Interview pre-assignment

Please complete this small development exercise on your own – Please publish the code on github or gitlab. If anything is unclear there is no need to contact us for more information – please use your best judgement. You will not be judged on requirements that are unclear. If you are unable to complete the entire exercise, please complete what you can – we can discuss the deltas – the more you can complete, the better.

Please create a simple vehicle search application that:

- provides a RESTful (or at least JSON over HTTP) interface
- is written using Java with Spring boot
- uses one or more databases for persistence; Any database(s) can be used; for simplicity an in-memory database such as H2 or a modern NoSQL engine is acceptable. Be prepared to explain your persistence choice(s) and describe how you architected the data tier for scale.

Things to consider:

- Testing (Unit, Functional, Integration, Automated, and Performance)
- Code quality and structure
- Scalability (can your solution easily scale to millions of transactions per day?)
- Extensibility (how would you add additional endpoints?)
- Modern practices
- Cloud/Container friendly (deployment and DevOps pipeline are some examples)

Implement using the following API's:

For all APIs, please include error handling for scenarios with incorrect or incomplete request data

Q1) Submit example1 (last page) into in-memory database or modern NoSQL engine

- o **POST /vehicleInfomation/submitVehicle**
  - ▪ **Example Request Body: See example 1 (last page)**
- o **Example Response:**
  > **{**
  > **"status":"OK",**
  > **"statusCode": 200,**
  > **"message": "{ID's} submitted to database successfully"**
  > **}**

Q2) Retrieve all entries from table example1 (last page) from in-memory database or modern NoSQL engine

- o **GET /getVehicleInfomation**
- o **Example Response: See example 1 (Last page)**

Q3) Retrieve vehicle(s) of matching modelName

- o **GET/getVehicleModelName/{modelName}**
- o **Example Request:**
  - ▪ **GET/getVehicleModelName/Edge**
- o **Example response:**
  > **{**
  > **"vehicles": {**
  > **"vehicle": [**
  > **{**
  > **"vehicleId": "102",**
  > **"vehicleDetails": {**

```
            "make": "Ford",
            "model": "Edge",
            "modelYear": "2019",
            "bodyStyle": "4D Sport Utility",
            "engine": "Twin-Scroll 2.0L EcoBoost",
            "drivetype": "AWD",
            "color": "Agate Black",
            "MPG": "28",
            "vehicleFeature": {
              "Exterior": [
                "Beltline Molding - Black",
                "Door Handles - Body Color",
                "Grille - Chrome",
                "Taillamps-Led"
              ],
              "Interior": [
                "60/40 Split Fold Rear Seat",
                "Cruise Control",
                "Dual Illum Vis Vanity Mirr",
                "Rotary Gear Shift Dial"
              ]
            },
            "vehiclePrice": [
              {
                "MSRP": "$30,000.00",
                "Savings": "$2000",
                "finalPrice": "$28,000.00"
              }
            ]
          }
        }
      ]
    }
  }
```

Q4) Retrieve All vehicle(s) between from and to of finalPrice range:

- GET/getVehiclePrice/{From}/{TO}
- Example Request:
    - GET/ getVehiclePrice /25,000.00/35,000.00
- Example Response:

```
{
  "vehicles": {
    "vehicle": [

      {
        "vehicleId": "102",
        "vehicleDetails": {
          "make": "Ford",
          "model": "Edge",
          "modelYear": "2019",
          "bodyStyle": "4D Sport Utility",
          "engine": "Twin-Scroll 2.0L EcoBoost",
          "drivetype": "AWD",
          "color": "Agate Black",
          "MPG": "28",
          "vehicleFeature": {
            "Exterior": [
```

```json
          "Beltline Molding - Black",
          "Door Handles - Body Color",
          "Grille - Chrome",
          "Taillamps-Led"
        ],
        "Interior": [
          "60/40 Split Fold Rear Seat",
          "Cruise Control",
          "Dual Illum Vis Vanity Mirr",
          "Rotary Gear Shift Dial"
        ]
      },
      "vehiclePrice": [
        {
          "MSRP": "$30,000.00",
          "Savings": "$2000",
          "finalPrice": "$28,000.00"
        }
      ]
    }
  },
  {
    "vehicleId": "104",
    "vehicleDetails": {
      "make": "Ford",
      "model": "mustang",
      "modelYear": "2017",
      "bodyStyle": "4D Sport Utility",
      "engine": "V8",
      "drivetype": "RWD",
      "color": "Blue Metallic",
      "MPG": "32",
      "vehicleFeature": {
        "Exterior": [
          "Dual Exhaust System",
          "Easy Fuel Capless Filler",
          "Headlamps - Autolamp",
          "Headlamps- Led With Signature Lighting"
        ],
        "Interior": [
          "Autodim Rearview Mirror",
          "Center Console W/Armrest",
          "Floor Mats - Front",
          "Smart Charging Usb Port(2)"
        ]
      },
      "vehiclePrice": [
        {
          "MSRP": "$33,645.70",
          "Savings": "$4,988.20",
          "finalPrice": "$28657.50"
        }
      ]
    }
  },
  {
    "vehicleId": "105",
```

```
"vehicleDetails": {
  "make": "Ford",
  "model": "Ranger",
  "modelYear": "2016",
  "bodyStyle": "Super Cab",
  "engine": "2.3L EcoBoost",
  "drivetype": "4WD",
  "color": "Oxford White",
  "MPG": "24",
  "vehicleFeature": {
    "Exterior": [
      "Daytime Running Lights",
      "Easy Fuel Capless Filler",
      "Fuel Tank - 18.0 Gallon",
      "Tow Hooks"
    ],
    "Interior": [
      "110V Outlet",
      "Dual Sliding Sunvisors",
      "Dual Zone Auto Climate Ctl",
      "Overhead Console"
    ]
  },
  "vehiclePrice": [
    {
      "MSRP": "$35,515.00",
      "Savings": "$5000",
      "finalPrice": "$30,515.00"
    }
  ]
}
          }
        ]
      }
    }
```

Q5) Retrieve All vehicle(s) contains matching interior OR exterior feature value(if not found show error message)

- GET/getVehicleByFeatures/{exterior}/{interior}
- length of string accepted for {exterior}/{interior} parameter must be 3 or more.
  - **Example of valid request**
    - GET/getVehicleFeature/Lig/sun
    - GET/getVehicleFeature/Ligh/sunv
    - GET/ getVehicleFeature /Lights/Sunvisors
  - **Response format should be same as define in Q3/Q4**
    - GET/ getVehicleFeature/Lights/Sunvisors should retrieve vehicle id 105
      - Lights matches with "Daytime Running *Lights*" exterior feature of vehicle id 105
      - Sunvisors matches with "Dual Sliding *Sunvisors*" interior feature of vehicle id 105
    - GET/ getVehicleFeature /Light/Sunvisors should retrieve vehicle id 104 and 105
      - Light matches with "Headlamps- Led With Signature Lighting" and "Daytime Running *Light*s" of exterior feature of vehicle ids 104, 105
      - Sunvisors matches with "Dual Sliding *Sunvisors*" of interior feature of vehicle id 105
  - **Less than 3 character should throw error message**
    - **Example of invalid request**
      - GET/getVehicleFeature/su/Lig
      - GET/getVehicleFeature/sun/Li
      - GET/getVehicleFeature/su/Lig

Example 1: Data set for assignment

```json
{
  "vehicles": {
    "vehicle": [
      {
        "vehicleId": "101",
        "vehicleDetails": {
          "make": "Ford",
          "model": "ecoSport",
          "modelYear": "2020",
          "bodyStyle": "4D Sport Utility",
          "engine": "1.0L EcoBoost",
          "drivetype": "FWD",
          "color": "shadow black",
          "MPG": "27",
          "vehicleFeature": {
            "Exterior": [
              "Acoustic-Laminate Windshld",
              "Active Grille Shutters",
              "Windshield Wiper De-Icer",
              "Privacy Glass - Rear Doors"
            ],
            "Interior": [
              "Illuminated Entry System",
              "Powerpoints - 12V",
              "Power Driver Seat - 6-Way",
              "Unique Clth/Htd Frt Seats"
            ]
          },
          "vehiclePrice": [
            {
              "MSRP": "$25,000.00",
              "Savings": "$5000",
              "finalPrice": "$20,000.00"
            }
          ]
        }
      },
      {
        "vehicleId": "102",
        "vehicleDetails": {
          "make": "Ford",
          "model": "Edge",
          "modelYear": "2019",
          "bodyStyle": "4D Sport Utility",
          "engine": "Twin-Scroll 2.0L EcoBoost",
          "drivetype": "AWD",
          "color": "Agate Black",
          "MPG": "28",
          "vehicleFeature": {
            "Exterior": [
              "Beltline Molding - Black",
              "Door Handles - Body Color",
              "Grille - Chrome",
              "Taillamps-Led"
```

```json
    ],
    "Interior": [
      "60/40 Split Fold Rear Seat",
      "Cruise Control",
      "Dual Illum Vis Vanity Mirr",
      "Rotary Gear Shift Dial"
    ]
  },
  "vehiclePrice": [
   {
     "MSRP": "$30,000.00",
     "Savings": "$2000",
     "finalPrice": "$28,000.00"
   }
  ]
 }
},
{
 "vehicleId": "103",
 "vehicleDetails": {
  "make": "Ford",
  "model": "F-150",
  "modelYear": "2020",
  "bodyStyle": "4D SuperCrew",
  "engine": "V6 PFDI",
  "drivetype": "4WD",
  "color": "Blue Jeans Metallic",
  "MPG": "23",
  "vehicleFeature": {
   "Exterior": [
     "Headlamps - Autolamp",
     "Locking Removable Tailgate",
     "Manual Fold Power Mirrors",
     "Headlamps - Auto High Beam"
   ],
   "Interior": [
     "1Touch Up/Down Dr/Pass Win",
     "60/40 Fold-Up Rear Bench Seat",
     "Cruise Control",
     "Illuminated Entry"
   ]
  },
  "vehiclePrice": [
   {
     "MSRP": "$40,925.00",
     "Savings": "$4678.00",
     "finalPrice": "$36,247.00"
   }
  ]
 }
},
{
 "vehicleId": "104",
 "vehicleDetails": {
  "make": "Ford",
  "model": "mustang",
  "modelYear": "2017",
```

```json
      "bodyStyle": "4D Sport Utility",
      "engine": "V8",
      "drivetype": "RWD",
      "color": "Blue Metallic",
      "MPG": "32",
      "vehicleFeature": {
       "Exterior": [
         "Dual Exhaust System",
         "Easy Fuel Capless Filler",
         "Headlamps - Autolamp",
         "Headlamps- Led With Signature Lighting"
       ],
       "Interior": [
         "Autodim Rearview Mirror",
         "Center Console W/Armrest",
         "Floor Mats - Front",
         "Smart Charging Usb Port(2)"
       ]
      },
      "vehiclePrice": [
       {
         "MSRP": "$33,645.70",
         "Savings": "$4,988.20",
         "finalPrice": "$28657.50"
       }
      ]
    }
   },
   {
    "vehicleId": "105",
    "vehicleDetails": {
     "make": "Ford",
     "model": "Ranger",
     "modelYear": "2016",
     "bodyStyle": "Super Cab",
     "engine": "2.3L EcoBoost",
     "drivetype": "4WD",
     "color": "Oxford White",
     "MPG": "24",
     "vehicleFeature": {
      "Exterior": [
        "Daytime Running Lights",
        "Easy Fuel Capless Filler",
        "Fuel Tank - 18.0 Gallon",
        "Tow Hooks"
      ],
      "Interior": [
        "110V Outlet",
        "Dual Sliding Sunvisors",
        "Dual Zone Auto Climate Ctl",
        "Overhead Console"
      ]
     },
     "vehiclePrice": [
      {
        "MSRP": "$35,515.00",
        "Savings": "$5000",
```

```
                    "finalPrice": "$30,515.00"
                  }
                ]
              }
            }
          ]
        }
      }
```

Example 2 : Error message (candidate can define error messages appropriate to operation)

```
{

        "status":"fail",
        "message": {Error message}

}
```