Program for Spring MVC Rest API using JPA CRUD operations with MySQL

SpringRestHibernateApplication.java

```
package com.test;

import org.springframework.boot.SpringApplication;
import org.springframework.boot.autoconfigure.SpringBootApplication;

@SpringBootApplication
public class SpringRestHibernateApplication {

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

}
```

CarController.java

```
package com.test.controller;

import java.util.List;
import java.util.Map;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.http.HttpStatus;
import org.springframework.http.ResponseEntity;
```

```
import org.springframework.web.bind.annotation.PathVariable;
import org.springframework.web.bind.annotation.RequestBody;
import org.springframework.web.bind.annotation.RequestMapping;
import org.springframework.web.bind.annotation.RequestMethod;
import org.springframework.web.bind.annotation.RestController;

import com.test.entities.Car;
import com.test.service.CarService;

import io.swagger.annotations.Api;
import io.swagger.annotations.ApiOperation;

@RestController
@Api(value = "This is spring boot rest api and hibernate Car mngnt application")
@RequestMapping(value = "/api/cars")
public class CarController {

        private static final Logger logger = LoggerFactory.getLogger(CarController.class);

        CarService carService;

        @Autowired
   public CarController(CarService carService) {
      this.carService = carService;
   }

        @ApiOperation(value = "it will add CAR DATA ")
        @RequestMapping(value = "", method = RequestMethod.POST)
   public ResponseEntity<Void> create(@RequestBody Car car) {
      try {
         logger.info(car.getCarBrand());
```

```
            logger.info(car.getCarEngine());
            logger.info(car.getCarModel());
            logger.info(car.getHorsepower());

        carService.add(car);

        return ResponseEntity.status(HttpStatus.OK).build();
    } catch (Exception e) {
        e.printStackTrace();
        return ResponseEntity.status(HttpStatus.BAD_REQUEST).build();
    }
}
        @ApiOperation(value = "it will display all CAR DATA ")
@RequestMapping(value = "", method = RequestMethod.GET)
public ResponseEntity<List<Map<String, Object>>> getAll() {
    try {
        List<Map<String, Object>> result = carService.findAll();
        return ResponseEntity.status(HttpStatus.OK).body(result);
    } catch (Exception e) {
        logger.error(e.getMessage(), e);
        return ResponseEntity.status(HttpStatus.BAD_REQUEST).build();
    }
}
        @ApiOperation(value = "it will display CAR DATA based on id")
@RequestMapping(value = "/{id}", method = RequestMethod.GET)
public ResponseEntity<Car> getById(@PathVariable("id") int id) {
    try {
        Car car = carService.findById(id);
        if (car != null) {
            return ResponseEntity.status(HttpStatus.OK).body(car);
        } else {
```

```
            return ResponseEntity.status(HttpStatus.NOT_FOUND).build();
        }
    } catch (Exception e) {
        logger.error(e.getMessage(), e);
        return ResponseEntity.status(HttpStatus.BAD_REQUEST).build();
    }
}
        @ApiOperation(value = "it will update CAR DATA based on ID")
        @RequestMapping(value = "/{id}", method = RequestMethod.PUT)
public ResponseEntity<Void> update(@PathVariable("id") int id, @RequestBody Car car) {
    try {
        carService.update(id, car);
        return ResponseEntity.status(HttpStatus.OK).build();
    } catch (Exception e) {
        e.printStackTrace();
        return ResponseEntity.status(HttpStatus.BAD_REQUEST).build();
    }
}

        @ApiOperation(value = "it will delete CAR DATA based on ID")
@RequestMapping(value = "/{id}", method = RequestMethod.DELETE)
public ResponseEntity<Void> delete(@PathVariable("id") int id) {
    try {
        carService.remove(id);
        return ResponseEntity.status(HttpStatus.OK).build();
    } catch (Exception e) {
        return ResponseEntity.status(HttpStatus.BAD_REQUEST).build();
    }
}
}
```

CarDao.java

```
package com.test.dao;

import java.util.List;
import java.util.Map;

import com.test.entities.Car;

public interface CarDao {

    public Car findById(int id);

    public void remove(int id);

    public void add(Car car);

    public void update(int id, Car car);

    public List<Map<String, Object>> findAll();
}
```

Car.java

```
package com.test.entities;

import java.io.Serializable;

import javax.persistence.Column;
import javax.persistence.Entity;
import javax.persistence.GeneratedValue;
import javax.persistence.GenerationType;
```

```
import javax.persistence.Id;
import javax.persistence.SequenceGenerator;
import javax.persistence.Table;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;

import com.fasterxml.jackson.annotation.JsonIgnoreProperties;

import lombok.Getter;
import lombok.Setter;

@Entity
@Table(name="CAR")
@JsonIgnoreProperties(ignoreUnknown=true)
public class Car implements Serializable {

	private static final long serialVersionUID = 1L;
	public static final Logger logger = LoggerFactory.getLogger(Car.class);

	@Id
	@GeneratedValue(generator = "CAR_SEQ", strategy = GenerationType.SEQUENCE)
	@SequenceGenerator(name = "CAR_SEQ", sequenceName = "CAR_SEQ", allocationSize=1)
	@Column(name="CAR_ID", unique=true, nullable=false, precision=10, scale=0)
	@Getter @Setter
	private Integer carId;

	@Column(name="CAR_BRAND", nullable = true, length = 50)
	@Getter @Setter
	private String carBrand;
```

```
	@Column(name="CAR_MODEL", nullable = true, length = 50)
	@Getter @Setter
private String carModel;

	@Column(name="HORSEPOWER", nullable = true, length = 6)
	@Getter @Setter
private String horsepower;

	@Column(name="CAR_ENGINE", nullable = true, length = 6)
	@Getter @Setter
private String carEngine;

	public Car(){}

public Car(String carBrand, String carModel, String horsepower, String carEngine) {
   this.carBrand = carBrand;
   this.carModel = carModel;
   this.horsepower = horsepower;
   this.carEngine = carEngine;


}

	public Integer getCarId() {
		return carId;
	}

	public void setCarId(Integer carId) {
		this.carId = carId;
	}
```

```
public String getCarBrand() {
	return carBrand;
}

public void setCarBrand(String carBrand) {
	this.carBrand = carBrand;
}

public String getCarModel() {
	return carModel;
}

public void setCarModel(String carModel) {
	this.carModel = carModel;
}

public String getHorsepower() {
	return horsepower;
}

public void setHorsepower(String horsepower) {
	this.horsepower = horsepower;
}

public String getCarEngine() {
	return carEngine;
}

public void setCarEngine(String carEngine) {
	this.carEngine = carEngine;
}
```

```
	public static long getSerialversionuid() {
		return serialVersionUID;
	}

	public static Logger getLogger() {
		return logger;
	}
}
```

CarDaoImpl.java

```
package com.test.impl;

import java.util.ArrayList;
import java.util.HashMap;
import java.util.List;
import java.util.Map;

import org.slf4j.Logger;
import org.slf4j.LoggerFactory;
import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Repository;

import com.test.dao.CarDao;
import com.test.entities.Car;
import com.test.repository.CarRepository;

@Repository
public class CarDaoImpl implements CarDao {

	private static final Logger logger = LoggerFactory.getLogger(CarDaoImpl.class);
```

```
	@Autowired
	private CarRepository carRepository;

public CarDaoImpl() {

}

@Override
public Car findById(int id) {

	try {

      return carRepository.findByCarId(id);

		} catch (Exception e) {
			logger.error(e.getMessage(), e);
		}
	return null;
}

@Override
public void remove(int id) {
	try {
		Car car = new Car();
		car.setCarId(id);
		carRepository.delete(car);
		} catch (Exception e) {
			logger.error(e.getMessage(), e);
		}
}
```

```
@Override
public void add(Car car) {
	try {
		carRepository.save(car);
		} catch (Exception e) {
			logger.error(e.getMessage(), e);
		}
}

@Override
public void update(int id, Car car) {
	try {
		car.setCarId(id);
		carRepository.save(car);
		} catch (Exception e) {
			logger.error(e.getMessage(), e);
		}
}

@Override
public List<Map<String, Object>> findAll() {
	try {
		List<Map<String, Object>> list = new ArrayList<>();
	Map<String, Object> map = new HashMap<>();
	List<Car> result = carRepository.findAll();
       for (Car car : result) {
	map = new HashMap<>();
	map.put(car.getCarId().toString(), car);
	list.add(map);
       }
```

```
        return list;
                } catch (Exception e) {
                        logger.error(e.getMessage(), e);
                }
          return null;
    }

}
```

CarRepository.java

```
package com.test.repository;

import java.util.List;

import org.springframework.data.jpa.repository.JpaRepository;
import org.springframework.transaction.annotation.Transactional;

import com.test.entities.Car;

@Transactional(readOnly = true)
public interface CarRepository extends JpaRepository<Car, Integer> {

        @Transactional(timeout = 10)
        Car findByCarId(Integer carId);

        @Transactional(timeout = 10)
        List<Car> findAll();

        @Transactional
        <S extends Car> S save(Car car);
```

```
        void delete(Car car);
}
```

CarService.java

```
package com.test.service;

import java.util.List;
import java.util.Map;

import org.springframework.beans.factory.annotation.Autowired;
import org.springframework.stereotype.Service;
import org.springframework.transaction.annotation.Transactional;

import com.test.dao.CarDao;
import com.test.entities.Car;

@Service
@Transactional
public class CarService {

        @Autowired
   private CarDao carDao;

   public CarService() {

   }

   public Car findById(int id) {
      if (id <= 0) {
```

```
        throw new IllegalArgumentException("ID cannot be 0 or < 0");
    }
    return carDao.findById(id);
}

public void remove(int id) {
    if (id <= 0) {
        throw new IllegalArgumentException("ID cannot be 0 or < 0 or this id do not exist");
    }
    carDao.remove(id);
}

public List<Map<String, Object>> findAll() {

    List<Map<String, Object>> result = carDao.findAll();
    if (result.size() > 0) {
        return result;
    } else {
        return null;
    }
}

public void add(Car car) {
    if (car == null) {
        throw new IllegalArgumentException("The passed object cannot be null.");
    }
    carDao.add(car);
}

public void update(int id, Car car) {
    if (id <= 0 && car == null) {
```

```
            throw new IllegalArgumentException("The passed object cannot be null.");
        }
        carDao.update(id, car);
    }

}
```

ApplicationProperties

```
server.port=7070
spring.main.banner-mode=off

#server
#server.error.whitelabel.enabled=false

# create and drop tables and sequences
spring.jpa.hibernate.ddl-auto=create-drop
spring.jpa.show-sql=true

# dtabase settings
spring.datasource.url=jdbc:mysql://localhost:3306/springdb
spring.datasource.username=root
spring.datasource.password=Password@123
spring.datasource.driver-class-name=com.mysql.jdbc.Driver

# HikariCP settings
# spring.datasource.hikari.*

spring.datasource.hikari.connection-timeout=60000
spring.datasource.hikari.maximum-pool-size=5

# logging
logging.pattern.console=%d{yyyy-MM-dd HH:mm:ss} %-5level %logger{36} - %msg%n
logging.level.org.hibernate.SQL=debug
#logging.level.org.hibernate.type.descriptor.sql=trace
logging.level.=info
```

Test.jsp

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Insert title here</title>
</head>
<body>
            <form action="http://localhost:7070/api/cars/">

                  click here

            </form>
</body>
</html>
```

OUTPUT

```
8
9  create database springdb;
10 use springdb;
11 select * from car;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

car_id	car_brand	car_engine	car_model	horsepower
1	Lamborghini	cxzy	X7	2000
2	Ferrari	ghtg	MS9	1500
3	RollsRoyce	xxcd	RoyalX1	1400
NULL	NULL	NULL	NULL	NULL

```
8
9  create database springdb;
10 use springdb;
11 select * from car;
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content:

car_id	car_brand	car_engine	car_model	horsepower
1	Lamborghini	cxzy	X7	2000
2	TaTa	abcd	Safari	800
3	RollsRoyce	xxcd	RoyalX1	1400
NULL	NULL	NULL	NULL	NULL

http://localhost:7070/api/cars/

Save

GET | http://localhost:7070/api/cars/ | Send

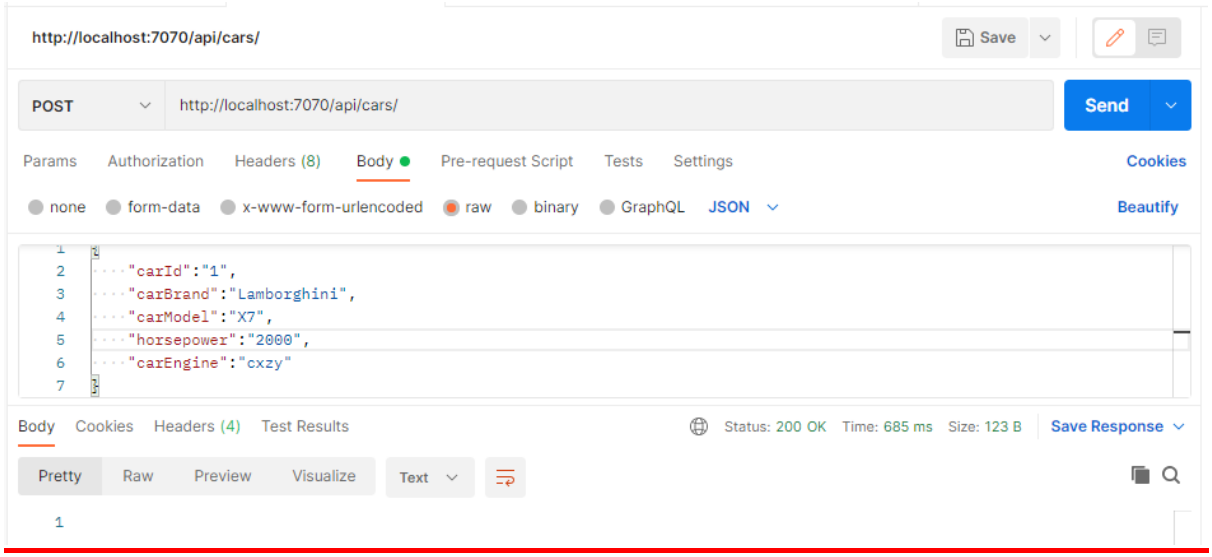
Params | Authorization | Headers (8) | Body | Pre-request Script | Tests | Settings | Cookies

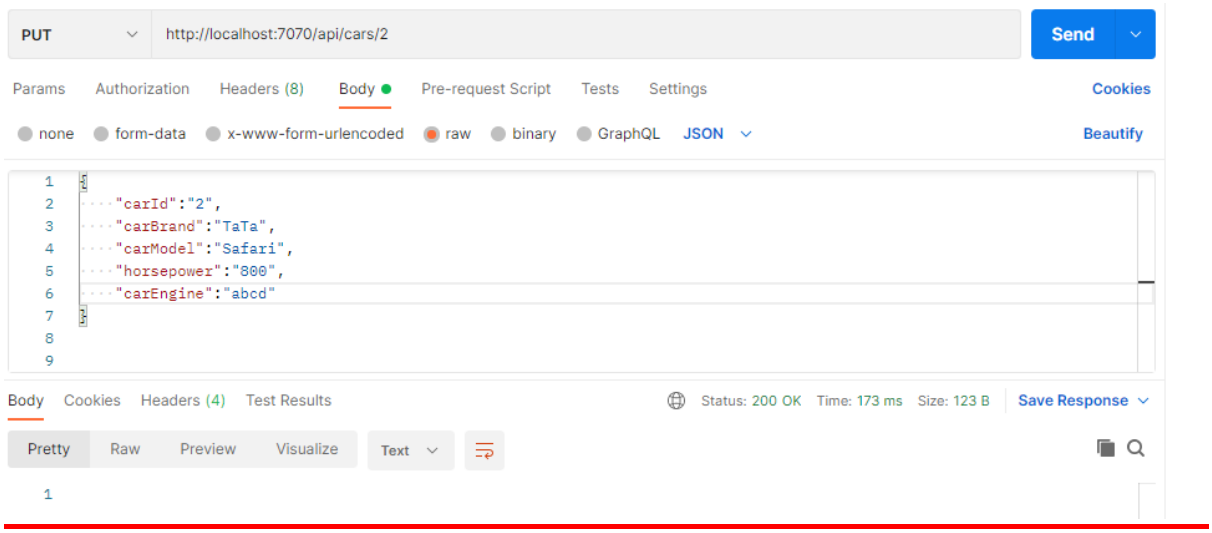
none | form-data | x-www-form-urlencoded | raw | binary | GraphQL | JSON | Beautify

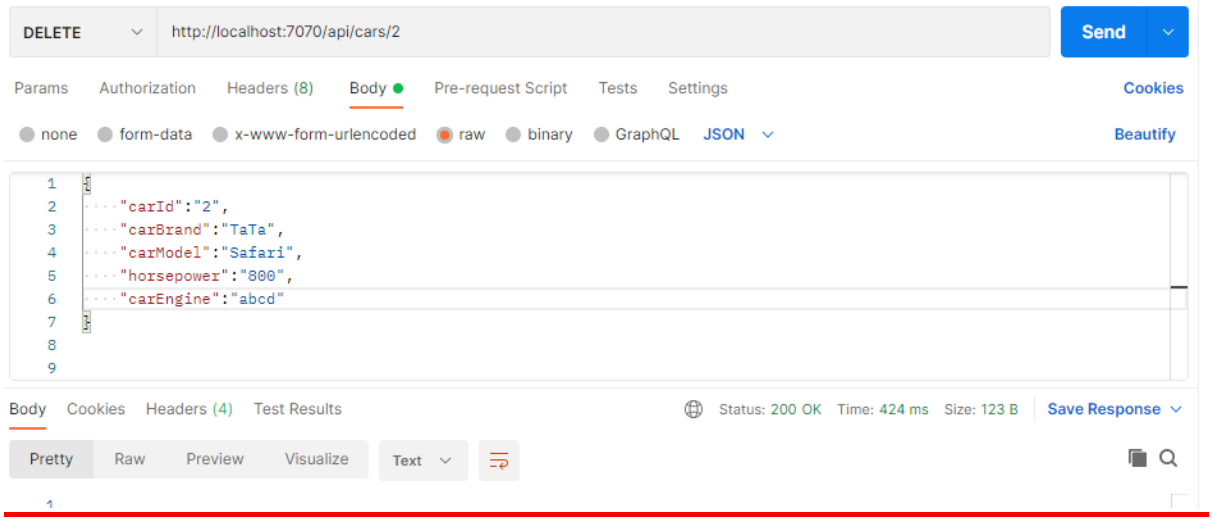
Body | Cookies | Headers (5) | Test Results | Status: 200 OK | Time: 20 ms | Size: 263 B | Save Response

Pretty | Raw | Preview | Visualize | JSON


```
[
    {
        "1": {
            "carId": 1,
            "carBrand": "Lamborghini",
            "carModel": "X7",
            "horsepower": "2000",
            "carEngine": "cxzy"
        }
    }
]
```


http://localhost:7070/api/cars/
Save
POST
http://localhost:7070/api/cars/
Send
Params
Authorization
Headers (8)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
JSON
Beautify
{
"carId":"1",
"carBrand":"Lamborghini",
"carModel":"X7",
"horsepower":"2000",
"carEngine":"cxzy"
}
Body
Cookies
Headers (4)
Test Results
Status: 200 OK
Time: 685 ms
Size: 123 B
Save Response
Pretty
Raw
Preview
Visualize
Text
1


PUT
http://localhost:7070/api/cars/2
Send
Params
Authorization
Headers (8)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
JSON
Beautify
{
"carId":"2",
"carBrand":"TaTa",
"carModel":"Safari",
"horsepower":"800",
"carEngine":"abcd"
}
Body
Cookies
Headers (4)
Test Results
Status: 200 OK
Time: 173 ms
Size: 123 B
Save Response
Pretty
Raw
Preview
Visualize
Text
1


DELETE
http://localhost:7070/api/cars/2
Send
Params
Authorization
Headers (8)
Body
Pre-request Script
Tests
Settings
Cookies
none
form-data
x-www-form-urlencoded
raw
binary
GraphQL
JSON
Beautify
{
"carId":"2",
"carBrand":"TaTa",
"carModel":"Safari",
"horsepower":"800",
"carEngine":"abcd"
}
Body
Cookies
Headers (4)
Test Results
Status: 200 OK
Time: 424 ms
Size: 123 B
Save Response
Pretty
Raw
Preview
Visualize
Text
1