.carList;
34.    }
35.
36.    public Object clone() throws CloneNotSupportedException
37.    {
38.        List<String> tempList = new ArrayList<String>();
39.        for(String s : this.getCarList())
40.        {
41.            tempList.add(s);
42.        }
43.        return new Car(tempList);
```

```

44.         }
45.
46.     }

```

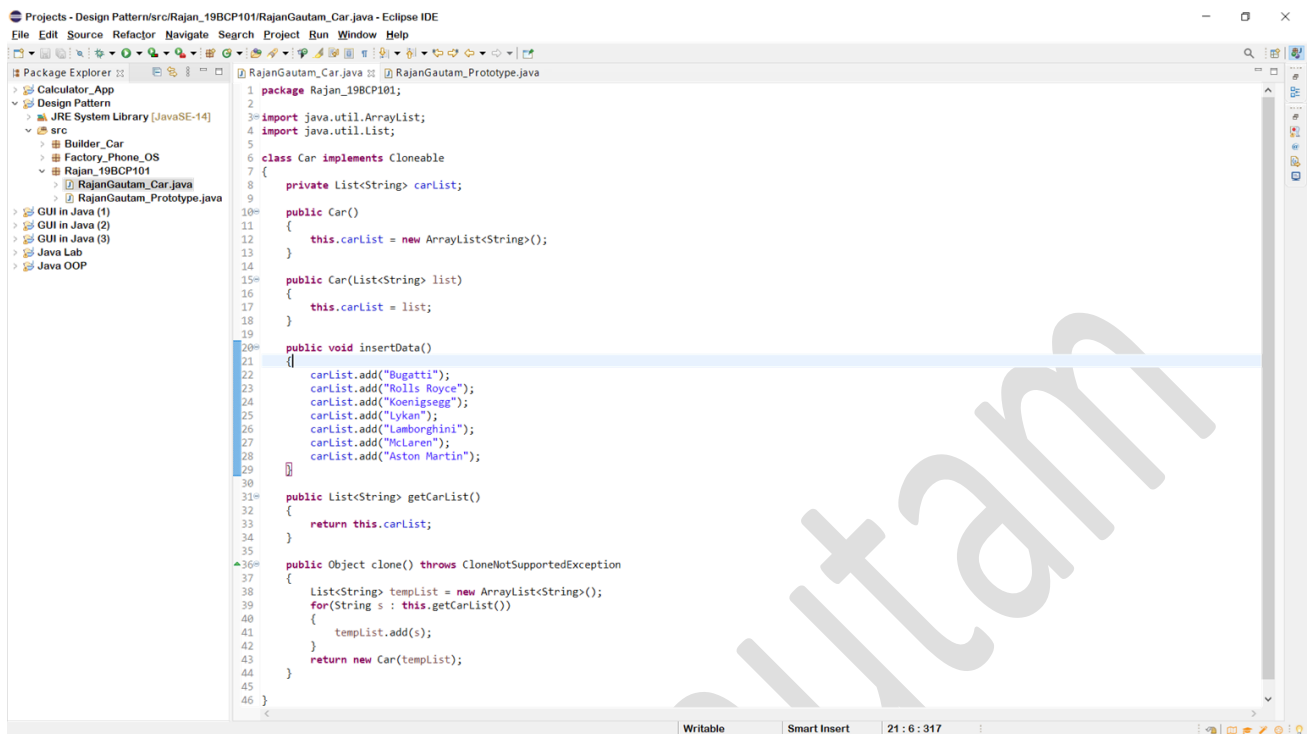
RajanGautam_Prototype.java

```

1. package Rajan_19BCP101;
2.
3. import java.util.List;
4. import java.util.Scanner;
5.
6. public class RajanGautam_Prototype {
7.
8.     public static void main(String[] args) throws CloneNotSupportedException
9.     {
10.         Car car = new Car();
11.         car.insertData();
12.
13.         System.out.print("List Before Modification: ");
14.         System.out.println(car.getCarList());
15.
16.         Car myCar = (Car) car.clone();
17.         List<String> list = myCar.getCarList();
18.
19.         Scanner scanner = new Scanner(System.in);
20.         System.out.print("Enter a new Car to add : ");
21.         String add_car = scanner.nextLine();
22.
23.         list.add(add_car);
24.         System.out.println("After Adding " + add_car + " : " +
            myCar.getCarList());
25.
26.         System.out.print("Enter a Car to remove : ");
27.         String remove_car = scanner.nextLine();
28.         scanner.close();
29.
30.         list.remove(remove_car);
31.         System.out.println("After Removing " + remove_car + " : "
            + myCar.getCarList());
32.
33.     }
34.
35. }

```

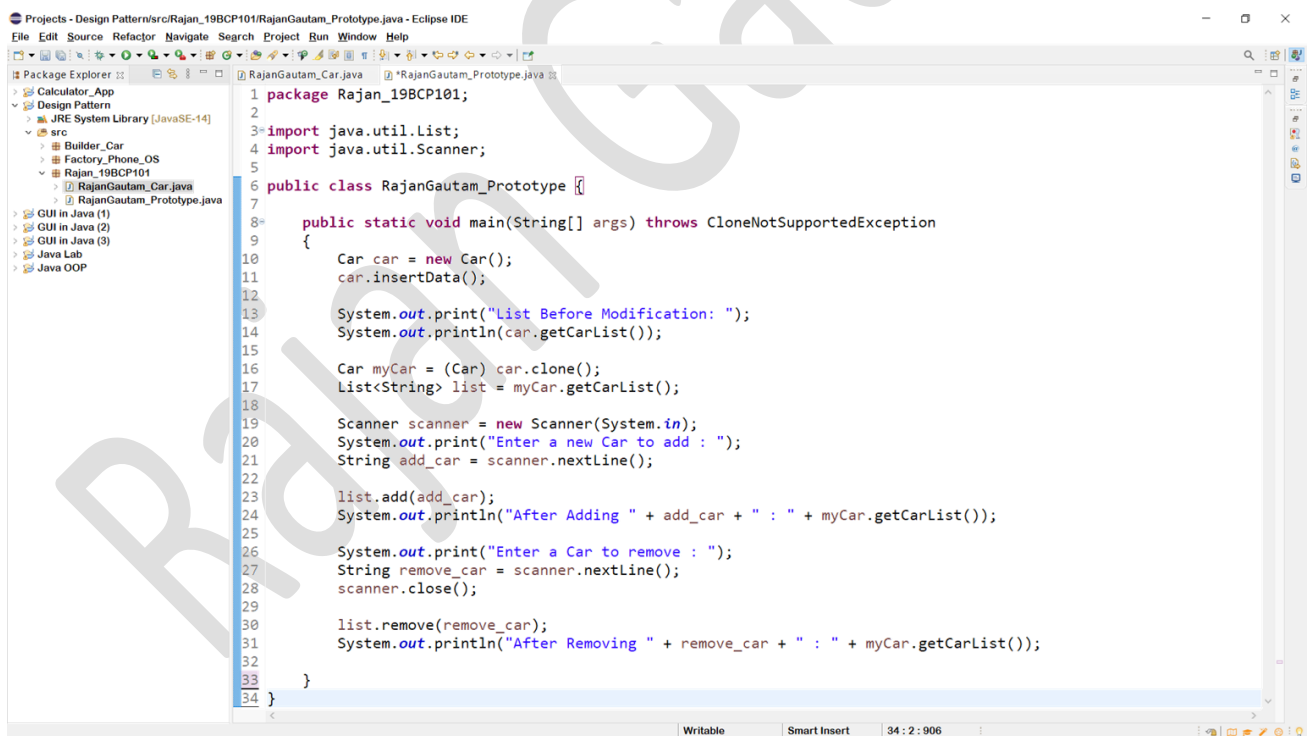
SCREENSHOT OF IDE:



```

1 package Rajan_19BCP101;
2
3 import java.util.ArrayList;
4 import java.util.List;
5
6 class Car implements Cloneable
7 {
8     private List<String> carList;
9
10    public Car()
11    {
12        this.carList = new ArrayList<String>();
13    }
14
15    public Car(List<String> list)
16    {
17        this.carList = list;
18    }
19
20    public void insertData()
21    {
22        carList.add("Bugatti");
23        carList.add("Rolls Royce");
24        carList.add("Koenigsegg");
25        carList.add("Lycan");
26        carList.add("Lamborghini");
27        carList.add("McLaren");
28        carList.add("Aston Martin");
29    }
30
31    public List<String> getCarList()
32    {
33        return this.carList;
34    }
35
36    public Object clone() throws CloneNotSupportedException
37    {
38        List<String> tempList = new ArrayList<String>();
39        for(String s : this.getCarList())
40        {
41            tempList.add(s);
42        }
43        return new Car(tempList);
44    }
45 }
46

```

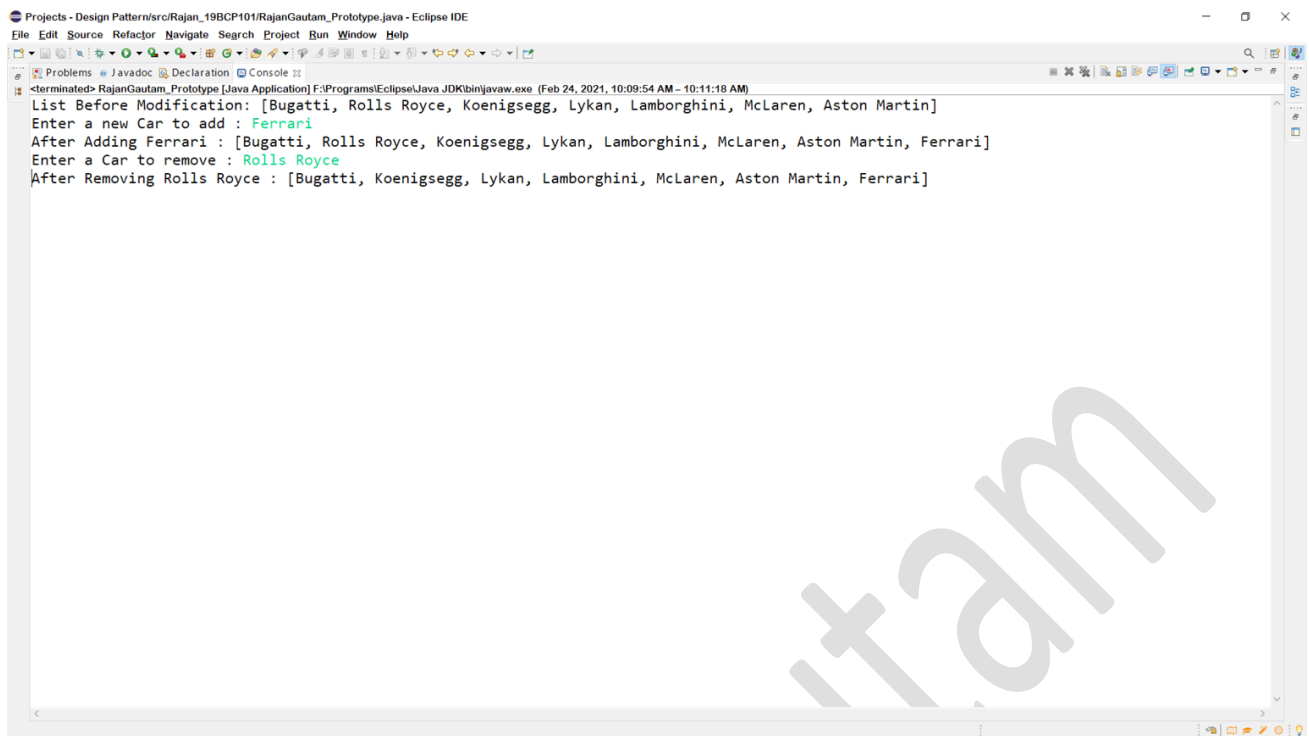


```

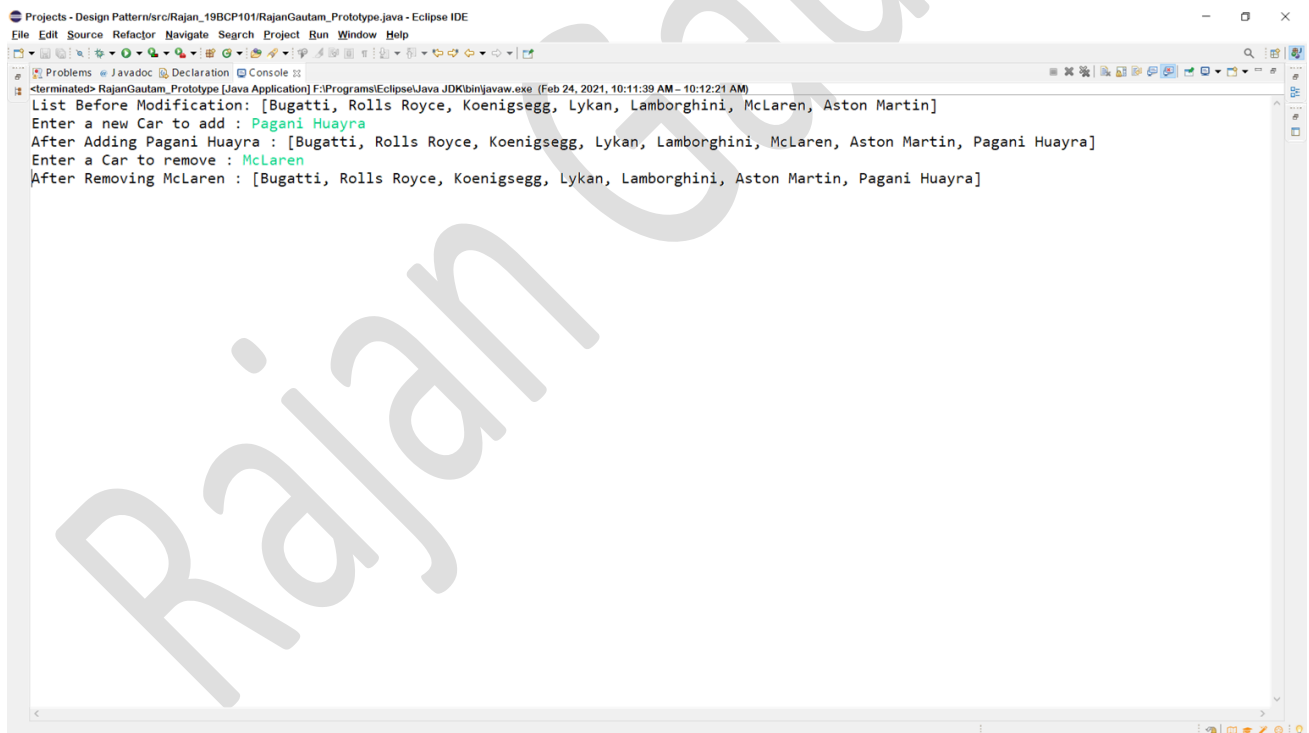
1 package Rajan_19BCP101;
2
3 import java.util.List;
4 import java.util.Scanner;
5
6 public class RajanGautam_Prototype {
7
8     public static void main(String[] args) throws CloneNotSupportedException
9     {
10        Car car = new Car();
11        car.insertData();
12
13        System.out.print("List Before Modification: ");
14        System.out.println(car.getCarList());
15
16        Car myCar = (Car) car.clone();
17        List<String> list = myCar.getCarList();
18
19        Scanner scanner = new Scanner(System.in);
20        System.out.print("Enter a new Car to add : ");
21        String add_car = scanner.nextLine();
22
23        list.add(add_car);
24        System.out.println("After Adding " + add_car + " : " + myCar.getCarList());
25
26        System.out.print("Enter a Car to remove : ");
27        String remove_car = scanner.nextLine();
28        scanner.close();
29
30        list.remove(remove_car);
31        System.out.println("After Removing " + remove_car + " : " + myCar.getCarList());
32    }
33 }
34

```

SCREENSHOT OF OUTPUT:



```
Projects - Design Pattern/src/Rajan_19BCP101/RajanGautam_Prototype.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
<terminated> RajanGautam_Prototype [Java Application] F:\Programs\Eclipse\Java\JDK\bin\javaw.exe (Feb 24, 2021, 10:09:54 AM - 10:11:18 AM)
List Before Modification: [Bugatti, Rolls Royce, Koenigsegg, Lykan, Lamborghini, McLaren, Aston Martin]
Enter a new Car to add : Ferrari
After Adding Ferrari : [Bugatti, Rolls Royce, Koenigsegg, Lykan, Lamborghini, McLaren, Aston Martin, Ferrari]
Enter a Car to remove : Rolls Royce
After Removing Rolls Royce : [Bugatti, Koenigsegg, Lykan, Lamborghini, McLaren, Aston Martin, Ferrari]
```



```
Projects - Design Pattern/src/Rajan_19BCP101/RajanGautam_Prototype.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help
<terminated> RajanGautam_Prototype [Java Application] F:\Programs\Eclipse\Java\JDK\bin\javaw.exe (Feb 24, 2021, 10:11:39 AM - 10:12:21 AM)
List Before Modification: [Bugatti, Rolls Royce, Koenigsegg, Lykan, Lamborghini, McLaren, Aston Martin]
Enter a new Car to add : Pagani Huayra
After Adding Pagani Huayra : [Bugatti, Rolls Royce, Koenigsegg, Lykan, Lamborghini, McLaren, Aston Martin, Pagani Huayra]
Enter a Car to remove : McLaren
After Removing McLaren : [Bugatti, Rolls Royce, Koenigsegg, Lykan, Lamborghini, Aston Martin, Pagani Huayra]
```

GitHub Link: https://github.com/rgautam320/Design-Pattern-Lab/tree/main/Prototype_Car