Car Application Documentation

Overview

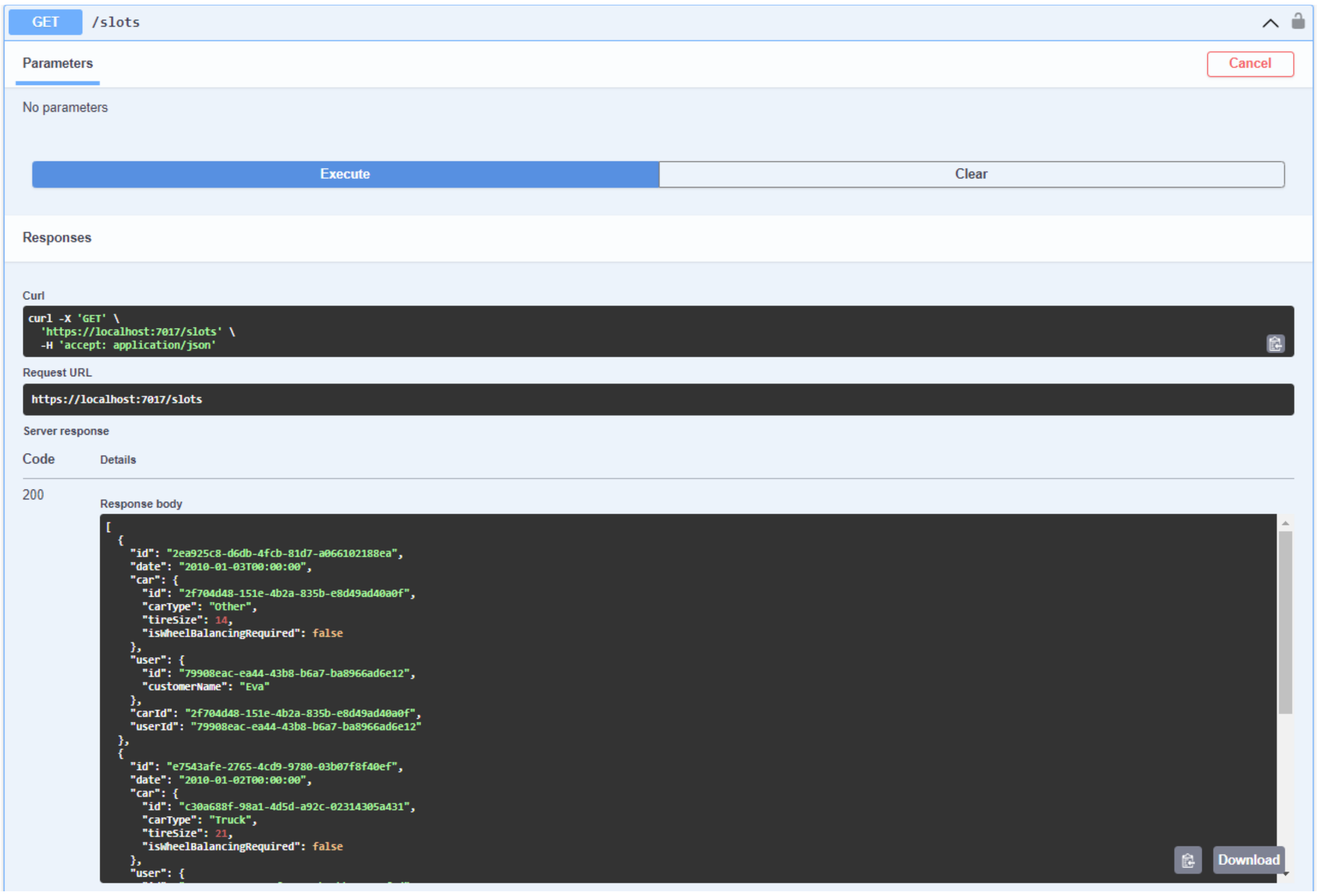
The Car application is designed to manage car-related operations, including pricing calculations, logging, and API endpoints. Below are the key features and implementation details.

Features

1. In-Memory Database (Entity Framework):
   - Implemented an in-memory database using Entity Framework (EF).
   - Created base tables and established relations.
2. Logging with SeriLog:
   - Integrated SeriLog for comprehensive logging.
   - Initial configuration includes console and file logging.
   - Consider future extensions (e.g., ElasticSearch).
3. Price Calculation Strategy:
   - Utilized the strategy pattern for price calculation.
   - Covered by xUnit tests to ensure correctness.
4. Code Organization and Readability:
   - Centralized Car-related code in CarRequests.cs.
   - Introduced a ValidatorExtension for FluentValidation.
   - Structured the web API using a chain pattern.
5. Unit Tests:
   - Demonstrated unit tests for price calculation and validator.
   - Ensured robust validation and accurate results.
6. XML Documentation:
   - Created an XML file (Hedin.ChangeTires.Api.xml) for future reference.
   - Useful for generating API documentation.
7. Token-Based Authentication and Swagger Integration:
   - Implemented token-based authentication.
   - Tested authentication within the Swagger interface.
8. Swagger Documentation:
   - Documented API endpoints in Swagger.
   - Included example code snippets and request/response details.
9. External APIs:
   - Developed two external APIs.
   - Concealed implementation details.
10. Error Handling (Try-Catch):
    - Demonstrated try-catch blocks for robust error handling.
11. Secure Dirty Reads (Database):
    - Note that dirty reads are feasible only in a real database (not in-memory).
12. Project Scope and Focus:
    - Acknowledged time limitations.
    - Emphasized code approaches over advanced services.
    - Prepared for in-depth discussions during interviews.

Example case application:

1. Chceck booked slots (one picture of more than a thousand words)



Curl

```
curl -X 'GET' \
  'https://localhost:7017/slots' \
  -H 'accept: application/json'
```

Request URL

```
https://localhost:7017/slots
```

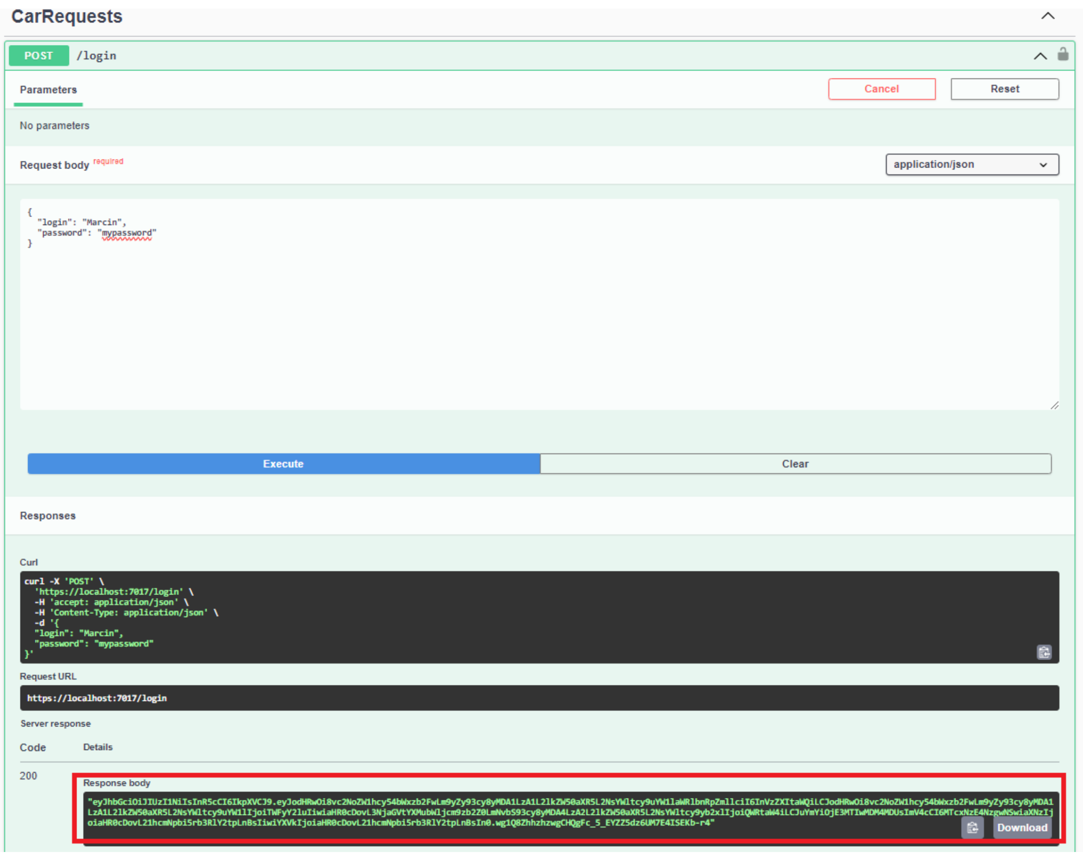
Server response

Code Details

200 Response body

```
[
  {
    "id": "2ea925c8-d6db-4fcb-81d7-a066102188ea",
    "date": "2010-01-03T00:00:00",
    "car": {
      "id": "2f704d48-151e-4b2a-835b-e8d49ad40a0f",
      "carType": "Other",
      "tireSize": 14,
      "isWheelBalancingRequired": false
    },
    "user": {
      "id": "79908eac-ea44-43b8-b6a7-ba8966ad6e12",
      "customerName": "Eva"
    },
    "carId": "2f704d48-151e-4b2a-835b-e8d49ad40a0f",
    "userId": "79908eac-ea44-43b8-b6a7-ba8966ad6e12"
  },
  {
    "id": "e7543afe-2765-4cd9-9780-03b07f8f40ef",
    "date": "2010-01-02T00:00:00",
    "car": {
      "id": "c30a688f-98a1-4d5d-a92c-02314305a431",
      "carType": "Truck",
      "tireSize": 21,
      "isWheelBalancingRequired": false
    },
    "user": {
```

2. Booking slot
   a. Get token (login: Marcin password: mypassword)



```
{
  "login": "Marcin",
  "password": "mypassword"
}
```

Curl

```
curl -X 'POST' \
  'https://localhost:7017/login' \
  -H 'accept: application/json' \
  -H 'Content-Type: application/json' \
  -d '{
  "login": "Marcin",
  "password": "mypassword"
}'
```

Request URL

```
https://localhost:7017/login
```

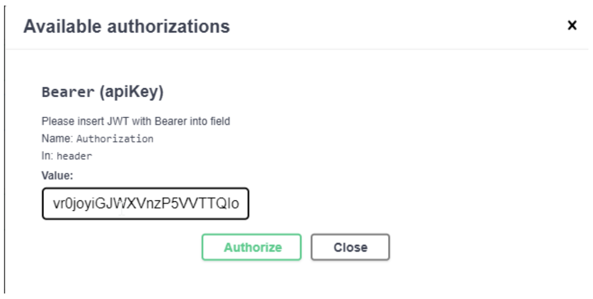
Server response

Code Details

200 Response body

```
"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lkZW50aXR5L2NsYWltcy9uYW1laWRlbnRpZmllciI6InVzZXItaWQiLCJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1
LzA1L2lkZW50aXR5L2NsYWltcy9uYW1lIjoiTWFyY2luIiwiaHR0cDovL3NjaGVtYXMubWljcm9zb2Z0LmNvbS93cy8yMDA4LzA2L2lkZW50aXR5L2NsYWltcy9yb2xlIjoiQWRtaW4iLCJuYmYiOjE3MTIwMDM4MDUsImV4cCI6MTcxNzE4NzgwNSwiaXNzIj
oiaHR0cDovL21hcmNpbi5rb3RlY2tpLnBsIiwiYXVkIjoiaHR0cDovL21hcmNpbi5rb3RlY2tpLnBsIn0.wg1Q8ZhhzhzwgCHQgFc_5_EYZZ5dz6UM7E4ISEKb-r4"
```

b. Authorise



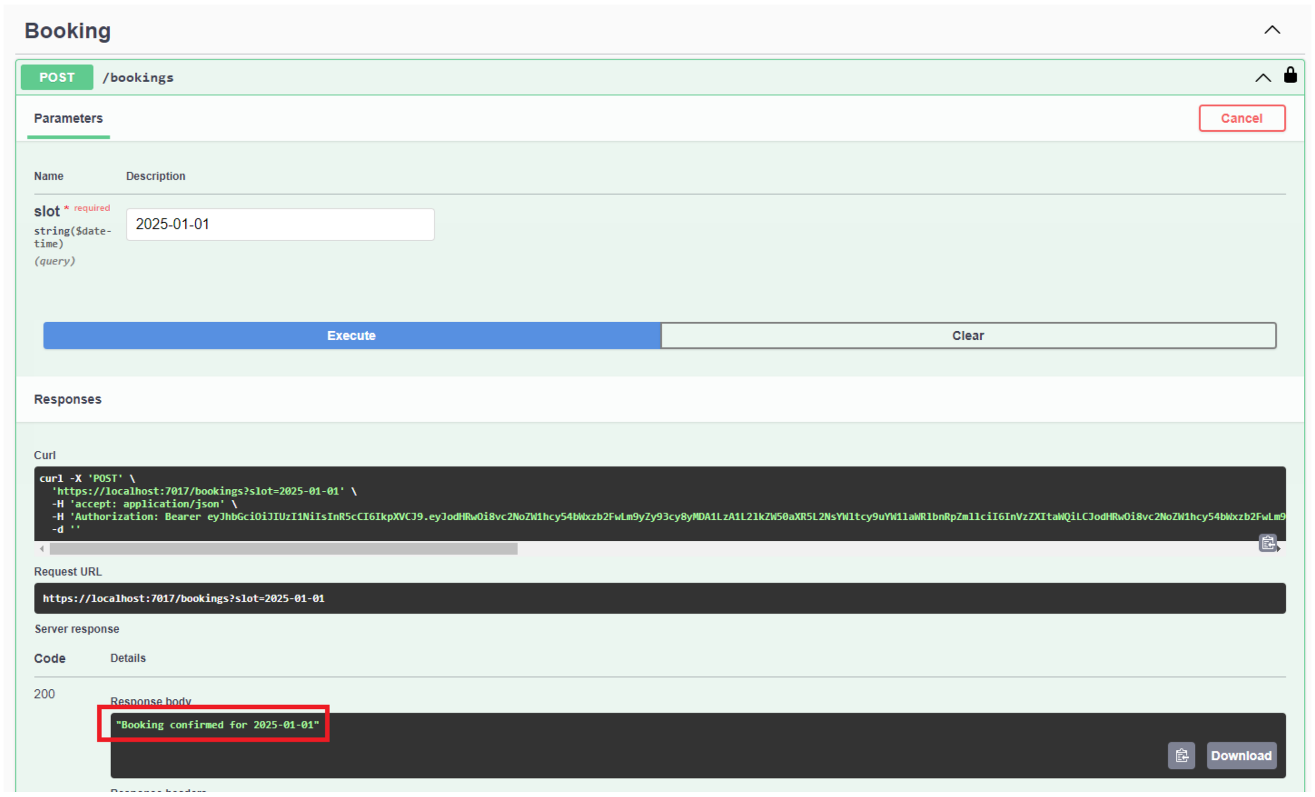
Available authorizations

Bearer (apiKey)

Please insert JWT with Bearer into field
Name: Authorization
In: header
Value:

vr0joyiGJWXVnzP5VVTTQlo

c. Get Answer



Booking

POST /bookings

Parameters

Name	Description
slot * required string($date-time) (query)	2025-01-01

Responses

Curl

```
curl -X 'POST' \
  'https://localhost:7017/bookings?slot=2025-01-01' \
  -H 'accept: application/json' \
  -H 'Authorization: Bearer eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lkZW50aXR5L2NsYWltcy9uYW1laWRlbnRpZmllciI6InVzZXItaWQiLCJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9
  -d ''
```

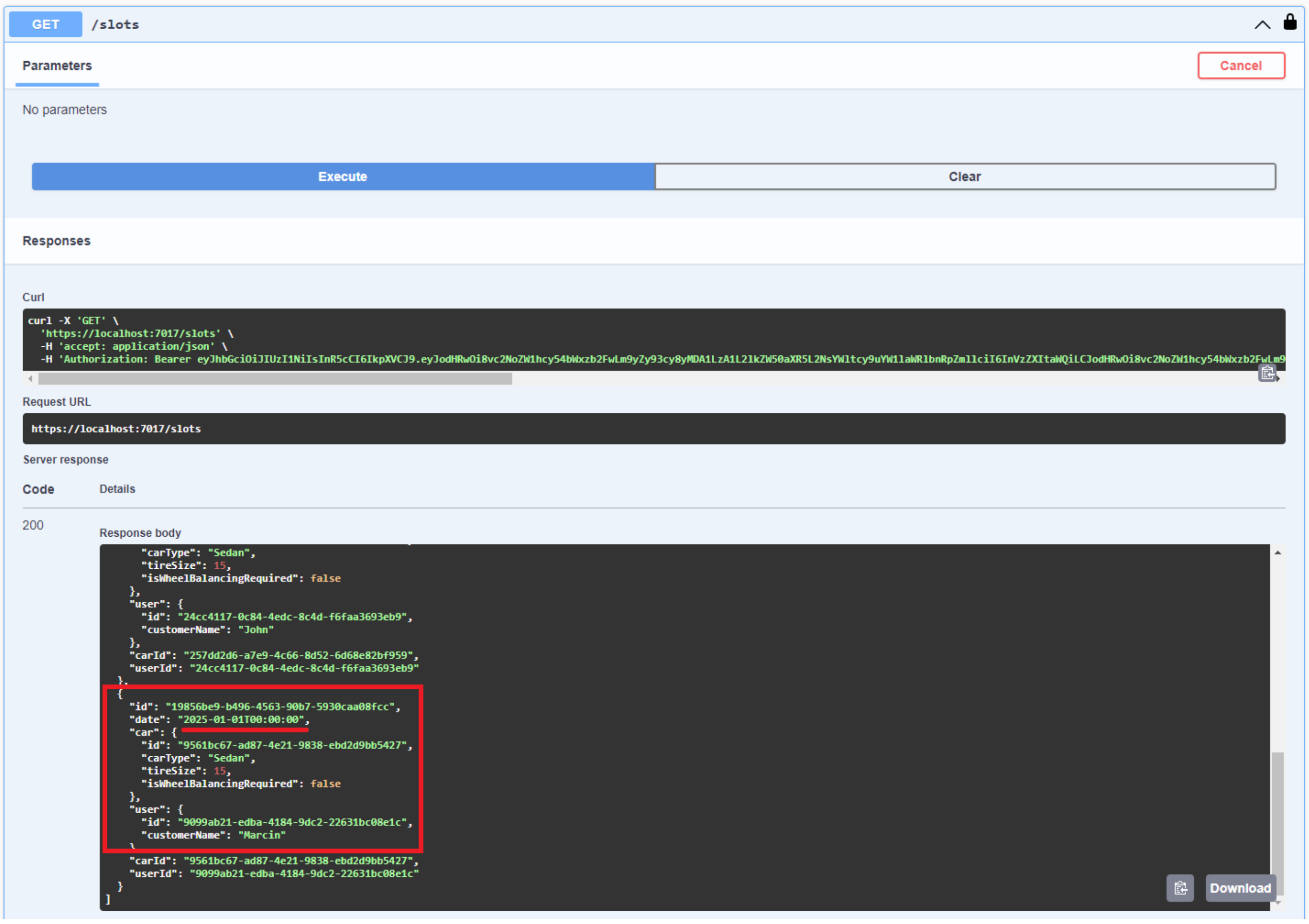
Request URL

```
https://localhost:7017/bookings?slot=2025-01-01
```

Server response

Code	Details
200	Response body "Booking confirmed for 2025-01-01"

d. Confirm booking



No parameters

Responses

Curl

```
curl -X 'GET' \
  'https://localhost:7017/slots' \
  -H 'accept: application/json' \
  -H 'Authorization: Bearer eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lkZW50aXR5L2NsYWltcy9uYW1laWRlbnRpZmllciI6InVzZXItaWQiLCJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9
```

Request URL

```
https://localhost:7017/slots
```

Server response

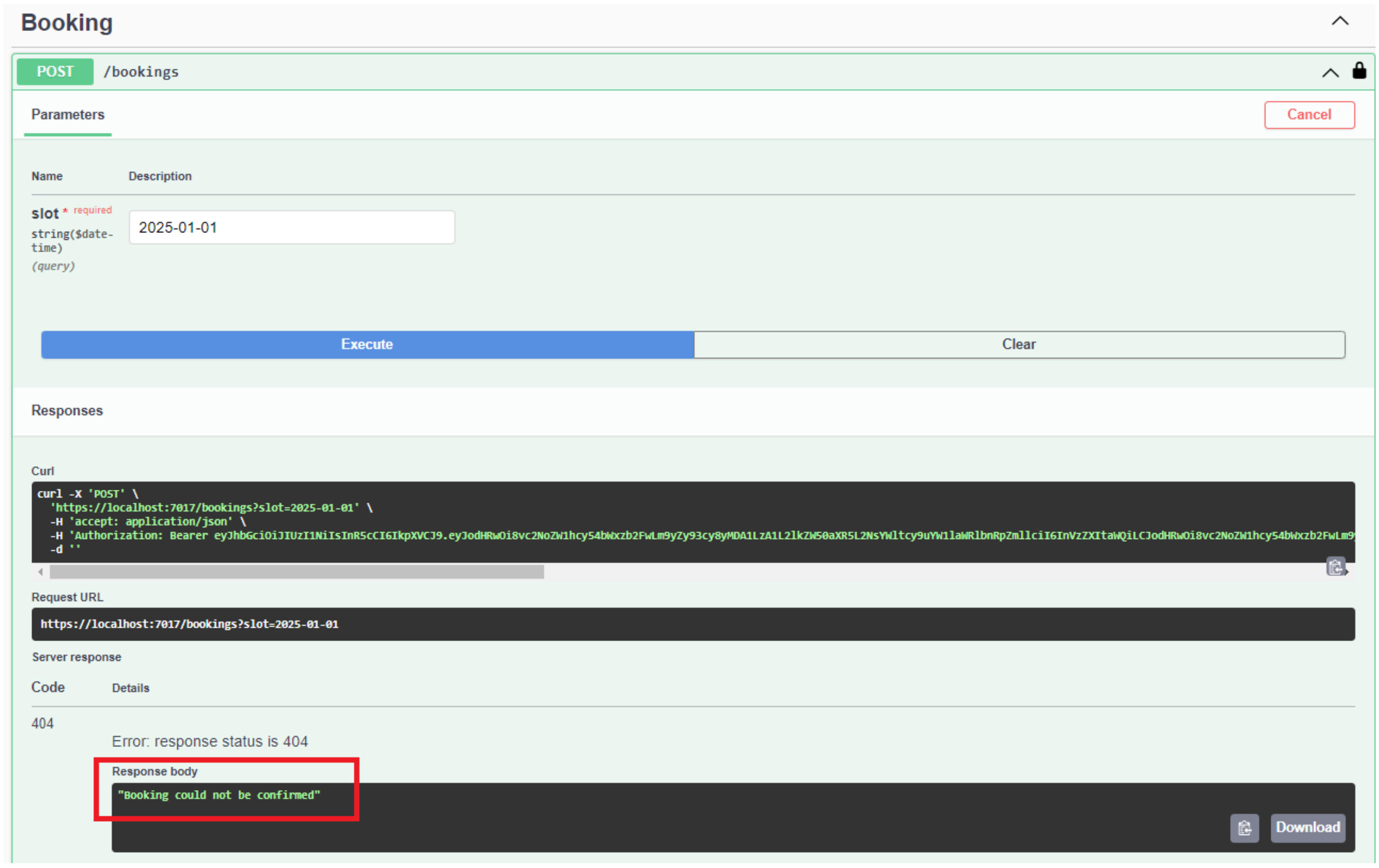
Code Details

200

Response body

```
      "carType": "Sedan",
      "tireSize": 15,
      "isWheelBalancingRequired": false
    },
    "user": {
      "id": "24cc4117-0c84-4edc-8c4d-f6faa3693eb9",
      "customerName": "John"
    },
    "carId": "257dd2d6-a7e9-4c66-8d52-6d68e82bf959",
    "userId": "24cc4117-0c84-4edc-8c4d-f6faa3693eb9"
  },
  {
    "id": "19856be9-b496-4563-90b7-5930caa08fcc",
    "date": "2025-01-01T00:00:00",
    "car": {
      "id": "9561bc67-ad87-4e21-9838-ebd2d9bb5427",
      "carType": "Sedan",
      "tireSize": 15,
      "isWheelBalancingRequired": false
    },
    "user": {
      "id": "9099ab21-edba-4184-9dc2-22631bc08e1c",
      "customerName": "Marcin"
    },
    "carId": "9561bc67-ad87-4e21-9838-ebd2d9bb5427",
    "userId": "9099ab21-edba-4184-9dc2-22631bc08e1c"
  }
]
```

e. Try booking a slot when it is booked



Name Description

slot * required
string($date-time)
(query)

2025-01-01

Responses

Curl

```
curl -X 'POST' \
  'https://localhost:7017/bookings?slot=2025-01-01' \
  -H 'accept: application/json' \
  -H 'Authorization: Bearer eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lkZW50aXR5L2NsYWltcy9uYW1laWRlbnRpZmllciI6InVzZXItaWQiLCJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9
  -d ''
```

Request URL

```
https://localhost:7017/bookings?slot=2025-01-01
```

Server response

Code Details

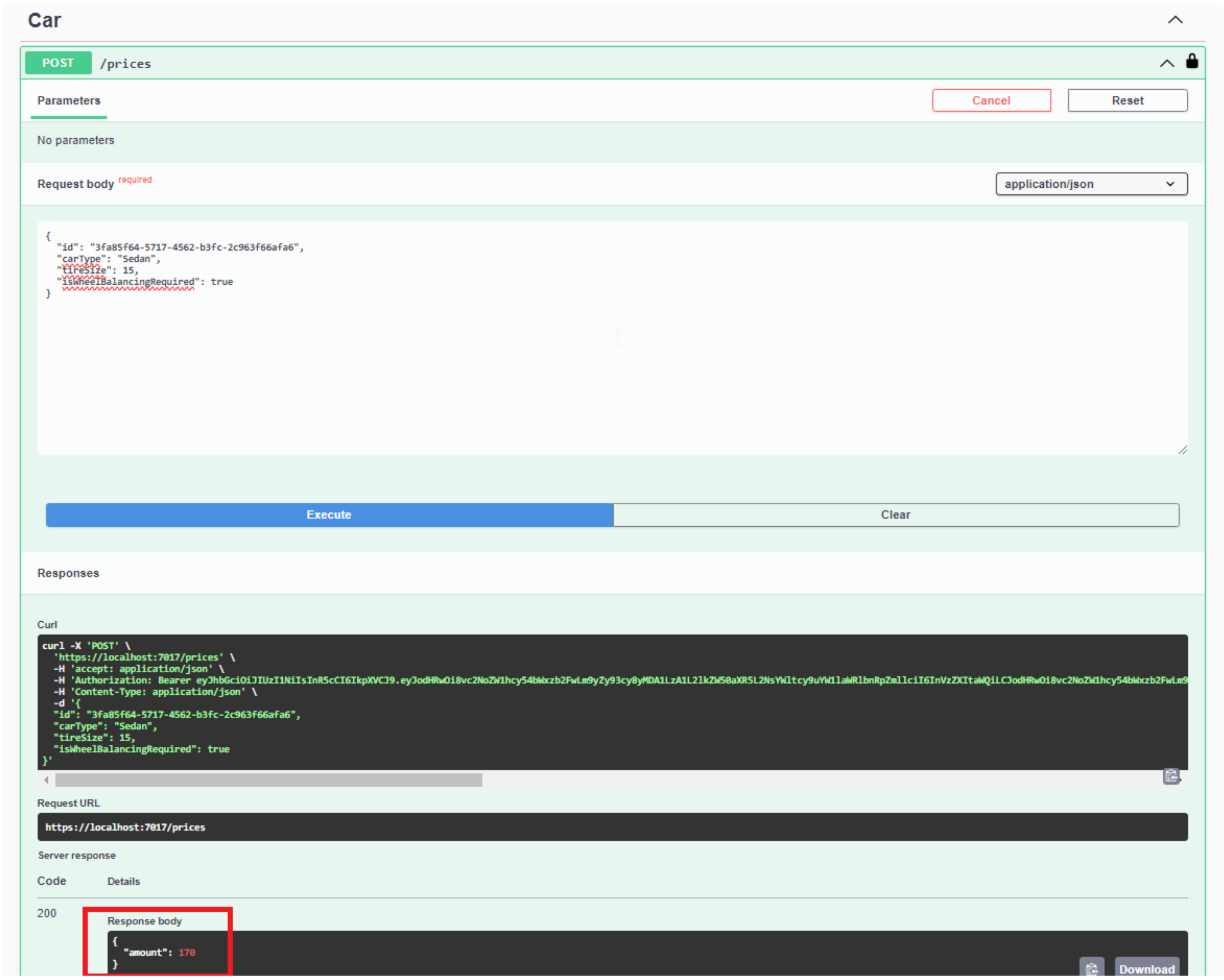
404

Error: response status is 404

Response body

```
"Booking could not be confirmed"
```

3. Caclucate price change tire in a car.



```
{
  "id": "3fa85f64-5717-4562-b3fc-2c963f66afa6",
  "carType": "Sedan",
  "tireSize": 15,
  "isWheelBalancingRequired": true
}
```

```
curl -X 'POST' \
  'https://localhost:7017/prices' \
  -H 'accept: application/json' \
  -H 'Authorization: Bearer eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9yZy93cy8yMDA1LzA1L2lkZW50aXR5L2NsYWltcy9uYW1laWRlbnRpZmllciI6InVzZXItaWQiLCJodHRwOi8vc2NoZW1hcy54bWxzb2FwLm9
  -H 'Content-Type: application/json' \
  -d '{
  "id": "3fa85f64-5717-4562-b3fc-2c963f66afa6",
  "carType": "Sedan",
  "tireSize": 15,
  "isWheelBalancingRequired": true
}'
```

Request URL

```
https://localhost:7017/prices
```

Server response

Code	Details
200	Response body `{ "amount": 170 }`

```
{
  "amount": 170
}
```