**Student Name: Diptesh Ravindra Varule Roll No.:23277**

**Assignment No 10**

**Factory Design pattern**

**Problem Statement :**

Design and implement Factory design pattern for the given context. Consider Car building process, which requires many steps from allocating accessories to final makeup. These steps should be written as methods and should be called while creating an instance of a specific car type. Hatchback, Sedan, SUV could be the subclasses of Car class. Car class and its subclasses, CarFactory and TestFactoryPattern should be

**Source Code:**

**package** ass10;

**import** java.util.Scanner;

**abstract** **class** Car\_Factory{

//created interface//declared methods//

String compnay,car\_name;

**double** budget;

**abstract** **void** getprice(**double** price);

**abstract** **void** detail(String company\_name,String car\_name);

**abstract** **void** accessories();

**void** input() {

Scanner scan =**new** Scanner (System.***in***);

System.***out***.print("Company- ");

compnay=scan.next();

System.***out***.print("Car- ");

car\_name=scan.next();

System.***out***.print("Rough Budget(in Lakhs)- ");

budget=scan.nextDouble();

}

**void** display(Car\_Factory obj1) {

//calling the methods//

obj1.getprice(budget);

System.***out***.println("\n-----------------------------------");

obj1.detail(compnay, car\_name);

System.***out***.println("\n-----------------------------------");

obj1.accessories();

System.***out***.println("\n-----------------------------------");

}

}

//implemented interface//

**class** Small\_car **extends** Car\_Factory{

String Ans;

//taking price and printing message for accessories//

**public** **void** getprice(**double** price) {

//Scanner scan = new Scanner(System.in);

//System.out.print("Enter Price(in lakhs)- ");

//price=scan.nextInt();

**if**(price>2&&price<5) {

Ans="No";

}

**else** {

Ans="Yes";

}

//scan.close();

}

//method for displaying car detail//

**public** **void** detail(String company\_name,String car\_name) {

System.***out***.println("Company- "+company\_name);

System.***out***.println("Name of Car- "+car\_name);

System.***out***.println("Color- Black/White/Orange/Red");

System.***out***.println("Fuel- Petrol");

System.***out***.println("Gears- Manual");

}

//method to display accessories of car//

**public** **void** accessories() {

System.***out***.println("Types of Tyres- Alloy Wheels");

System.***out***.println("Airbags- "+Ans);

System.***out***.println("Back Wiper- "+Ans);

System.***out***.println("Side Mirror- Two");

System.***out***.println("Touch Screen Music Player- "+Ans);

}

}

**class** Sedan **extends** Car\_Factory{

String Ans;

//taking price and printing message for accessories//

**public** **void** getprice(**double** price) {

//Scanner scan = new Scanner(System.in);

//System.out.print("Enter Price(in lakhs)- ");

//price=scan.nextInt();

**if**(price>6&&price<10) {

Ans="No";

}

**else** {

Ans="Yes";

}

//scan.close();

}

//method for displaying car detail//

**public** **void** detail(String company\_name,String car\_name) {

System.***out***.println("Company- "+company\_name);

System.***out***.println("Name of Car- "+car\_name);

System.***out***.println("Color- Black/White/Orange/Red");

System.***out***.println("Fuel- Petrol/Diesel");

System.***out***.println("Gears- Auto/Manual");

}

//method to display accessories of car//

**public** **void** accessories() {

System.***out***.println("Types of Tyres- Alloy Wheels");

System.***out***.println("Airbags- YES");

System.***out***.println("Back Wiper- YES");

System.***out***.println("Side Mirror- Two");

System.***out***.println("Touch Screen Music Player- YES");

System.***out***.println("Roof Window- "+Ans);

}

}

**class** Luxary **extends** Car\_Factory{

String Ans;

//taking price and printing message for accessories//

**public** **void** getprice(**double** price) {

//Scanner scan = new Scanner(System.in);

//System.out.print("Enter Price(in lakhs)- ");

//price=scan.nextInt();

**if**(price>10&&price<14) {

Ans="No";

}

**else** {

Ans="Yes";

}

//scan.close();

}

//method for displaying car detail//

**public** **void** detail(String company\_name,String car\_name) {

System.***out***.println("Company- "+company\_name);

System.***out***.println("Name of Car- "+car\_name);

System.***out***.println("Color- Black/White/Orange/Red");

System.***out***.println("Fuel- Diesel");

System.***out***.println("Gears- Auto");

}

//method to display accessories of car//

**public** **void** accessories() {

System.***out***.println("Types of Tyres- Alloy Wheels");

System.***out***.println("Airbags- YES");

System.***out***.println("Back Wiper- YES");

System.***out***.println("Side Mirror- Two");

System.***out***.println("Touch Screen Music Player- YES");

System.***out***.println("Roof Window- YES");

System.***out***.println("Automotive Garbage Cans- "+Ans);

System.***out***.println("Automotice Air Freshner- "+Ans);

System.***out***.println("Button Start- "+Ans);

}

}

/\*

class Car{

//using getcar method to get the object as per chice//

public Car\_Factory getcar(int name) {

if(name==1)//if input is for small cars//

return new Small\_car();

else if(name==2)//if input is for sedan car//

return new Sedan();

return new Luxary();//if input is for luxary car//

}

}

\*/

**public** **class** Assignment10 {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

Scanner scan = **new** Scanner(System.***in***);

**int** ch;

//double price;

Car\_Factory obj;

**while**(**true**){

//asking user which car to see//

System.***out***.println("Which Car you want to See?- ");

System.***out***.println("\n\t1.Small Car\n\t2.Sedan Car\n\t3.Luxary Car\n\t4.Exit");

ch=scan.nextInt();

System.***out***.println();

**switch**(ch) {

**case** 1:

obj= **new** Small\_car();

obj.input();

obj.display(obj);

**break**;

**case** 2:

obj= **new** Sedan();

obj.input();

obj.display(obj);

**break**;

**case** 3:

obj= **new** Luxary();

obj.input();

obj.display(obj);

**break**;

**case** 4:

System.***out***.println("\n-----------------------------------");

**return**;

**default**:

System.***out***.println("INVALID CHOICE !!");

System.***out***.println("\n-----------------------------------");

**break**;

}

}

}

}

**Output :**

Which Car you want to See?-

1.Small Car

2.Sedan Car

3.Luxary Car

4.Exit

1

Company- Maruti

Car- Alto\_800

Rough Budget(in Lakhs)- 3.85

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Company- Maruti

Name of Car- Alto\_800

Color- Black/White/Orange/Red

Fuel- Petrol

Gears- Manual

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Types of Tyres- Alloy Wheels

Airbags- No

Back Wiper- No

Side Mirror- Two

Touch Screen Music Player- No

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Which Car you want to See?-

1.Small Car

2.Sedan Car

3.Luxary Car

4.Exit

2

Company- Honda

Car- Amaze

Rough Budget(in Lakhs)- 8.4

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Company- Honda

Name of Car- Amaze

Color- Black/White/Orange/Red

Fuel- Petrol/Diesel

Gears- Auto/Manual

-----------------------------------

Types of Tyres- Alloy Wheels

Airbags- YES

Back Wiper- YES

Side Mirror- Two

Touch Screen Music Player- YES

Roof Window- No

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Which Car you want to See?-

1.Small Car

2.Sedan Car

3.Luxary Car

4.Exit

3

Company- BMW

Car- M5

Rough Budget(in Lakhs)- 154

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Company- BMW

Name of Car- M5

Color- Black/White/Orange/Red

Fuel- Diesel

Gears- Auto

-----------------------------------

Types of Tyres- Alloy Wheels

Airbags- YES

Back Wiper- YES

Side Mirror- Two

Touch Screen Music Player- YES

Roof Window- YES

Automotive Garbage Cans- Yes

Automotice Air Freshner- Yes

Button Start- Yes

-----------------------------------

Which Car you want to See?-

1.Small Car

2.Sedan Car

3.Luxary Car

4.Exit

5

INVALID CHOICE !!

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Which Car you want to See?-

1.Small Car

2.Sedan Car

3.Luxary Car

4.Exit

4

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