**Builder Pattern Example: Car**

**Class: Car**

**package** builder.car;

**public** **class** Car {

**private** String bodyStyle;

**private** String power;

**private** String engine;

**private** String breaks;

**private** String seats;

**private** String windows;

**private** String fuelType;

**private** String carType;

**public** Car (String carType){

**this**.carType = carType;

}

**public** String getBodyStyle() {

**return** bodyStyle;

}

**public** **void** setBodyStyle(String bodyStyle) {

**this**.bodyStyle = bodyStyle;

}

**public** String getPower() {

**return** power;

}

**public** **void** setPower(String power) {

**this**.power = power;

}

**public** String getEngine() {

**return** engine;

}

**public** **void** setEngine(String engine) {

**this**.engine = engine;

}

**public** String getBreaks() {

**return** breaks;

}

**public** **void** setBreaks(String breaks) {

**this**.breaks = breaks;

}

**public** String getSeats() {

**return** seats;

}

**public** **void** setSeats(String seats) {

**this**.seats = seats;

}

**public** String getWindows() {

**return** windows;

}

**public** **void** setWindows(String windows) {

**this**.windows = windows;

}

**public** String getFuelType() {

**return** fuelType;

}

**public** **void** setFuelType(String fuelType) {

**this**.fuelType = fuelType;

}

@Override

**public** String toString(){

StringBuilder sb = **new** StringBuilder();

sb.append("--------------"+carType+"--------------------- \n");

sb.append(" Body: ");

sb.append(bodyStyle);

sb.append("\n Power: ");

sb.append(power);

sb.append("\n Engine: ");

sb.append(engine);

sb.append("\n Breaks: ");

sb.append(breaks);

sb.append("\n Seats: ");

sb.append(seats);

sb.append("\n Windows: ");

sb.append(windows);

sb.append("\n Fuel Type: ");

sb.append(fuelType);

**return** sb.toString();

}

}

**Class: CarDirector**

**package** builder.car;

**public** **class** CarDirector {

**private** CarBuilder carBuilder;

**public** CarDirector(CarBuilder carBuilder){

**this**.carBuilder = carBuilder;

}

**public** **void** build(){

carBuilder.buildBodyStyle();

carBuilder.buildPower();

carBuilder.buildEngine();

carBuilder.buildBreaks();

carBuilder.buildSeats();

carBuilder.buildWindows();

carBuilder.buildFuelType();

}

}

**Interface: CarBuilder**

**package** builder.car;

**public** **interface** CarBuilder {

**public** **void** buildBodyStyle();

**public** **void** buildPower();

**public** **void** buildEngine();

**public** **void** buildBreaks();

**public** **void** buildSeats();

**public** **void** buildWindows();

**public** **void** buildFuelType();

**public** Car getCar();

}

**Class: SedanCarBuilder**

**package** builder.car;

**public** **class** SedanCarBuilder **implements** CarBuilder{

**private** **final** Car car = **new** Car("SEDAN");

@Override

**public** **void** buildBodyStyle() {

car.setBodyStyle("External dimensions: overall length (inches): 202.9, " +

"overall width (inches): 76.2, overall height (inches): 60.7, wheelbase (inches): 112.9," + " front track (inches): 65.3, rear track (inches): 65.5 and curb to curb turning circle (feet): 39.5");

}

@Override

**public** **void** buildPower(){

car.setPower("285 hp @ 6,500 rpm; 253 ft lb of torque @ 4,000 rpm");

}

@Override

**public** **void** buildEngine() {

car.setEngine("3.5L Duramax V 6 DOHC");

}

@Override

**public** **void** buildBreaks() {

car.setBreaks("Four-wheel disc brakes: two ventilated. Electronic brake distribution");

}

@Override

**public** **void** buildSeats() {

car.setSeats("Front seat center armrest.Rear seat center armrest.Split-folding rear seats");

}

@Override

**public** **void** buildWindows() {

car.setWindows("Laminated side windows.Fixed rear window with defroster");

}

@Override

**public** **void** buildFuelType() {

car.setFuelType("Gasoline 19 MPG city, 29 MPG highway, 23 MPG combined and 437 mi. range");

}

@Override

**public** Car getCar(){

**return** car;

}

}

**Class: SportsCarBuilder**

**package** builder.car;

**public** **class** SportsCarBuilder **implements** CarBuilder{

**private** **final** Car car = **new** Car("SPORTS");

@Override

**public** **void** buildBodyStyle() {

car.setBodyStyle("External dimensions: overall length (inches): 192.3," +

" overall width (inches): 75.5, overall height (inches): 54.2, wheelbase (inches): 12.3," + " front track (inches): 63.7, rear track (inches): 64.1 and curb to curb turning circle (feet): 37.7");

}

@Override

**public** **void** buildPower(){

car.setPower("323 hp @ 6,800 rpm; 278 ft lb of torque @ 4,800 rpm");

}

@Override

**public** **void** buildEngine() {

car.setEngine("3.6L V 6 DOHC and variable valve timing");

}

@Override

**public** **void** buildBreaks() {

car.setBreaks("Four-wheel disc brakes: two ventilated. Electronic brake distribution. StabiliTrak stability control");

}

@Override

**public** **void** buildSeats() {

car.setSeats("Driver sports front seat with one power adjustments manual height, front passenger seat sports front seat with one power adjustments");

}

@Override

**public** **void** buildWindows() {

car.setWindows("Front windows with one-touch on two windows");

}

@Override

**public** **void** buildFuelType() {

car.setFuelType("Gasoline 17 MPG city, 28 MPG highway, 20 MPG combined and 380 mi. range");

}

@Override

**public** Car getCar(){

**return** car;

}

}

**Class: TestBuilderPattern**

**package** builder.car;

**public** **class** TestBuilderPattern {

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

CarBuilder carBuilder = **new** SedanCarBuilder();

CarDirector director = **new** CarDirector(carBuilder);

director.build();

Car car = carBuilder.getCar();

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

carBuilder = **new** SportsCarBuilder();

director = **new** CarDirector(carBuilder);

director.build();

car = carBuilder.getCar();

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

}

}

Result:

--------------SEDAN---------------------

Body: External dimensions: overall length (inches): 202.9, overall width (inches): 76.2, overall height (inches): 60.7, wheelbase (inches): 112.9, front track (inches): 65.3, rear track (inches): 65.5 and curb to curb turning circle (feet): 39.5

Power: 285 hp @ 6,500 rpm; 253 ft lb of torque @ 4,000 rpm

Engine: 3.5L Duramax V 6 DOHC

Breaks: Four-wheel disc brakes: two ventilated. Electronic brake distribution

Seats: Front seat center armrest.Rear seat center armrest.Split-folding rear seats

Windows: Laminated side windows.Fixed rear window with defroster

Fuel Type: Gasoline 19 MPG city, 29 MPG highway, 23 MPG combined and 437 mi. range

--------------SPORTS---------------------

Body: External dimensions: overall length (inches): 192.3, overall width (inches): 75.5, overall height (inches): 54.2, wheelbase (inches): 112.3, front track (inches): 63.7, rear track (inches): 64.1 and curb to curb turning circle (feet): 37.7

Power: 323 hp @ 6,800 rpm; 278 ft lb of torque @ 4,800 rpm

Engine: 3.6L V 6 DOHC and variable valve timing

Breaks: Four-wheel disc brakes: two ventilated. Electronic brake distribution. StabiliTrak stability control

Seats: Driver sports front seat with one power adjustments manual height, front passenger seat sports front seat with one power adjustments

Windows: Front windows with one-touch on two windows

Fuel Type: Gasoline 17 MPG city, 28 MPG highway, 20 MPG combined and 380 mi. range