

MIAAD **PROJECT** **REPORT**

YOUNESS ZYADI

2022 /2023



ABOUT THE PROJECT

The purpose of this distributed system based on microservices is to manage and automate the process of handling vehicle speeding violations detected by automatic radars. The system comprises three microservices:


1. The radar management microservice: This service is responsible for managing the radars. Each radar is defined by its ID, maximum speed, and coordinates (longitude and latitude).
 2. The registration microservice: This service handles the management of vehicles owned by owners. Each vehicle belongs to a single owner, who is defined by their ID, name, date of birth, email, and phone number. A vehicle is defined by its ID, license plate number, brand, fiscal power, and model.
 3. The violation management microservice: This service is responsible for managing the violations. Each violation is defined by its ID, date, the radar number that detected the speeding, the vehicle's license plate number, the vehicle's speed, the radar's maximum speed, and the penalty amount.
- 

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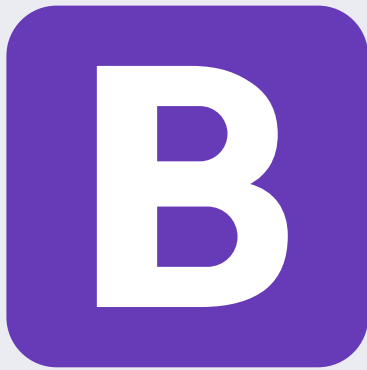
02 Technical Architecture

03 Class Diagram

04 Micro Services

05 Angular Application

TECHNOLOGIES USED



Spring **Cloud**

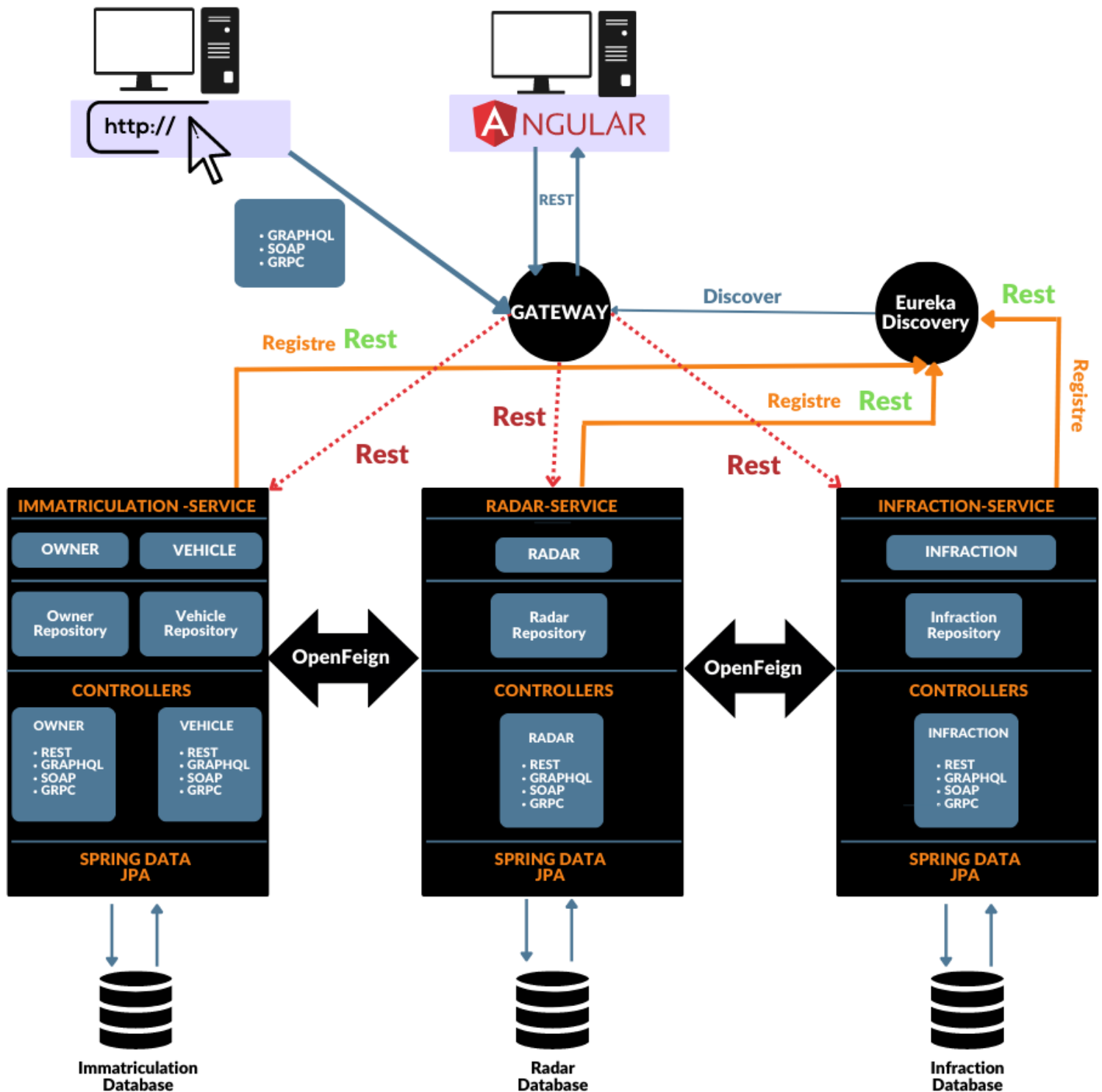


ANGULAR

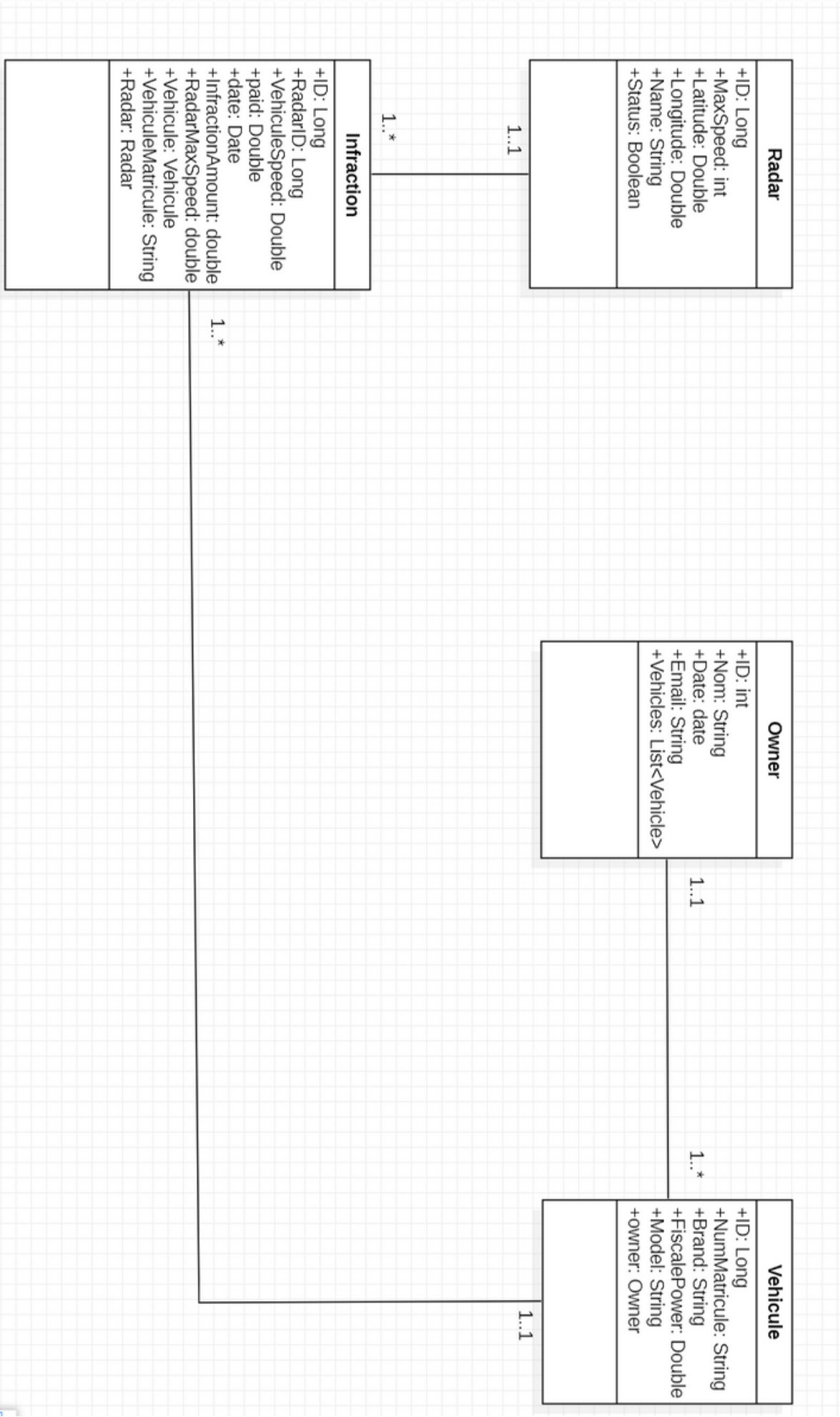


spring **Eureka**

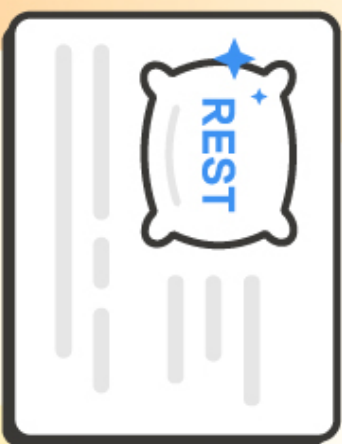
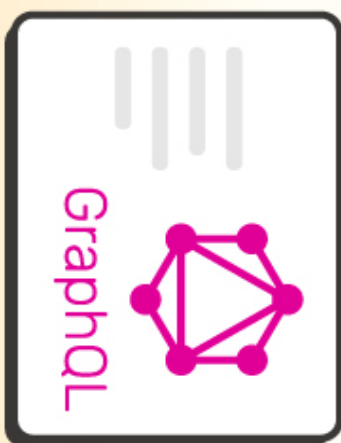
ARCHITECTURE TECHNIQUE



CLASS DIAGRAM



MICRO SERVICES



IMMATRICULATION SERVICE TESTS



ALL VIHECLES :

Postman interface showing a GET request to `http://localhost:8081/api/vehicle/vehicles`. The response is a JSON array of three vehicle objects, each with an owner.

```
1 {
2   {
3     "id": 1,
4     "registrationNumber": "77200-46-ε",
5     "brand": "Ford",
6     "fiscalPower": 782.0,
7     "model": "3 Series",
8     "owner": {
9       "id": 1,
10      "name": "Khalid Al Bakkali",
11      "birthDate": "2023-06-16T02:16:59.864+00:00",
12      "email": "KhalidAlBakkali@edu.umi.ac.ma.com"
13    }
14  },
15  {
16    "id": 2,
17    "registrationNumber": "58264-12-ε",
18    "brand": "Chevrolet",
19    "fiscalPower": 341.0,
20    "model": "Civic",
21    "owner": {
22      "id": 1,
23      "name": "Khalid Al Bakkali",
24      "birthDate": "2023-06-16T02:16:59.864+00:00",
25      "email": "KhalidAlBakkali@edu.umi.ac.ma.com"
26    }
27  },
28  {
29    "id": 3,
30    "registrationNumber": "02054-54-ε",
31    "brand": "Ford",
32    "fiscalPower": 892.0,
33    "model": "Mustang",
34    "owner": {
35      "id": 1,
36      "name": "Khalid Al Bakkali",
37      "birthDate": "2023-06-16T02:16:59.864+00:00",
38      "email": "KhalidAlBakkali@edu.umi.ac.ma.com"
39    }
40  }
41 }
```




VIHECLE BY ID :

ork ▾ Explore [Invite](#) Upgrade ▾ - □ ×

GET http://localhost:8081/api/vehicle/vehicles/1 Save ▾ </>

GET ▾ http://localhost:8081/api/vehicle/vehicles/1 [Send](#) ▾

Params Authorization Headers (6) Body Pre-request Script Tests Settings [Cookies](#)

Body Cookies Headers (5) Test Results Status: 200 OK Time: 44 ms Size: 393 B Save as Example ...

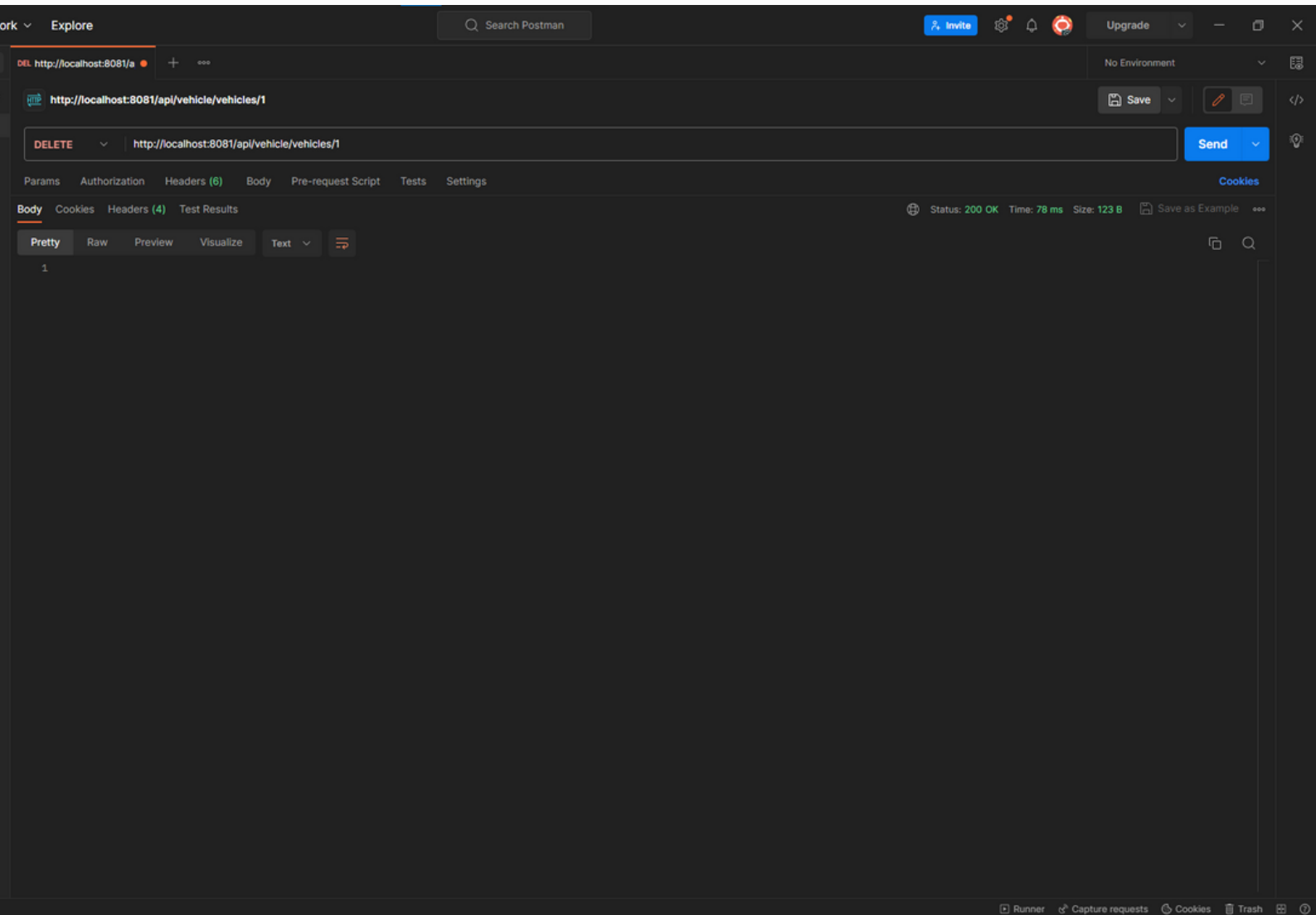
Pretty Raw Preview Visualize JSON ▾

```
1  {
2    "id": 1,
3    "registrationNumber": "77288-46-z",
4    "brand": "Ford",
5    "fiscalPower": 782.0,
6    "model": "3 Series",
7    "owner": {
8      "id": 1,
9      "name": "Khalid Al Bakkali",
10     "birthDate": "2023-06-16T02:16:59.864+00:00",
11     "email": "KhalidAlBakkali@edu.umi.ac.ma.com"
12   }
13 }
```

Runner Capture requests Cookies Trash



DELETE VIHECLE :



TEST WEB SERVICE USING SOAPUI





ALL OWNERS:

Search Forum

Online Help

Send

Save Request

Response (Raw)

```
{
  "_embedded": {
    "owners": [ {
      "name": "Khalid Al Bakkali",
      "birthDate": "2023-06-16T01:59:47.309+00:00",
      "email": "KhalidAlBakkali@edu.umi.ac.ma.com",
      "_links": {
        "self": {
          "href": "http://localhost:8081/owners/1"
        },
        "owner": {
          "href": "http://localhost:8081/owners/1"
        }
      }
    }, {
      "name": "Omar Ben Hamidi",
      "birthDate": "2023-06-16T01:59:47.456+00:00",
      "email": "OmarBenHamidi@edu.umi.ac.ma.com",
      "_links": {
        "self": {
          "href": "http://localhost:8081/owners/2"
        },
        "owner": {
          "href": "http://localhost:8081/owners/2"
        }
      }
    }, {
      "name": "Youssef El Haddadi",
      "birthDate": "2023-06-16T01:59:47.458+00:00",
      "email": "YoussefElHaddadi@edu.umi.ac.ma.com",
      "_links": {
        "self": {
          "href": "http://localhost:8081/owners/3"
        },
        "owner": {
          "href": "http://localhost:8081/owners/3"
        }
      }
    }, {
      "name": "Karim Laaroussi",
      "birthDate": "2023-06-16T01:59:47.460+00:00",
      "email": "KarimLaaroussi@edu.umi.ac.ma.com",
      "_links": {
        "self": {
          "href": "http://localhost:8081/owners/4"
        },
        "owner": {
          "href": "http://localhost:8081/owners/4"
        }
      }
    }
  ]
}
```

Close

ONE OWNER:

Search Forum

Online Help

Inspector

Response (Raw)

```
HTTP/1.1 200
Vary=Origin
Vary=Access-Control-Request-Method
Vary=Access-Control-Request-Headers
Content-Type=application/hal+json
Transfer-Encoding=chunked
Date=Fri, 16 Jun 2023 02:09:58 GMT
Keep-Alive=timeout=60
Connection=keep-alive

{
  "name" : "Khalid Al Bakkali",
  "birthDate" : "2023-06-16T01:59:47.309+00:00",
  "email" : "KhalidAlBakkali@edu.umi.ac.ma.com",
  "_links" : {
    "self" : {
      "href" : "http://localhost:8081/owners/1"
    },
    "owner" : {
      "href" : "http://localhost:8081/owners/1"
    }
  }
}
```

Close



TEST WEB SERVICE USING GRPC



Env



localhost:9091



Unary Call



TLS



GRPC



Editor

1 {}

Response

```
}
{
  "id": "5",
  "name": "Jamal El Fakiri",
  "birthDate": {
    "seconds": "1686881820",
    "nanos": 26000000
  },
  "email": "JamalElFakiri@edu.umi.ac.ma.com"
},
{
  "id": "6",
  "name": "John Smith",
  "birthDate": {
    "seconds": "1686881820",
    "nanos": 29000000
  },
  "email": "JohnSmith@edu.umi.ac.ma.com"
},
{
  "id": "7",
  "name": "Emma Johnson",
  "birthDate": {
    "seconds": "1686881820",
    "nanos": 32000000
  },
  "email": "EmmaJohnson@edu.umi.ac.ma.com"
},
{
  "id": "8",
  "name": "Michael Brown",
  "birthDate": {
    "seconds": "1686881820",
    "nanos": 34000000
  },
  "email": "MichaelBrown@edu.umi.ac.ma.com"
},
{
  "id": "9",
  "name": "Sophia Davis",
  "birthDate": {
    "seconds": "1686881820",
    "nanos": 39000000
  },
  "email": "SophiaDavis@edu.umi.ac.ma.com"
},
{
  "id": "10",
  "name": "William Miller",
  "birthDate": {
    "seconds": "1686881820",
    "nanos": 43000000
  },
  "email": "WilliamMiller@edu.umi.ac.ma.com"
}
}
```

ALL OWNERS:

Env localhost:9091

Unary Call

TLS

GRPC

N

Editor

```
1 {  
2   "id": 5  
3 }
```

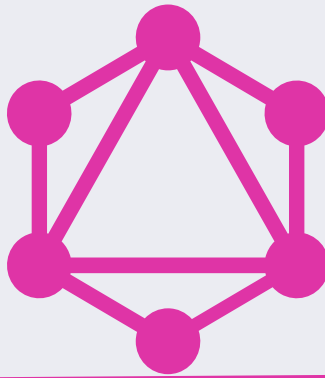
Response

```
{  
  "owner": {  
    "id": "5",  
    "name": "Jamal El Fakiri",  
    "birthDate": {  
      "seconds": "1686881820",  
      "nanos": 26000000  
    },  
    "email": "JamalElFakiri@edu.umi.ac.ma.com"  
  },  
}
```



ONE OWNER:

TEST WEB SERVICE USING **GRAPHQL**



ALL OWNERS:

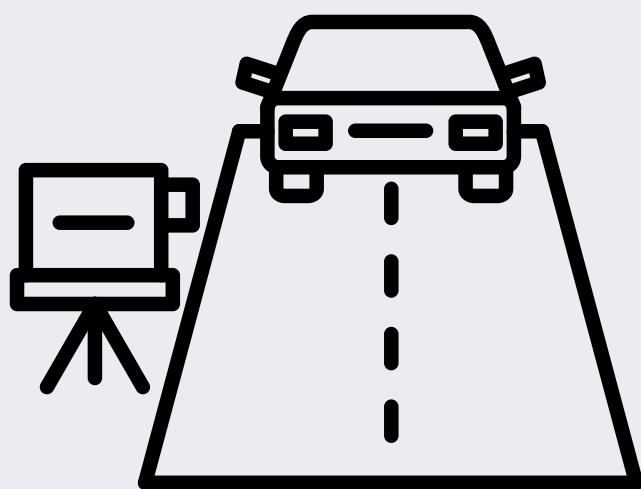
```
{
  "data": {
    "getOwners": [
      {
        "email": "KhalidAlBakkali@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:16:59.864"
      },
      {
        "email": "OmarBenHamidi@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.016"
      },
      {
        "email": "YoussefElHaddadi@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.02"
      },
      {
        "email": "KarimLaaroussi@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.023"
      },
      {
        "email": "JamaElFakiri@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.026"
      },
      {
        "email": "JohnSmith@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.029"
      },
      {
        "email": "EmmaJohnson@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.032"
      },
      {
        "email": "MichaelBrown@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.034"
      },
      {
        "email": "SophiaDavis@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.039"
      },
      {
        "email": "WilliamMiller@edu.umi.ac.ma.com",
        "birthdate": "2023-06-16 03:17:00.043"
      }
    ]
  }
}
```

ALL VEHICLES:

```
es {  
  registrationNumber
```



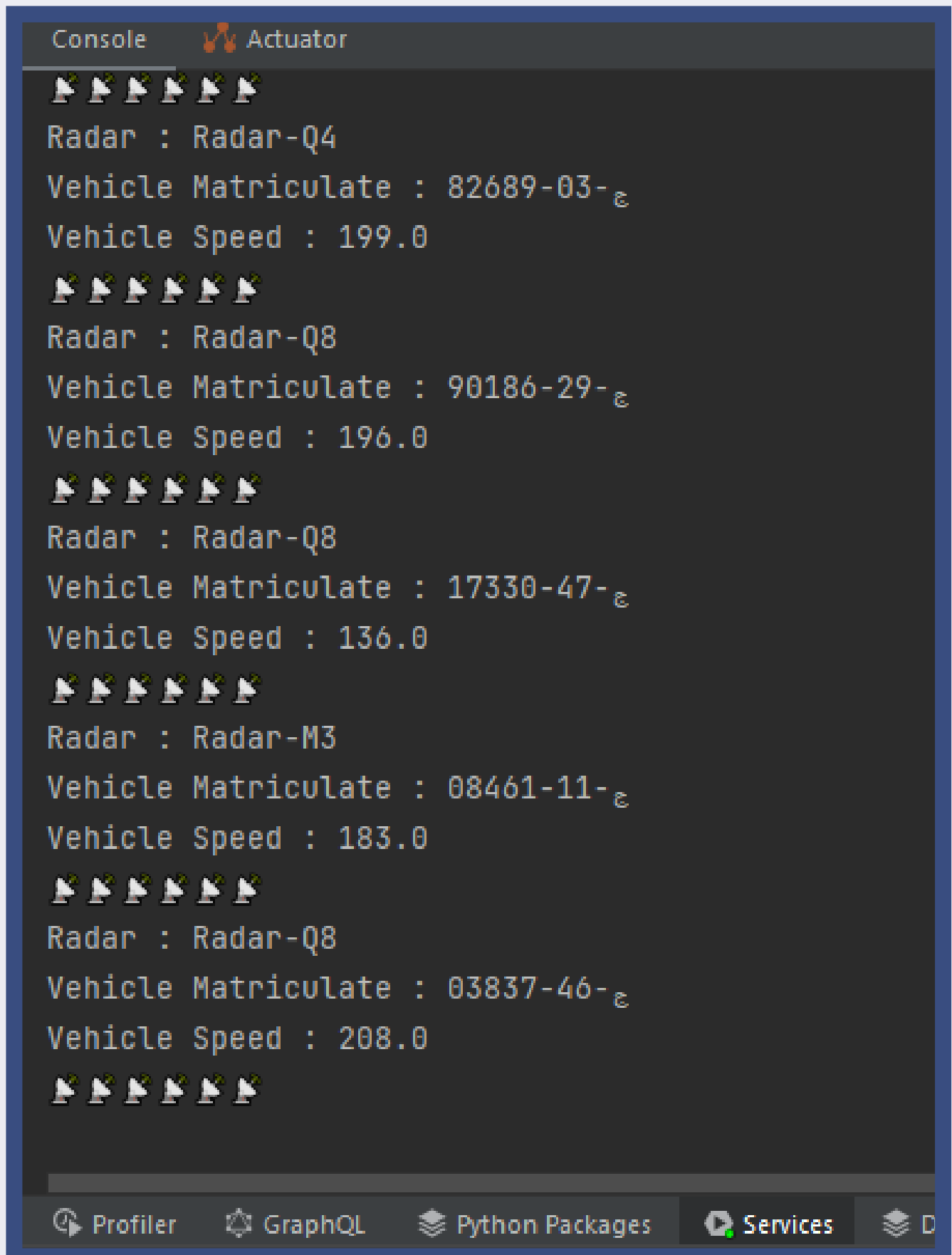
```
{  
  "data": {  
    "getVehicles": [  
      {  
        "model": "Civic",  
        "brand": "Chevrolet",  
        "registrationNumber": "58264-12-ç"  
      },  
      {  
        "model": "Mustang",  
        "brand": "Ford",  
        "registrationNumber": "02854-54-ç"  
      },  
      {  
        "model": "Civic",  
        "brand": "Toyota",  
        "registrationNumber": "86348-15-ç"  
      },  
      {  
        "model": "Silverado",  
        "brand": "Honda",  
        "registrationNumber": "30614-19-ç"  
      },  
      {  
        "model": "Silverado",  
        "brand": "Ford",  
        "registrationNumber": "48813-74-ç"  
      },  
      {  
        "model": "Camry",  
        "brand": "BMW",  
        "registrationNumber": "67143-71-ç"  
      },  
      {  
        "model": "Silverado",  
        "brand": "Honda",  
        "registrationNumber": "27697-28-ç"  
      },  
      {  
        "model": "Silverado",  
        "brand": "Honda",  
        "registrationNumber": "60398-13-ç"  
      },  
      {  
        "model": "Civic",  
        "brand": "Ford",  
        "registrationNumber": "02854-54-ç"  
      }  
    ]  
  }  
}
```



RADAR SUMULATOR



RADAR SUMULATOR TEST:



The screenshot displays a software interface with a dark-themed console window. At the top, there are two tabs: 'Console' and 'Actuator'. The 'Console' tab is active, showing a series of log entries. Each entry is preceded by a row of six small radar icons. The log entries provide details for five different radar units, including their names, vehicle matriculate numbers, and vehicle speeds. At the bottom of the interface, there is a horizontal bar with several icons and labels: 'Profiler', 'GraphQL', 'Python Packages', 'Services', and a partially visible 'D' icon.

```
Console  Actuator

Radar : Radar-Q4
Vehicle Matriculate : 82689-03-ε
Vehicle Speed : 199.0

Radar : Radar-Q8
Vehicle Matriculate : 90186-29-ε
Vehicle Speed : 196.0

Radar : Radar-Q8
Vehicle Matriculate : 17330-47-ε
Vehicle Speed : 136.0

Radar : Radar-M3
Vehicle Matriculate : 08461-11-ε
Vehicle Speed : 183.0

Radar : Radar-Q8
Vehicle Matriculate : 03837-46-ε
Vehicle Speed : 208.0

Profiler  GraphQL  Python Packages  Services  D
```



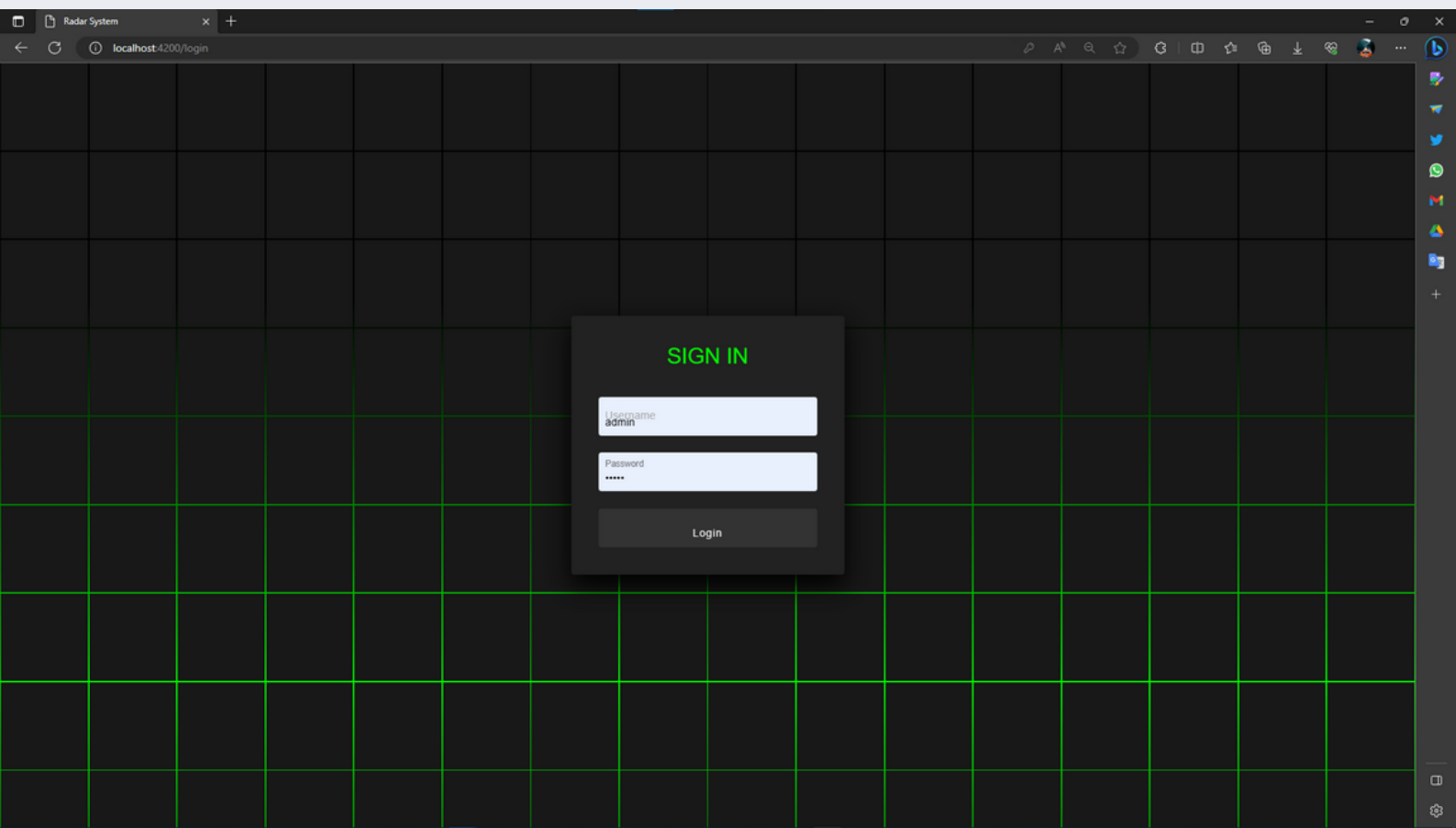
WEB APPLICATION



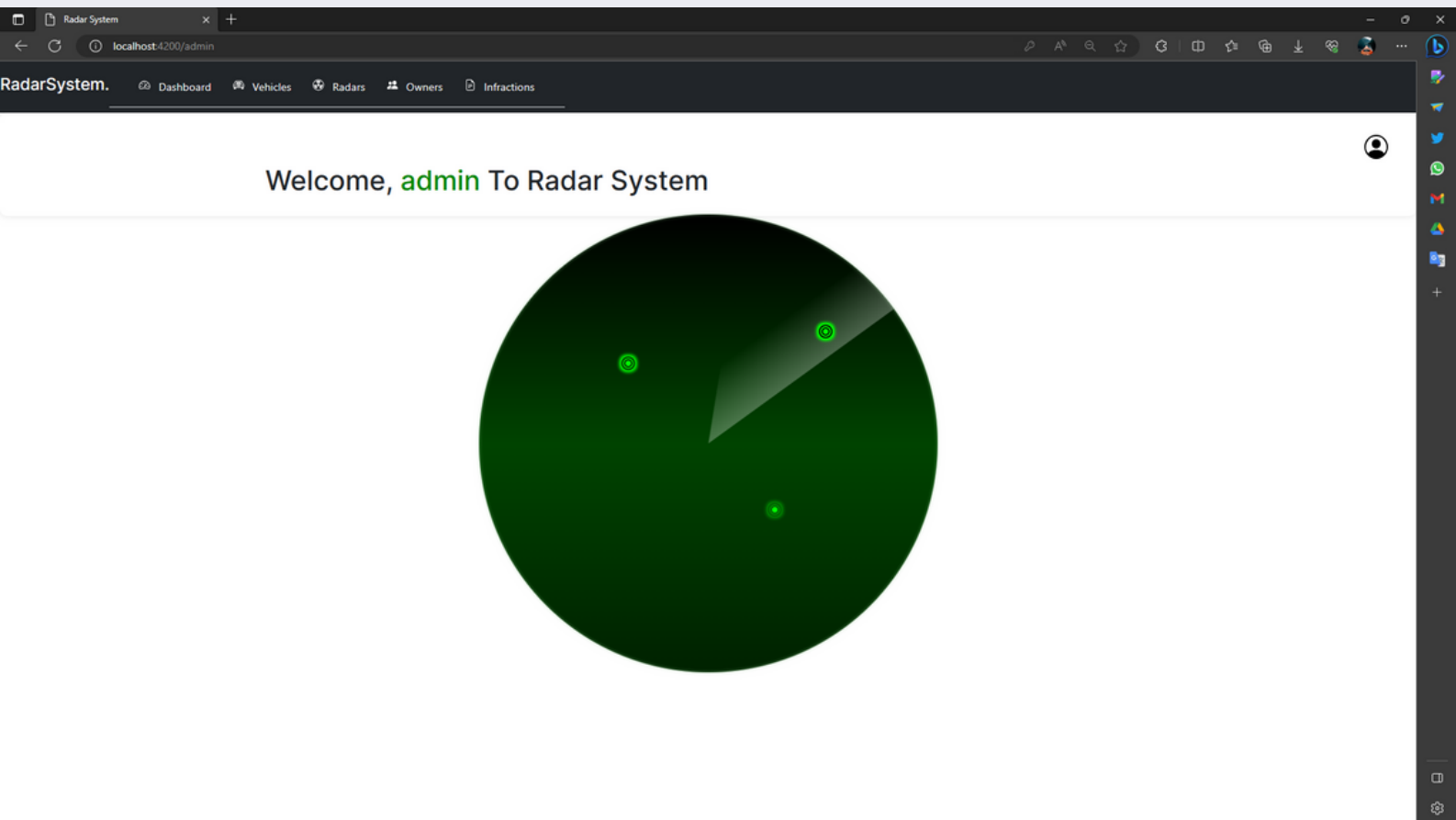
NGULAR



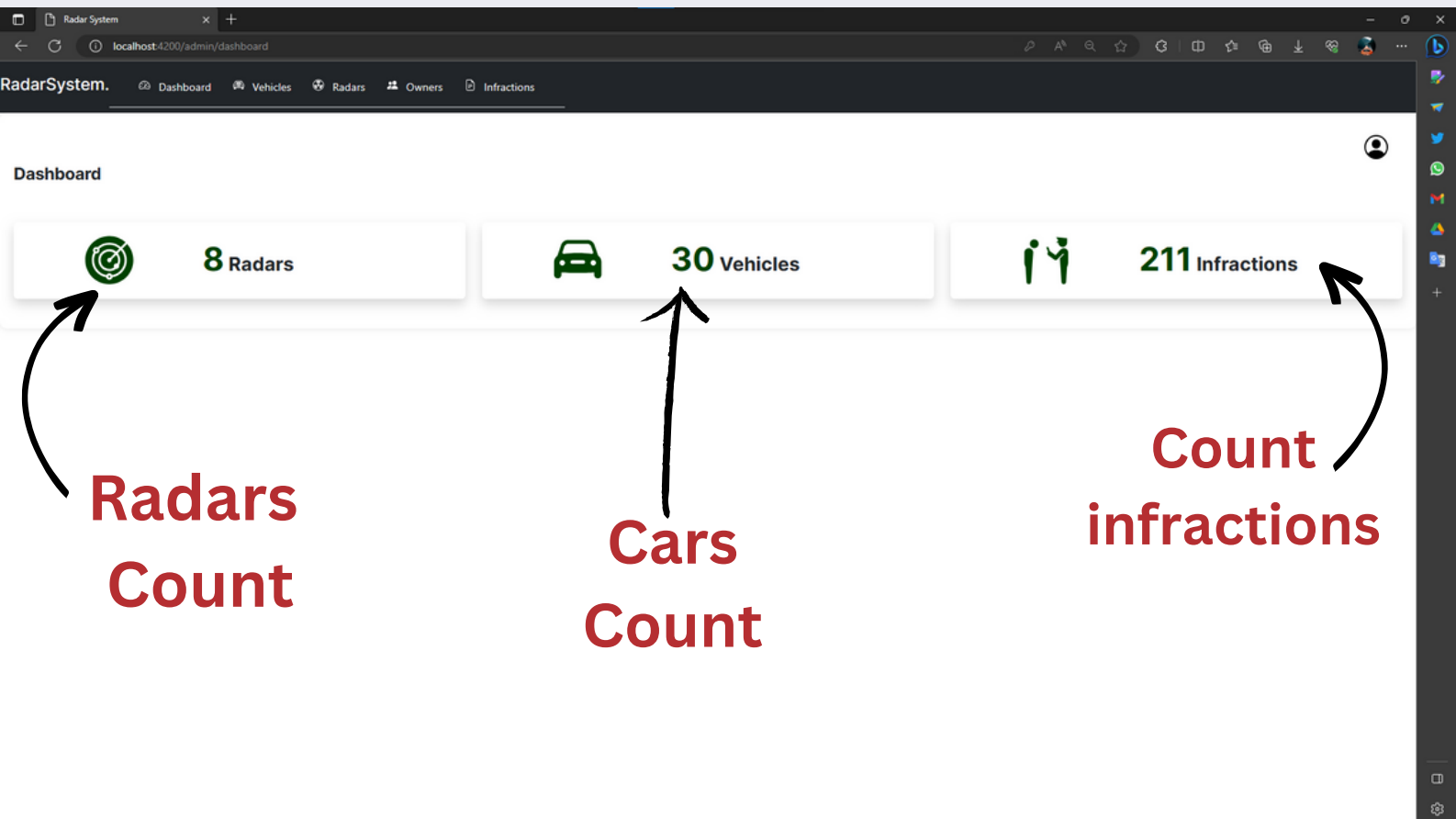
LOGIN:



HOME:



DASHBOARD:



RADARS:

Radar System

localhost:4200/admin/radars

RadarSystem. Dashboard Vehicles Radars Owners Infractions

All Radars

+ Add New Radar

Search

Q

#	NAME	LONGITUDE	LATITUDE	MAX SPEED	DELETE	UPDATE
1	Radar-N1	0.19	2.59	120 km/h		
2	Radar-X2	7.75	4.50	120 km/h		
3	Radar-M3	5.04	2.64	120 km/h		
4	Radar-Q4	4.08	5.99	120 km/h		
5	Radar-N5	5.60	7.58	120 km/h		
6	Radar-X6	8.08	1.51	120 km/h		
7	Radar-M7	9.93	7.57	120 km/h		
8	Radar-Q8	2.60	0.97	120 km/h		

Page 1 of 1

VEHICLES & OWNERS:

Radar System

localhost:4200/admin/vehicles

RadarSystem. Dashboard Vehicles Radars Owners Infractions

Vehicles & Owners

REGISTRATION NUMBER	BRAND	MODEL	POWER	OWNER INFO
53730- 88- z	Chevrolet			
02141- 23- z	Chevrolet			
65128- 34- z	Ford			
15896- 42- z	BMW	1 Series	116	
62975- 66- z	BMW	3 Series	401	
59042- 28- z	Toyota	Camry	140	
30668- 40- z	Ford	3 Series	851	
47015- 47- z	Chevrolet	Mustang	397	
29139- 87- z	BMW	Mustang	145	
88271- 53- z	Honda	Camry	735	

Page 1 of 3

Owner Informations

Full Name :

Karim Laaroussi

Email :

KarimLaaroussi@edu.umi.ac.ma.com

Birth Date :

2023-06-25

Close

OWNERS:

RadarSystem. Dashboard Vehicles Radars Owners Infractions			
Owners			
FULL NAME	EMAIL	BIRTH DATE	CAR MATRICULATE
Khalid Al Bakkali	KhalidAlBakkali@edu.umi.ac.ma.com	2023-06-25T14:59:30.113-00:00	53730-88- ز
Khalid Al Bakkali	KhalidAlBakkali@edu.umi.ac.ma.com	2023-06-25T14:59:30.113-00:00	02141-23- ز
Khalid Al Bakkali	KhalidAlBakkali@edu.umi.ac.ma.com	2023-06-25T14:59:30.113-00:00	65128-34- ز
Omar Ben Hamidi	OmarBenHamidi@edu.umi.ac.ma.com	2023-06-25T14:59:30.323-00:00	15896-42- ز
Omar Ben Hamidi	OmarBenHamidi@edu.umi.ac.ma.com	2023-06-25T14:59:30.323-00:00	62975-66- ز
Omar Ben Hamidi	OmarBenHamidi@edu.umi.ac.ma.com	2023-06-25T14:59:30.323-00:00	59042-28- ز
Youssef El Haddadi	YoussefElHaddadi@edu.umi.ac.ma.com	2023-06-25T14:59:30.326-00:00	30668-40- ز
Youssef El Haddadi	YoussefElHaddadi@edu.umi.ac.ma.com	2023-06-25T14:59:30.326-00:00	47015-47- ز
Youssef El Haddadi	YoussefElHaddadi@edu.umi.ac.ma.com	2023-06-25T14:59:30.326-00:00	29139-87- ز
Karim Laaroussi	KarimLaaroussi@edu.umi.ac.ma.com	2023-06-25T14:59:30.329-00:00	88271-53- ز
Page 1 of 3			

INFRACTIONS:

RadarSystem. Dashboard Vehicles Radars Owners Infractions			
All Infractions			
ID	DATE	AMOUNT	DETAILS
1	23-06-25 [16:01:30]	565 Dirhams	
2	23-06-25 [16:01:31]	347 Dirhams	
3	23-06-25 [16:01:32]	708 Dirhams	
4	23-06-25 [16:01:36]	131 Dirhams	
5	23-06-25 [16:01:40]	835 Dirhams	
6	23-06-25 [16:01:44]	666 Dirhams	
7	23-06-25 [16:01:48]	284 Dirhams	
8	23-06-25 [16:01:52]	383 Dirhams	
9	23-06-25 [16:01:56]	955 Dirhams	
10	23-06-25 [16:02:00]	133 Dirhams	
Page 1 of 27			

infracation Details

Car infos :

Matriculate : 45578-08-[ز](#)

Brand : BMW

Model : Silverado

Fiscal Power : 63

Owner infos :

Full Name : John Smith

Birth Date : 2023-06-25

Email : JohnSmith@edu.umi.ac.ma.com

Radar infos :

Radar Name : Radar-N5

Max Speed : 120 km/h

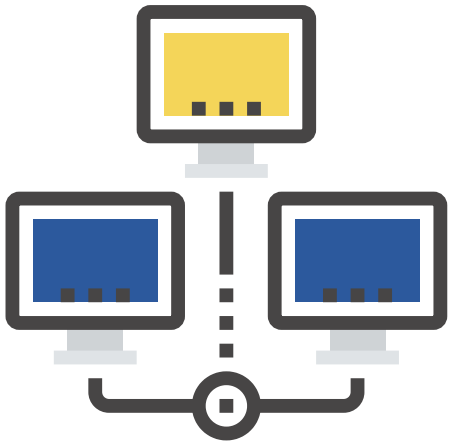
Longitude : 5.6018754241604665

Latitude : 7.582996713063649

Amount:

835 Dirhams

Close



*Thank
You*