# Objective:

To retrieve information related to the fleet of cars via a web service API.

### **Languages and Tools**

- Java Development Kit (JDK) version 8
- Spring Boot
- Maven
- MySQL Workbench
- Spring Tool Suite 3
- HTML, JQuery, Datatable
- Azure App service & Azure Database for MySQL (to build and deploy a web service using DevOps and CI/CD principles)
- Postman

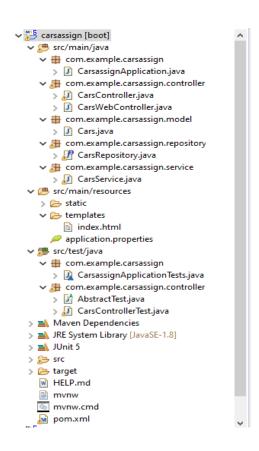
### Why Spring Boot?

Reduced development time and source code. Ease of dependency management without a need to look for compatible drivers and libraries and no complex configuration required.

### Why MySQL?

Free, open source and flexible for optimized performance.

# **Project Structure**



- 1. The application.properties file contains the properties to configure the application.
- 2. pom.xml file contains all the dependencies that are added while creating the application

CarsassignApplication.java – Entry point of the application to launch

```
🚺 CarsassignA... 🔀 🔎 CarsControll...
                                     CarsReposit...
                                                        CarsService....
                                                                          CarsControll...
    package com.example.carsassign;
 1
  2
  3⊕ import org.springframework.boot.SpringApplication;
  5
  6
    @SpringBootApplication
  7
 8
 9
    public class CarsassignApplication {
 10
 11⊝
         public static void main(String[] args) {
 12
             SpringApplication.run(CarsassignApplication.class, args);
 13
 14
 15
    }
```

**@SpringBootApplication** – includes annotations such as *@EnableAutoConfiguration*, *@Configuration* and *@ComponentScan* that will enable the auto-configuration, instantiation feature and scan the packages for relevant components.

### Model Class - Cars.java

```
☑ CarsassignA...

               package com.example.carsassign.model;
   3⊕ import javax.persistence.Column;...
  10 @Entity
  11 @Table(name = "cars")
  12 public class Cars {
  13
             @Id
 14⊝
          @GeneratedValue(strategy = GenerationType.IDENTITY)
            @Column(name="Id")
  17
                private Long id;
  18
            @Column(name="Name")
  19⊖
  20
            private String carName;
  21
            @Column(name="Miles per Gallon")
  22⊝
  23
            private String milespGallon;
  25⊝
            @Column(name="Cylinders")
  26
            private String cylinders;
  27
            @Column(name="Displacement")
  28⊖
            private String displacement;
  29
  30
  31⊝
            @Column(name="Horsepower")
            private String horsePwr;
  33
  34⊝
            @Column(name="Weight_in_lbs")
  35
            private String wgtInlbs;
  36
             @Column(name="Acceleration")
  37⊝
  38
            private String accleration;
  40⊝
             @Column(name="Year")
            private String year;
  41
  42
             @Column(name="Origin")
  43⊕
  44
             private String origin;
```

- **@Entity** annotation specifies the mapped database table.
- @Table name of the table, which has been mapped.
- @Column the name of the field in the database table.
- @Id the primary key field in the table

### Repository class - CarsRepository.java

```
CarsassignA...
                                                CarsControll...
                                   Cars.java
                                                                  CarsService....
                                                                                   CarsControll...
    package com.example.carsassign.repository;
  1
😘 4⊕ import java.util.List;[
 13
 14 @Repository
 15 public interface CarsRepository extends JpaRepository<Cars, String>, QueryByExampleExecutor<Cars>{
 17⊝
         @Query(value = "SELECT * FROM cars where Name = ?", nativeQuery = true)
 18
        List<Cars> findByName(String name);
 19
 20
```

**@Repository** - Indicates that the class is a data repository that will contain storage, retrieval, and search mechanisms.

The **JpaRepository** interface provided by Spring Data JPA makes it possible for the repository class to store, retrieve records in the cars table.

### Service class - CarsService.java

```
CarsassignA...
                 Cars.java
                                              CarsReposit...
    package com.example.carsassign.service;
3⊕ import org.springframework.beans.factory.annotation.Autowired;
 11 @Service
 12 public class CarsService {
           @Autowired
 15
                CarsRepository carRepository;
 16
         // CREATE
           public Cars createCars(Cars car) {
 18⊝
               return carRepository.save(car);
 20
           }
 21
22
23⊖
           // READ
            public List<Cars> getCars() {
               return carRepository.findAll();
 25
26
27
28
           // READ BY NAME
           public List<Cars> getCarsDetailsbyName(String name) {
              return carRepository.findByName(name);
```

@Autowired annotation for instantiating a class object.

### Controller class - CarsController.java

```
🕡 CarsControll... 🖂 🚺 Cars.java
CarsassignA...
                                                   CarsReposit...

√ CarsService....

                                                                                        CarsContro
     package com.example.carsassign.controller;
  2
  3
😘 4⊕ import java.util.List;[
 17
 18
 19 @RestController
 20 @RequestMapping("/api")
 21 public class CarsController {
 22⊝
             @Autowired
 23
             CarsService carService;
 24
 25⊖
             @RequestMapping(value="/cars", method=RequestMethod.POST)
 26
             public Cars createCars(@RequestBody Cars car) {
 27
                 return carService.createCars(car);
 28
 29
 30⊝
             @RequestMapping(value="/cars", method=RequestMethod.GET)
 31
             public List<Cars> readCars() {
32
                 return carService.getCars();
 33
 34
 35⊖
             @RequestMapping(value="/cars/{carName}", method=RequestMethod.GET)
             public List<Cars> readCarsbyName(@PathVariable(value = "carName") String name) {
 36
37
                 return carService.getCarsDetailsbyName(name);
 38
 39
 40
 41
 42 }
 43
```

@RequestMapping annotation on the class defines a base URL for the APIs created in this controller.

@RestController consists of:

@Controller - informs Spring Boot that this class is a controller.

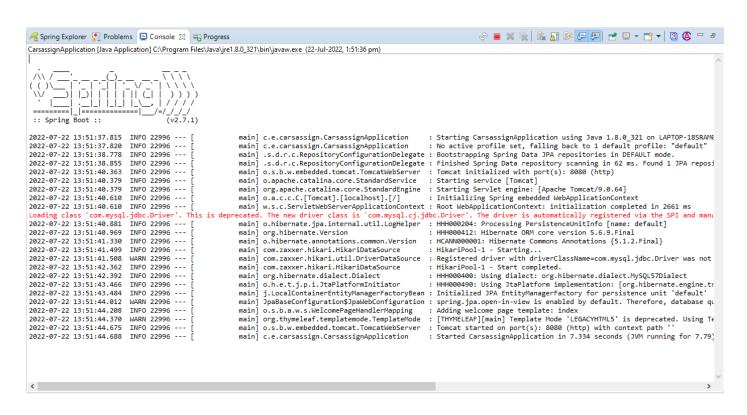
**@ResponseBody** - indicates that data returned by each method inside the controller will be returned as the response body for the API.

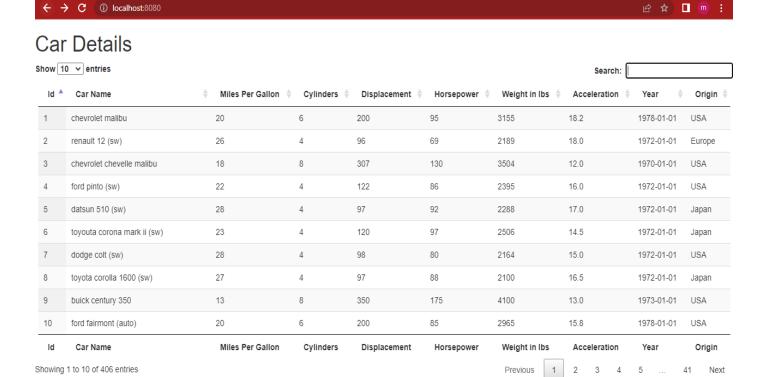
### Decisions taken

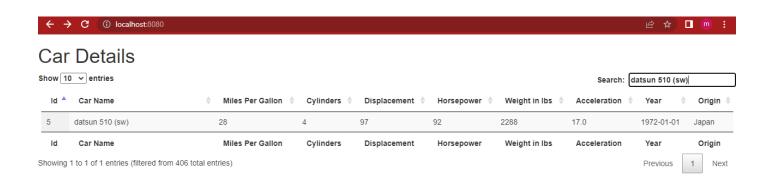
To implement the dataTable for the better customer experience.

**src/main/resource package** - contains html + jquery datable where the jquery data table will be integrated with server side pagination in spring boot application. Data table's input is directly integrated to spring boot rest APIs.

# Local Application Build



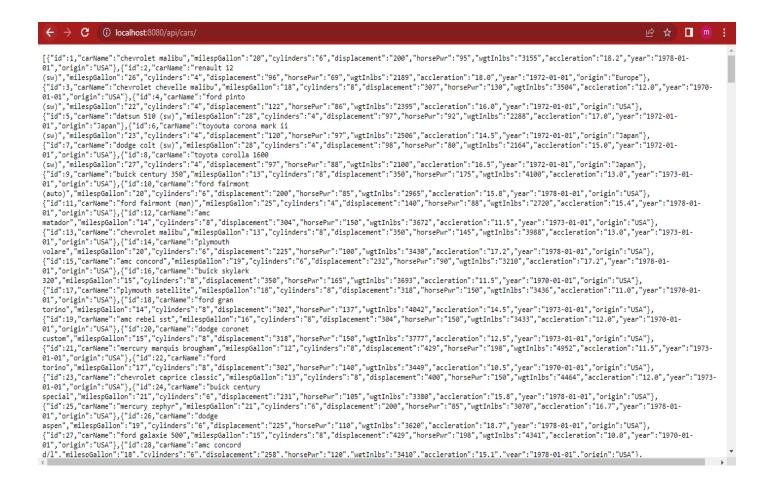




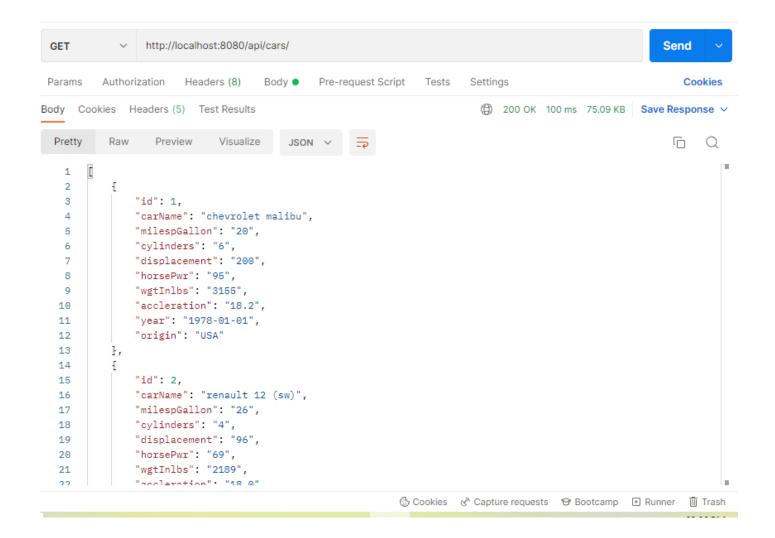
## JSON response



[{"id":1,"carName":"chevrolet malibu","milespGallon":"20","cylinders":"6","displacement":"200","horsePwr":"95","wgtInlbs":"3155","accleration":"18.2","year":"1978-01-01","origin":"USA"},{"id":13,"carName":"chevrolet
malibu","milespGallon":"13","cylinders":"8","displacement":"350","horsePwr":"145","wgtInlbs":"3988","accleration":"13.0","year":"1973-01-01","origin":"USA"}]



### **POSTMAN**



# **Principles**

Focused on the exact user's need and developed in a way to accommodate any future enhancement or changes.

Assessed and evaluated the quality of the application by reviewing if any errors present.

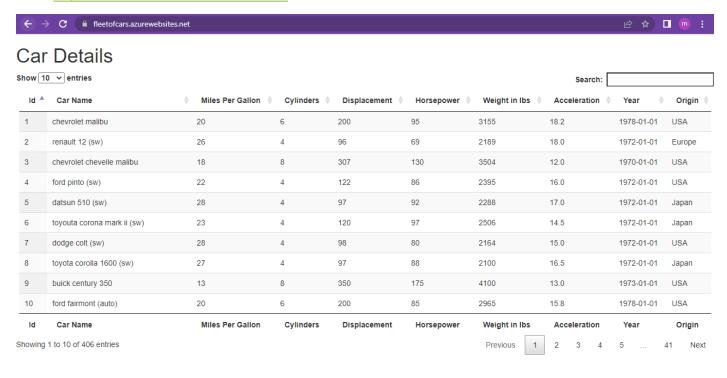
Keep it short and simple principle in order to avoid code complexity

## Cloud Provider

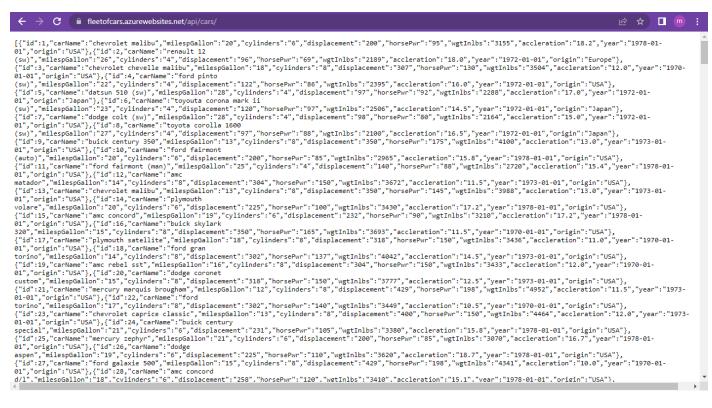
Using Azure web app cloud service implemented build and deployment of the web service using DevOps and CI/CD principles

## Output

### URL: https://fleetofcars.azurewebsites.net



## JSON response: <a href="https://fleetofcars.azurewebsites.net/api/cars">https://fleetofcars.azurewebsites.net/api/cars</a>



### JSON response for exact match of the Name key:

https://fleetofcars.azurewebsites.net/api/cars/chevrolet%20malibu



[{"id":1,"carName":"chevrolet malibu","milespGallon":"20","cylinders":"6","displacement":"200","horsePwr":"95","wgtInlbs":"3155","accleration":"18.2","year":"1978-01-01","origin":"USA"},{"id":13,"carName":"chevrolet

malibu", "milespGallon": "13", "cylinders": "8", "displacement": "350", "horsePwr": "145", "wgtInlbs": "3988", "accleration": "13.0", "year": "1973-01-01", "origin": "USA"}]