```
package com.cts.carstore;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;
import org.springframework.context.annotation.ComponentScan;

import com.cts.carstore.skeletonvalidator.SkeletonValidator;

@SpringBootApplication
@ComponentScan("com.cts.*")
public class CarStoreApplication {

	public static void main(String[] args) {
		SpringApplication.run(CarStoreApplication.class, args);

		new SkeletonValidator();
	}

}
```

```
package com.cts.carstore.controller;

import java.util.ArrayList;
import java.util.List;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Controller;
import org.springframework.ui.ModelMap;
```

```
import org.springframework.validation.BindingResult;
import org.springframework.validation.Validator;
import org.springframework.web.bind.annotation.ModelAttribute;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;

import com.cts.carstore.exception.ApplicationException;
import com.cts.carstore.model.CarSearch;
import com.cts.carstore.service.CarStoreService;



@Controller
public class CarStoreController {

	@Autowired
	private CarStoreService service;

	@Autowired
	private Validator validator;

	public CarStoreController() {
		System.out.println("in default constr of controller");

	}

	 @Autowired
	 public CarStoreController(CarStoreService service, Validator validator) {
	  this.service=service;
	  this.validator=validator;
	 }
```

```
  @RequestMapping(value = "/", method = RequestMethod.GET)
	public String showCarSearchForm(@ModelAttribute("carSearch") CarSearch carSearch) {

		//Add code here..



		return "carSearch"; //TODO, modify return value

	}

  @RequestMapping(value = "/getCarSearchResultPage", method = RequestMethod.POST)
	public String getCarSearchResultForm(@ModelAttribute("carSearch") CarSearch carSearch,
ModelMap map,
	BindingResult result)throws ApplicationException  {

		//Add code here..

		// Redirecting to the same form page if invalid
			if (result.hasErrors()) {
				return "carSearch";
			}

			else {

		return "carSearchResult"; //TODO, modify return value
		}
	}

  @ModelAttribute("cityList")
	public List<String> populateCities() {
		List<String> cities = new ArrayList<String>();
```

```
		cities.add("Chennai");
		cities.add("Mumbai");
		cities.add("Delhi");
		cities.add("Bangalore");
		cities.add("Pune");
		cities.add("Kolkatta");


		return cities;
}

  @ModelAttribute("brandList")
public List<String> populateBrands() {
		List<String> brands = new ArrayList<String>();

		brands.add("Maruti Suzuki");
		brands.add("Honda");
		brands.add("Mahindra");
		brands.add("Toyota");
		brands.add("Hundai");

		return brands;
}

  @ModelAttribute("budgetList")
public List<String> populateBudget() {
		List<String> budgetUpto = new ArrayList<String>();

		budgetUpto.add("Below 3 Lakh");
		budgetUpto.add("3 Lakh");
```

```
		budgetUpto.add("5 Lakh");
		budgetUpto.add("7 Lakh");
		budgetUpto.add("10 Lakh");


		return budgetUpto;
	}

	 @ModelAttribute("fuelTypeList")
	public List<String> populateFuelTypes() {
		List<String> fuelTypes = new ArrayList<String>();

		fuelTypes.add("Petrol");
		fuelTypes.add("Diesel");
		fuelTypes.add("CNG");

		return fuelTypes;
	}
}
```

```
package com.cts.carstore.exception;

public class ApplicationException extends Exception {
	private static final long serialVersionUID = -9079454849611061074L;
	public String errorMessage;
}
```

```
package com.cts.carstore.exception;



import java.util.Date;
```

```
import javax.servlet.http.HttpServletRequest;

import org.springframework.http.HttpStatus;

import org.springframework.ui.Model;
import org.springframework.web.bind.annotation.ControllerAdvice;

import org.springframework.web.bind.annotation.ResponseStatus;

import org.springframework.web.servlet.ModelAndView;




@ControllerAdvice
public class ExceptionHandlerControllerAdvice {


	@ResponseStatus(value = HttpStatus.INTERNAL_SERVER_ERROR)
	public ModelAndView handleResourceNotFound(final ApplicationException exception,
			final HttpServletRequest request, final Model model) {

		//Add code here..

		String message="Low Budget- No car available below 3 lakh price";
		Date date= new Date();

		//add attribute error and timestamp
```

```
                return null; //TODO, change return value

        }

}
```

```
package com.cts.carstore.model;

public class Car {
        private String brandName;
        private String modelName;
        private double price;   //price in lakh
        private String fuelType;
        private double mileage;
        private int seatingCapacity;

        public Car() {
                // TODO Auto-generated constructor stub
        }

        public Car(String brandName, String modelName, double price, String
fuelType,double mileage, int seatingCapacity) {
                super();
                this.brandName = brandName;
                this.modelName = modelName;
                this.price = price;
                this.fuelType = fuelType;
                this.mileage = mileage;
                this.seatingCapacity = seatingCapacity;
        }

        public String getBrandName() {
                return brandName;
        }

        public void setBrandName(String brandName) {
                this.brandName = brandName;
        }

        public String getModelName() {
                return modelName;
        }

        public void setModelName(String modelName) {

                this.modelName = modelName;
        }

        public double getPrice() {
                return price;
        }

        public void setPrice(double price) {
                this.price = price;
        }

        public String getFuelType() {
                return fuelType;
        }
```

```
	public void setFuelType(String fuelType) {
		this.fuelType = fuelType;
	}

	public int getSeatingCapacity() {
		return seatingCapacity;
	}

	public void setSeatingCapacity(int seatingCapacity) {
		this.seatingCapacity = seatingCapacity;
	}

	public double getMileage() {
		return mileage;
	}

	public void setMileage(double mileage) {
		this.mileage = mileage;
	}




}
package com.cts.carstore.model;

import javax.validation.constraints.NotBlank;
import javax.validation.constraints.NotNull;
import javax.validation.constraints.Pattern;

public class CarSearch {
	// Use validation annotations as per the requirement

	@NotNull(message = "Customer name is required")
	private String customerName;
	@NotBlank(message = "Gender is required")
	private String gender;
	@NotBlank(message = "Mobile number is required")
	@Pattern(regexp="([7,8,9]{1}[0-9]{9})",message="Mobile number should be 10
digit starting with 7,8,9")
	private String mobileNumber;
	private String customerCity;
	private String brand;
	private String budgetUpto;
	private String fuelType;


	public CarSearch() {
		// TODO Auto-generated constructor stub
	}

	public String getCustomerName() {
		return customerName;
	}

	public void setCustomerName(String customerName) {
		this.customerName = customerName;
```

```
	}

	public String getGender() {
		return gender;
	}

	public void setGender(String gender) {
		this.gender = gender;
	}

	public String getMobileNumber() {

		return mobileNumber;
	}

	public void setMobileNumber(String mobileNumber) {
		this.mobileNumber = mobileNumber;
	}

	public String getCustomerCity() {
		return customerCity;
	}

	public void setCustomerCity(String customerCity) {
		this.customerCity = customerCity;
	}

	public String getBrand() {
		return brand;
	}

	public void setBrand(String brand) {
		this.brand = brand;
	}

	public String getBudgetUpto() {
		return budgetUpto;
	}

	public void setBudgetUpto(String budgetUpto) {
		this.budgetUpto = budgetUpto;
	}

	public String getFuelType() {
		return fuelType;
	}

	public void setFuelType(String fuelType) {

		this.fuelType = fuelType;
	}

}
package com.cts.carstore.model;


public class ErrorResponse {

	private String errorMessage;
```

```
        private String requestedURI;

        //add code here
}
```

```
package com.cts.carstore.service;

import java.util.ArrayList;
import java.util.List;

import org.springframework.stereotype.Service;

import com.cts.carstore.exception.ApplicationException;
import com.cts.carstore.model.Car;
import com.cts.carstore.model.CarSearch;

@Service
public class CarStoreService {

        public List<Car> getCarSearchResult(CarSearch carSearch) throws ApplicationException {
                //Add code here..
                List<Car> l=buildCars();
                List<Car> r=new ArrayList<>();
                for(Car i:l) {
                        if(i.getBrandName().equals(carSearch.getBrand()) &&
i.getFuelType().equals(carSearch.getFuelType()) &&
i.getPrice()<=Double.parseDouble(carSearch.getBudgetUpto().substring(0, 1))) {
                                r.add(i);
                        }
                }

                return r;  //TODO, modify this return value
        }
```

```
// DO NOT CHANGE THIS METHOD
//DO NOT CHANGE CODE WITHIN METHOD
private List<Car> buildCars() {
        List<Car> cars = new ArrayList<Car>();
        // brand,modelName,price,fuelType,seatingCapacity
        Car car1 = new Car("Maruti Suzuki", "Swift", 5.20, "Petrol", 21.21, 5);
        Car car2 = new Car("Maruti Suzuki", "Alto", 3, "Petrol", 22.05, 5);
        Car car3 = new Car("Maruti Suzuki", "Ertiga LXi", 7.5, "Petrol", 19.01, 7);
        Car car4 = new Car("Maruti Suzuki", "Ertiga VXi", 8.9, "CNG", 26.2, 7);
        Car car5 = new Car("Maruti Suzuki", "WagonR", 4.5, "Petrol", 20.52, 5);
        Car car6 = new Car("Maruti Suzuki", "WagonR LXi", 5.20, "CNG", 32.52, 5);
        Car car7 = new Car("Honda", "Amaze", 6.20, "Petrol", 18.6, 5);
        Car car8 = new Car("Honda", "Amaze1.2E MT", 7.6, "Diesel", 24.7, 5);
        Car car9 = new Car("Honda", "Amaze1.5E MT", 8, "Diesel", 25.2, 5);
        Car car10 = new Car("Honda", "City", 9.30, "Petrol", 17.4, 5);
        Car car11 = new Car("Mahindra", "KUV100", 5.6, "Petrol", 15, 6);
        Car car12 = new Car("Toyota", "Yaris", 8.8, "Petrol", 18.1, 5);
        Car car13 = new Car("Hundai", "Aura", 7.30, "CNG", 20.5, 5);
        Car car14 = new Car("Hundai", "Creta", 9.9, "Petrol", 21.5, 5);
        cars.add(car1);
        cars.add(car2);
        cars.add(car3);
        cars.add(car4);
        cars.add(car5);
        cars.add(car6);
        cars.add(car7);
        cars.add(car8);
        cars.add(car9);
        cars.add(car10);
```

```
		cars.add(car11);
		cars.add(car12);
		cars.add(car13);
		cars.add(car14);

		return cars;
	}

}
```

```
package com.cts.carstore.skeletonvalidator;

import java.lang.reflect.Method;
import java.util.logging.Level;
import java.util.logging.Logger;



public class SkeletonValidator {

	public SkeletonValidator() {
		validateClassName("com.cts.carstore.model.Car");
		validateClassName("com.cts.carstore.model.CarSearch");
		validateClassName("com.cts.carstore.model.ErrorResponse");
		validateClassName("com.cts.carstore.service.CarStoreService");
		validateClassName("com.cts.carstore.controller.CarStoreController");
		validateClassName("com.cts.carstore.exception.ApplicationException");

	validateClassName("com.cts.carstore.exception.ExceptionHandlerControllerAdvice");
```

```
		validateMethodSignature("getCarSearchResult:java.util.List",
					"com.cts.carstore.service.CarStoreService");

	validateMethodSignature("showCarSearchForm:java.lang.String,populateCities:java.util.List,
populateBrands:java.util.List,populateBudget:java.util.List,populateFuelTypes:java.util.List",
					"com.cts.carstore.controller.CarStoreController");
	}

	private static final Logger LOG = Logger.getLogger("SkeletonValidator");

	protected final boolean validateClassName(String className) {

		boolean iscorrect = false;
		try {
			Class.forName(className);
			iscorrect = true;
			LOG.info("Class Name " + className + " is correct");

		} catch (ClassNotFoundException e) {

			LOG.log(Level.SEVERE, "You have changed either the " + "class
name/package. Use the correct package "
					+ "and class name as provided in the skeleton");

		} catch (Exception e) {
			LOG.log(Level.SEVERE,
					"There is an error in validating the " + "Class Name. Please
manually verify that the "
						+ "Class name is same as skeleton before
uploading");
		}
		return iscorrect;
```

```
}

protected final void validateMethodSignature(String methodWithExcptn, String className) {
        Class cls = null;
        try {

                String[] actualmethods = methodWithExcptn.split(",");
                boolean errorFlag = false;
                String[] methodSignature;
                String methodName = null;
                String returnType = null;

                for (String singleMethod : actualmethods) {
                        boolean foundMethod = false;
                        methodSignature = singleMethod.split(":");

                        methodName = methodSignature[0];
                        returnType = methodSignature[1];

                        cls = Class.forName(className);
                        Method[] methods = cls.getMethods();
                        for (Method findMethod : methods) {
                                if (methodName.equals(findMethod.getName())) {
                                        foundMethod = true;

                                        if
(!(findMethod.getReturnType().getName().equals(returnType))) {

                                                errorFlag = true;
```

```
                                                LOG.log(Level.SEVERE, " You have changed
the " + "return type in '" + methodName
                                                        + "' method. Please stick to
the " + "skeleton provided");

                                        } else {
                                                LOG.info("Method signature of " +
methodName + " is valid");
                                        }

                                }
                        }
                        if (!foundMethod) {
                                errorFlag = true;
                                LOG.log(Level.SEVERE, " Unable to find the given public
method " + methodName
                                                + ". Do not change the " + "given public
method name. " + "Verify it with the skeleton");
                        }

                }
                if (!errorFlag) {
                        LOG.info("Method signature is valid");
                }

        } catch (Exception e) {
                LOG.log(Level.SEVERE,
                        " There is an error in validating the " + "method structure.
Please manually verify that the "
                                + "Method signature is same as the skeleton
before uploading");
        }
    }
```

```
}
```

```
server.port=3030
spring.mvc.view.prefix=/WEB-INF/views/
spring.mvc.view.suffix=.jsp
spring.mvc.static-class-path=/resources/**
```

```
<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
	pageEncoding="ISO-8859-1"%>
<%@ taglib prefix="sf" uri="http://www.springframework.org/tags/form"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>
	<br>
	<br>
	<!-- Add code here.. -->
	<h1 id="heading">Windsor Car Showroom</h1>
	<table>
		<center></center><caption style="font-weight: bolder;">Search
Cars</caption></center>

		<sf:form action="getCarSearchResultPage" modelAttribute="carSearch"
			name="form">
			<tr>
				<td>Customer Name:</td>
				<td><sf:input path="customerName" id="customerName"
name="customerName"/></td>
				<td><sf:errors path="customerName" /></td>
			</tr>
			<tr>
				<td>Mobile Number:</td>
				<td><sf:input path="mobileNumber" id="mobileNumber"
/></td>
				<td><sf:errors path="mobileNumber" /></td>
			</tr>
			<tr>
				<td>Gender:</td>
				<td>
				<sf:radiobutton path="gender" value="male"/>
		<label class='radiolabel'>Male</label>

		<sf:radiobutton path="gender" value="female" />
		<label class='radiolabel'>Female</label> </td>
			</tr>
			<tr>
			<tr>
				<td>Customer City:</td>
```

```
                        <td><sf:select path="gender" id="gender"
items="${cityList}" /></td>
                    </tr>
                    <tr>
                    <tr>
                        <td>Brand:</td>
                        <td><sf:select path="gender" id="gender"
items="${brandList}" /></td>
                    </tr>
                    <tr>
                    <tr>
                        <td>Fuel/Transmission:</td>
                        <td><sf:select path="gender" id="gender"
items="${fuelTypeList}" /></td>
                    </tr>
                    <tr>
                    <tr>
                    <tr>
                        <td>Budget Upto:</td>
                        <td><sf:select path="gender" id="gender"
items="${budgetList}" /></td>
                    </tr>

                        <td><input type="submit" value="CarSearch"
name="CarSearch" /></td>
                        <td><input type="reset" value="Clear" /></td>
                    </tr>
            </sf:form>
      </table>


</body>
</html>



<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
      pageEncoding="ISO-8859-1"%>

<%@ taglib prefix="spring" uri="http://www.springframework.org/tags"%>
<%@ taglib prefix="sf" uri="http://www.springframework.org/tags/form"%>
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>

<!DOCTYPE html>
<html>
<head>
<meta charset="ISO-8859-1">
<title>Insert title here</title>
</head>
<body>

      <br>
      <br>
      <!--Add code here  -->
       <br>
      <br>
      <h3>Here are cars matching your search criteria:</h3>
      <table border="1">
```

```
		<tr><td>Brand Name</td><td>Model Name</td><td>Price in
lakh</td><td>Fuel/Transmission</td><td>Mileage</td><td>Seating Capacity</td></tr>
		<c:forEach var="i" items="${list}">
		<tr><td><c:out value="${i.getBrandName()}"/></td>
		<td><c:out value="${i.getModelName()}"/></td>
		<td><c:out value="${i.getPrice()}"/></td>
		<td><c:out value="${i.getFuelType()}"/></td>
		<td><c:out value="${i.getMileage()}"/></td>
		<td><c:out value="${i.getSeatingCapacity()}"/></td>
		</tr>
		</c:forEach>


		</table>
</body>
</html>



<%@ page language="java" contentType="text/html; charset=ISO-8859-1"
		pageEncoding="ISO-8859-1" isELIgnored="false" isErrorPage="true"%>

<%@ taglib prefix="spring" uri="http://www.springframework.org/tags"%>
<%@ taglib prefix="sf" uri="http://www.springframework.org/tags/form"%>
<%@ taglib uri="http://www.springframework.org/tags/form" prefix="form"%>
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core"%>

<!DOCTYPE HTML>
<html>

<head>
<title>Car Search Errors</title>
</head>

<body>
		<!--Add code here..  -->
		<form:form id="error">
<h3>Unable to retrieve loan information. Below are the error details:</h3>
<h3>Response Code: ${code }</h3>
<h3>Error Message: ${message }</h3>
<h3>Error Occurred on: ${curtime }</h3>
</form:form>
</body>
</html>
```