Name: -Aditya Raj Roll No: - 11212714 Section: - A1

Design Patterns
W6A1

Topic: -WAP to clear Prototype Design Pattern

Prototype Design Pattern

Prototype Pattern says that **cloning of an existing object instead of creating new one and can also be customized as per the requirement**.

This pattern should be followed, if the cost of creating a new object is expensive and resource intensive.

Advantage of Prototype Pattern

The main advantages of prototype pattern are as follows:

- It reduces the need of sub-classing.
- It hides complexities of creating objects.
- The clients can get new objects without knowing which type of object it will be.
- It lets you add or remove objects at runtime.

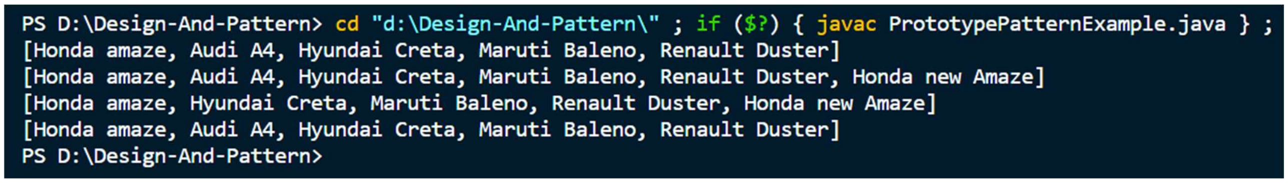
Usage of Prototype Pattern

- When the classes are instantiated at runtime.
- When the cost of creating an object is expensive or complicated.
- When you want to keep the number of classes in an application minimum.
- When the client application needs to be unaware of object creation and representation.

Code: -

```
package prototype;
import java.util.ArrayList;
import java.util.List;

class Vehicle implements Cloneable {
  private List<String> vehicleList;
  public Vehicle() {
    this.vehicleList = new ArrayList<String>();
  }

  public Vehicle(List<String> list) {
    this.vehicleList = list;
  }

  public void insertData() {
    vehicleList.add("Honda amaze");
    vehicleList.add("Audi A4");
    vehicleList.add("Hyundai Creta");
    vehicleList.add("Maruti Baleno");
    vehicleList.add("Renault Duster");
  }

  public List<String> getVehicleList() {
    return this.vehicleList;
  }

  @Override
  public Object clone() throws CloneNotSupportedException {
    List<String> tempList = new ArrayList<String>();

    for(String s : this.getVehicleList()) {
      tempList.add(s);
    }

    return new Vehicle(tempList);
  }
}

public class PrototypePatternExample {

  public static void main(String[] args) throws CloneNotSupportedException {
    Vehicle a = new Vehicle();
    a.insertData();

    Vehicle b = (Vehicle) a.clone();
    List<String> list = b.getVehicleList();
    list.add("Honda new Amaze");
    System.out.println(a.getVehicleList());
    System.out.println(list);

    b.getVehicleList().remove("Audi A4");
    System.out.println(list);
    System.out.println(a.getVehicleList());
  }
}
```

Output: -



```
PS D:\Design-And-Pattern> cd "d:\Design-And-Pattern\" ; if ($?) { javac PrototypePatternExample.java } ;
[Honda amaze, Audi A4, Hyundai Creta, Maruti Baleno, Renault Duster]
[Honda amaze, Audi A4, Hyundai Creta, Maruti Baleno, Renault Duster, Honda new Amaze]
[Honda amaze, Hyundai Creta, Maruti Baleno, Renault Duster, Honda new Amaze]
[Honda amaze, Audi A4, Hyundai Creta, Maruti Baleno, Renault Duster]
PS D:\Design-And-Pattern>
```