SoT REST assignment | Airline | 2019 Q1 B1 - Fontys ICT

🛠 This project was develop with GitHub, Intellij Idea, Java 11 and React.js.
Source code: https://github.com/mauriciabad/SoT-REST

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Assignment statement

Make a REST service and client(s) for the required case: **searching and buying flight tickets (for travelling with an airplane)**. You may make it simple or advanced, for example: clients can create account, search for flight tickets and buy them, etc.

Detailed assessment criteria can be found here: SOT Module Description and Assignments.

API Reference

This are all the available resources for Airline's API 1.0.

> **Base URL**: http://localhost:8080/airline/v1/

Endpoints

Flights

Method	Endpoint	Description	Response
GET	/flights	Get all flights filtered by the Query parameters: `flightId`, `origin`, `destination`, `departure`, `departureBefore`, `departureAfter`, `arrival`, `arrivalBefore`, `arrivalAfter`, `price`, `maxPrice` and/or `airline`. This dates must have this format: `YYYYY-MM-dd`	Array<Flight>
POST	/flights	Create a new flight Also accepts `x-www-form-urlencoded`	Flight
GET	/flights/{flightId}	Get information about a specific flight	Flight
		Update `origin`, `destination`,	

Method	Endpoint	Description	Response
PUT	/flights/{flightId}	Update `departure`, `arrival` and/or `airline` of a flight.	Flight
DELETE	/flights/{flightId}	Delete a flight	

Flights Tickets

Method	Endpoint	Description	Response
GET	/flights/{flightId}/tickets	Get all tickets	Array<Ticket>
POST	/flights/{flightId}/tickets/{ticketId}/buy?buyerId={userId}	Buy a specific ticket. Needs `buyerId` Query parameter	Ticket

Users

Method	Endpoint	Description	Response
GET	/users	Get all users	Array<User>
POST	/users	Create a new user	User
GET	/users/{userId}	Get information about a specific user	User
PUT	/users/{userId}	Update a user	User
DELETE	/users/{userId}	Delete a user	

Objects

Flight

Name	Type
id	int
origin	String
destination	String
departure	String `yyyy-MM-dd HH:mm`
arrival	String `yyyy-MM-dd HH:mm`
airline	String
tickets	Array<Ticket>
price	int
cheapestTicket	Ticket

> **Notice**:
>
> - The attribute `price` is the price of the cheapest ticket.

> - The attributes `price` and `cheapestTicket` are redundant information.

Ticket

Name	Type
id	int
price	int
seat	String
buyerId	int
forSale	bool

User

Name	Type
id	int
name	String

General comments

- All the data is encoded in `json` format.
- ID's are generated automatically, if you provide one in a POST or PUT request this will be ignored.
- When a list is requested the response contains the header `X-Total-Count` with the amount of items in the list.
- CORS enabled with header `Access-Control-Allow-Origin: *`.
- `OPTIONS` method is also implemented.
- Flights can be filtered by all this parameters: `flightId`, `origin`, `destination`, `departure`, `departureBefore`, `departureAfter`, `arrival`, `arrivalBefore`, `arrivalAfter`, `price`, `maxPrice` and/or `airline`.

1st Client - Java console

```
    _    _      _ _                 _    ____ ___
   / \  (_)_ __| (_)_ __   ___     / \  |  _ \_ _|
  / _ \ | | '__| | | '_ \ / _ \   / _ \ | |_) | |
 / ___ \| | |  | | | | | |  __/  / ___ \|  __/| |
/_/   \_\_|_|  |_|_|_| |_|\___| /_/   \_\_|  |___|

Welcome to Airline API

What Entity you want to work with?
  F. Flights
  U. Users
  exit. Close
```

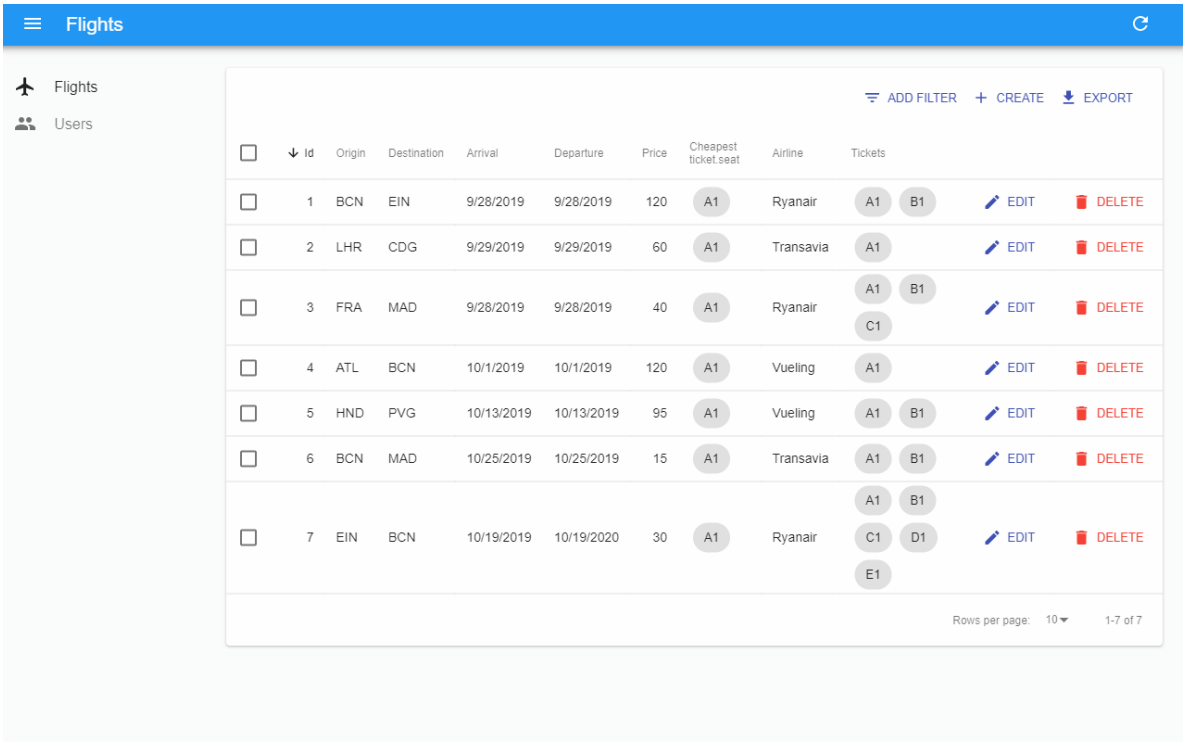
Run the class `Main` inside `client` module.

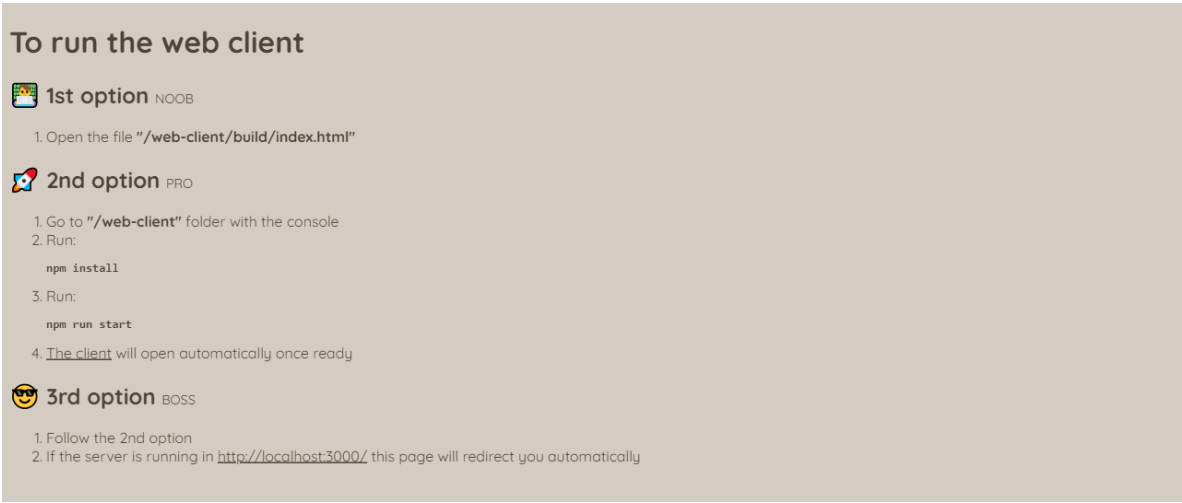
> **Note**: you can write the options in lowercase and will still work.

> **Disclaimer 1**: I wanted to make a preatier display of the entities, instead of just writing the JSON. But because working with JSON in Java is a nightmare I left like this.

> **Disclaimer 2**: *The Intellij Idea console made me code dirty workarrounds*.
>
> - No Unicode support.
> - The `Console` class is incompatible.
> - The graddle run button doesn't work straight away.
>
> So I couldn't use fancy Emojis, I had to make my own Console class, and running the code must be done from the regular Intellij Play button...

2nd Client - Web React.js





You MUST run the app in localhost, or open the file `[/web-client/build/index.html](https://github.com/mauriciabad/SoT-REST/blob/master/web-client/build/index.html)` from the computer.

- The source code is inside the `/web-client` folder.
- The compiled files are inside the `/web-client/build` folder.

> I used the react-admin framework to build it.

When you deploy the apache tomcat server it will give you nice instructions about how to run the 2nd client.

Error handling

Some errors can occur when:

- A required parameter is missing.
- The specified item does not exist.
- Date parameter has wrong format.
- Try to buy a ticket not for sale.

Example custom error message

```
{
  "error": true,
  "message": "Flight with flightId 999 doesn't exist",
  "status": 404,
  "statusName": "Not Found"
}
```

Implementing a Composite service

The idea I had is the **Custom Flights Recomendation**.

One use case would be:

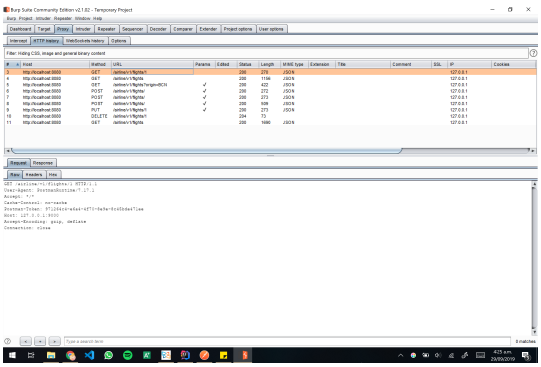
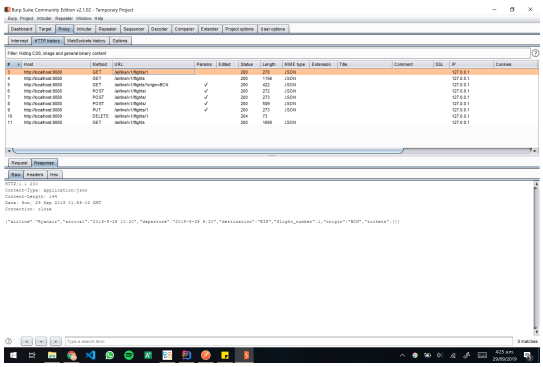
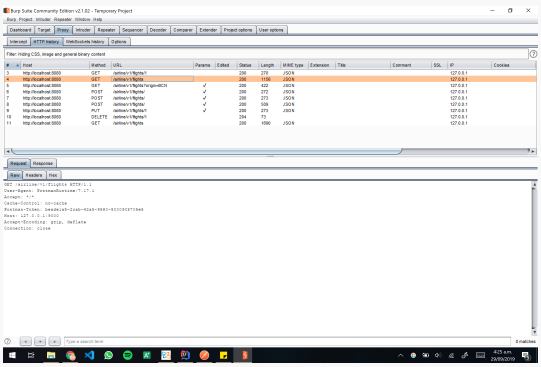
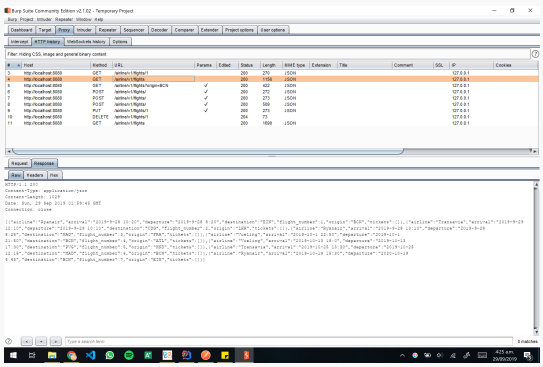
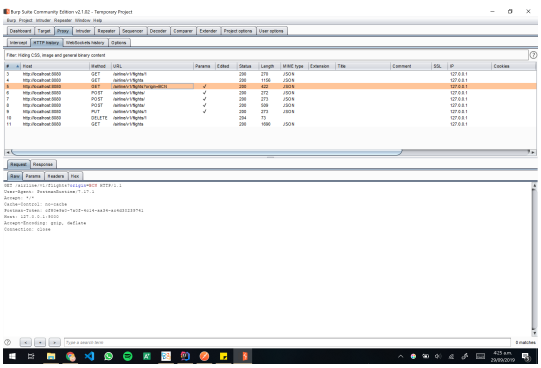
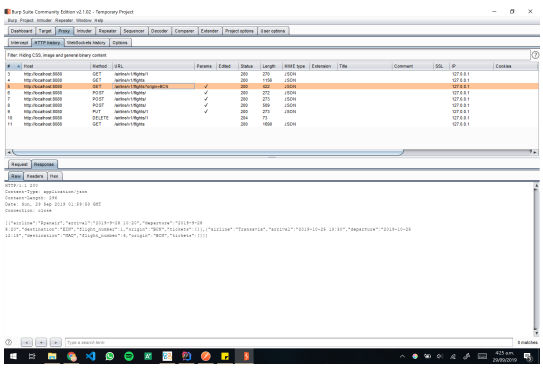
1. Ask the costumer's favorite football team.
2. Call a `Football API` to know when and where is the next match.
3. Call our `Airline API` to get the flights there.
4. Check in a `Weather API` the weather for the departure and arival times.
5. Send a recomendation emailthrought `Mailing API` with all that information to the costumer.

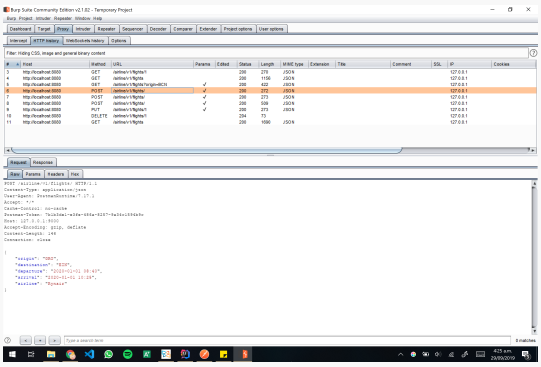
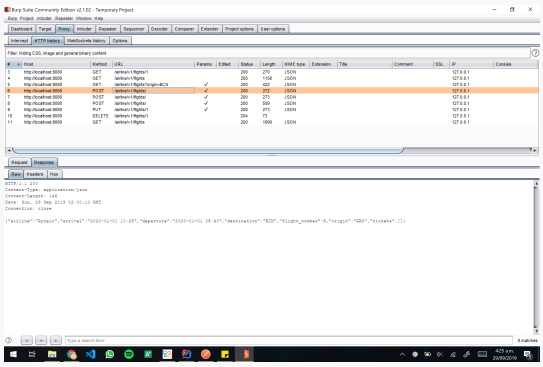
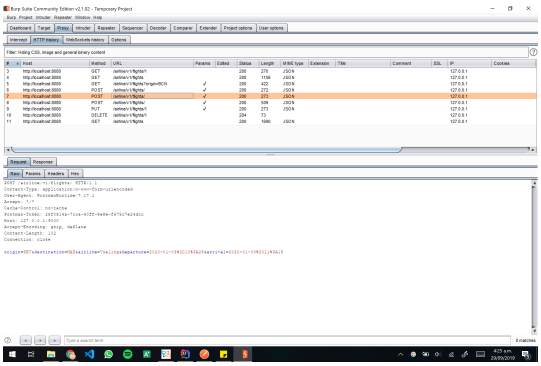
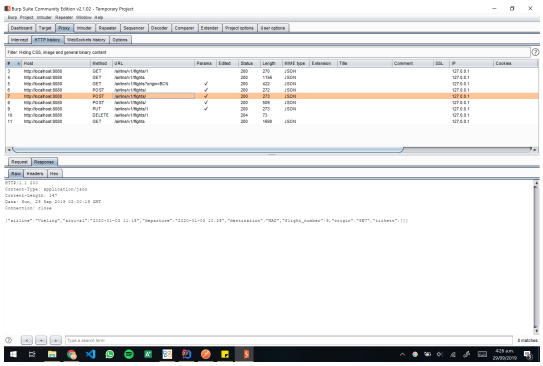
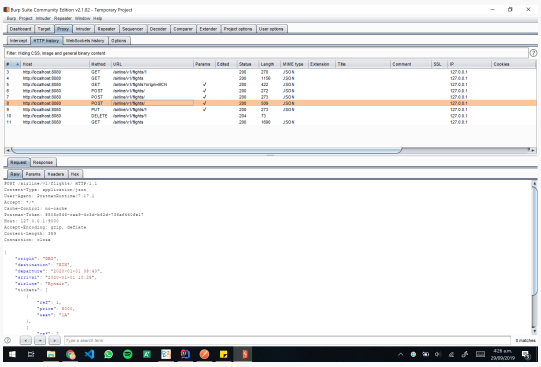
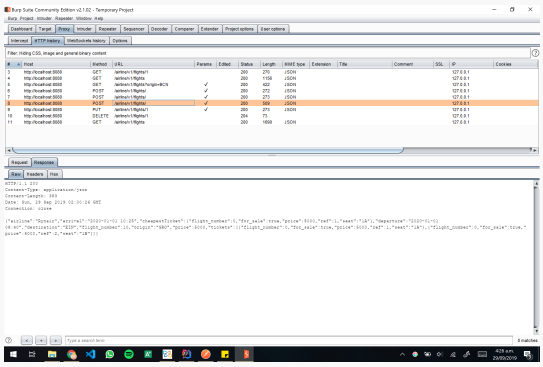
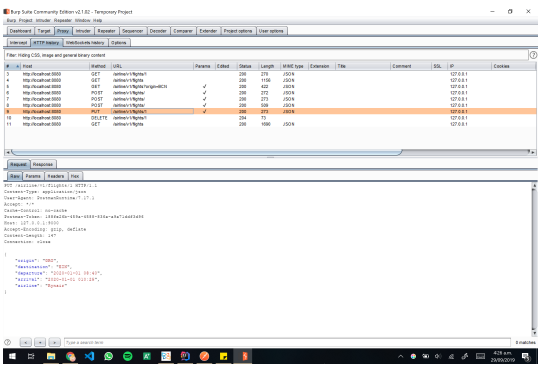
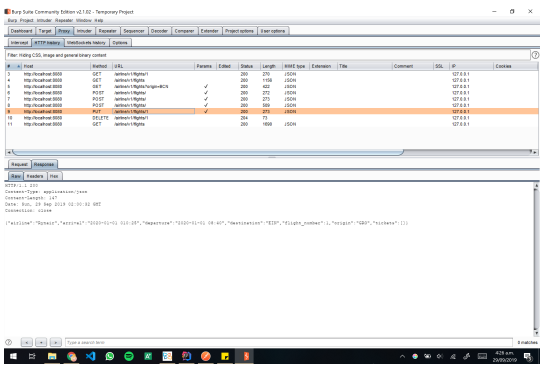
This would call several services from one service.

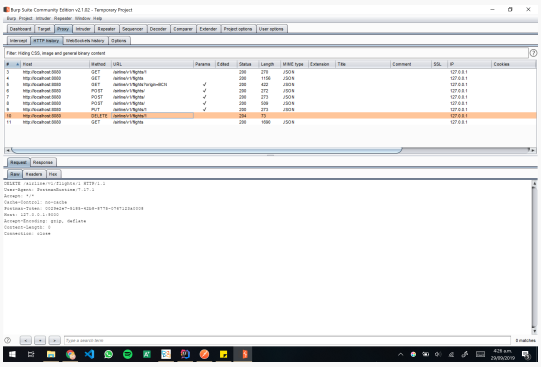
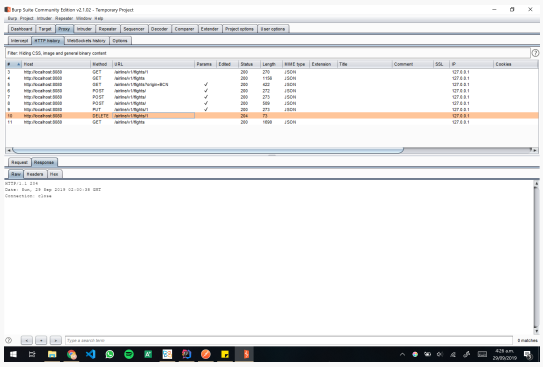
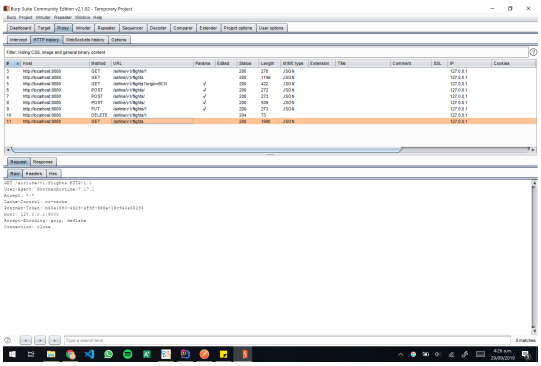
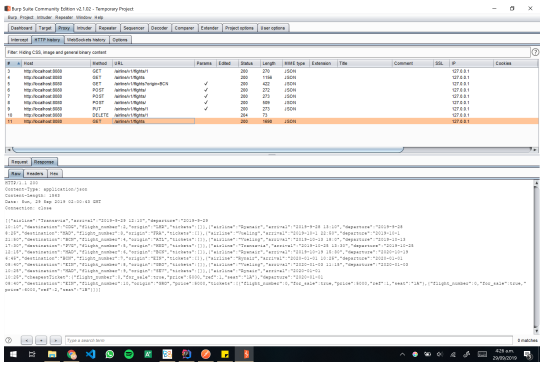
HTTP messages

Real HTTP messages being transferred between client and server.

We can see the input and output of some CRUD operations of `/flights` and different kinds of encodings.

Request	Response
	
`GET` `/flights/1`	`GET` `/flights/1`
	
`GET` `/flights`	`GET` `/flights`
	
`GET` `/flights?origin=BCN` `query`	`GET` `/flights?origin=BCN` `query`

Request	Response
	
`POST` `/flights` `json`	`POST` `/flights` `json`
	
`POST` `/flights` `form`	`POST` `/flights` `form`
	
`POST` `/flights` `json`	`POST` `/flights` `json`
	
`PUT` `/flights/1` `json`	`PUT` `/flights/1` `json`

Request	Response
	
`DELETE` `/flights/1`	`DELETE` `/flights/1`
	
`GET` `/flights`	`GET` `/flights`