

12.4 Web UI - Tools and testing: Homework

The task is to test the GUI of the [Flight Tickets Booking application](#)

Use the CRUD flight scenario to do the following:

- Investigate the DOM tree on the Elements tab, and compare it with the View HTML source. What could be done here, that is impossible to do with the View page source?
 - What errors do you see in the Console tab when running the scenarios? What are they about?
 - What sources are used to form the page? Scripts, images, other?
 - Are there any requests going from WebUI to the server?
 - Clear browser data (cash and cookies). What has been changed?
 - *Grab the traffic using a proxy server. Describe what did you and did you found any issues.
-
- **Investigate the DOM tree on the Elements tab, and compare it with the View HTML source. What could be done here, that is impossible to do with the View page source?**

On the Elements tab we can:

Visually observe styles, colors.

To overview schematically how are margins, borders, padding and content related.

It is impossible visual observe in HTML. Here there are just description in words.

Investigation:

1. CREATE

Add New Airport

A screenshot of a web form titled "Add New Airport". The form has five input fields arranged in two rows. The first row contains "Airport code" and "Airport Name". The second row contains "City", "Region", and "Country". A green "Save" button is positioned at the bottom right of the form.

In View Source and in Elements we can observe information about method: **POST**, label class, input class required value and its type:

```
<form action="/airport/new" method="post">
```

Here 1 of the them:

```
<label class="col-form-label" for="airportCode">Airport  
code</label>
```

```
<input class="form-control" id="airportCode" name="airportCode"  
placeholder="" required value="" type="text">
```

In this page there is nonconformance. The element Region must be shown as **State** as shown on the page Airport List and on the DB.

(Label class + form-control):

```
<label class="col-form-label" for="state">Region</label>
```

```
<input class="form-control" id="state" name="region" placeholder="" required="" value=""  
type="text">
```

We can see it in the Elements and in the HTML.

I added a new airport on the UI with code HEL.

The field State is empty:

Airports List						Add Airport	
ID	Airport Code	Airport Name	City	State	Country		
73	KAAA	Harry Armand Bach	East Jaquelinehaven	Idaho	French Guiana	Delete	Edit
270	DIBU	Harry Legg	East Alfonso	Wyoming	Western Sahara	Delete	Edit
92	ELUS	Harry Legg	West Ignaciaville	Idaho	Antarctica (the territory South of 60 deg S)	Delete	Edit
364	HEL	Helsinki-Vantaa Airport	Helsinki		Finland	Delete	Edit

We can observe that this field is empty in Elements and also in HTML:

```
▼ <tr style="background-color: #fdfdfd"> == $0  
  <th scope="row">364</th>  
  <td>HEL</td>  
  <td>Helsinki-Vantaa Airport</td>  
  <td>Helsinki</td>  
  <td></td>  
  <td>Finland</td>
```

```
<div
```

```
>
```

```

<tr style="background-color: #fdfdfd">
<th scope="row">364</th>
<td>HEL</td>
<td>Helsinki-Vantaa Airport</td>
<td>Helsinki</td>
<td></td>
<td>Finland</td>
<td><a href="/airport/delete?airportId=364">
<button class="btn btn-outline-danger btn-sm"
onclick="alert('are you sure you want to delete?')"
type="button">Delete
</button>
</a></td>
<td><a href="/airport/edit?airportId=364">
<button class="btn btn-outline-secondary btn-sm"
type="button">Edit
</button>
</a></td>
</tr>
</div>

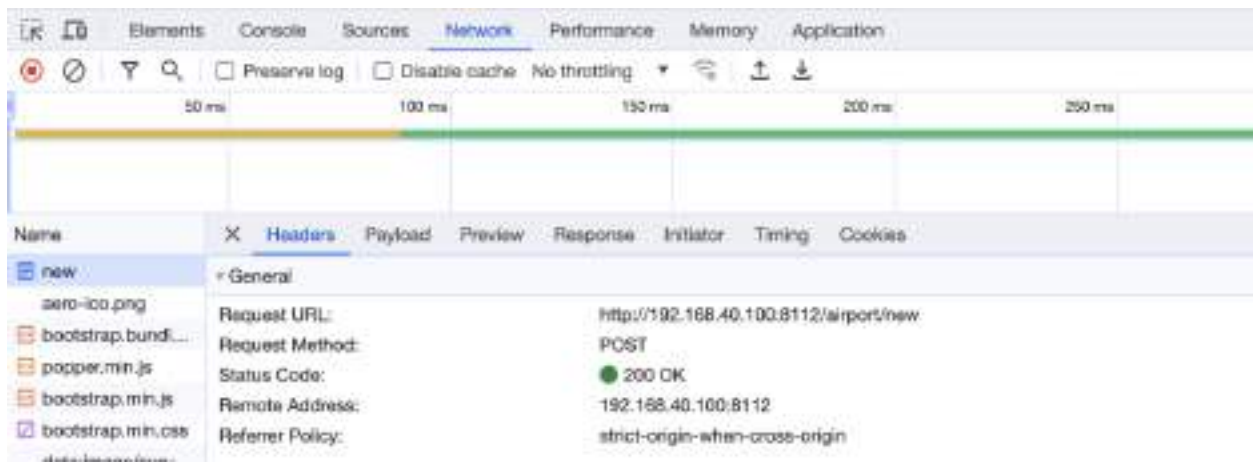
```

But it is a mandatory field, we cannot add a new airport without some data in this field:

Add New Airport

Airport code		Airport Name	
<input type="text" value="DME"/>		<input type="text" value="Domodedovo Airport"/>	
City	Region	Country	
<input type="text" value="Moscow"/>	<input type="text" value=""/>	<input type="text" value="Russia"/>	
		<div>Please fill out this field.</div> <input type="button" value="Save"/>	

In **Network tab** we see that POST worked as expected:

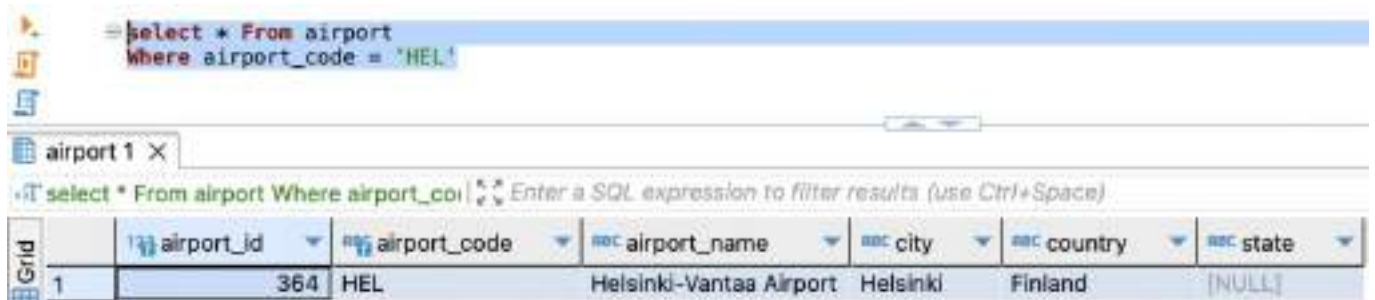


Here also we see **region** instead of **state**:



Created new airport on DB:

But field **state** is **NULL** I think because of this nonconformance described above.



Described above system's behavior (network tab) we can observe in Developer Tools and in View page source.

2. READ

I can easily find created airport on the UI:

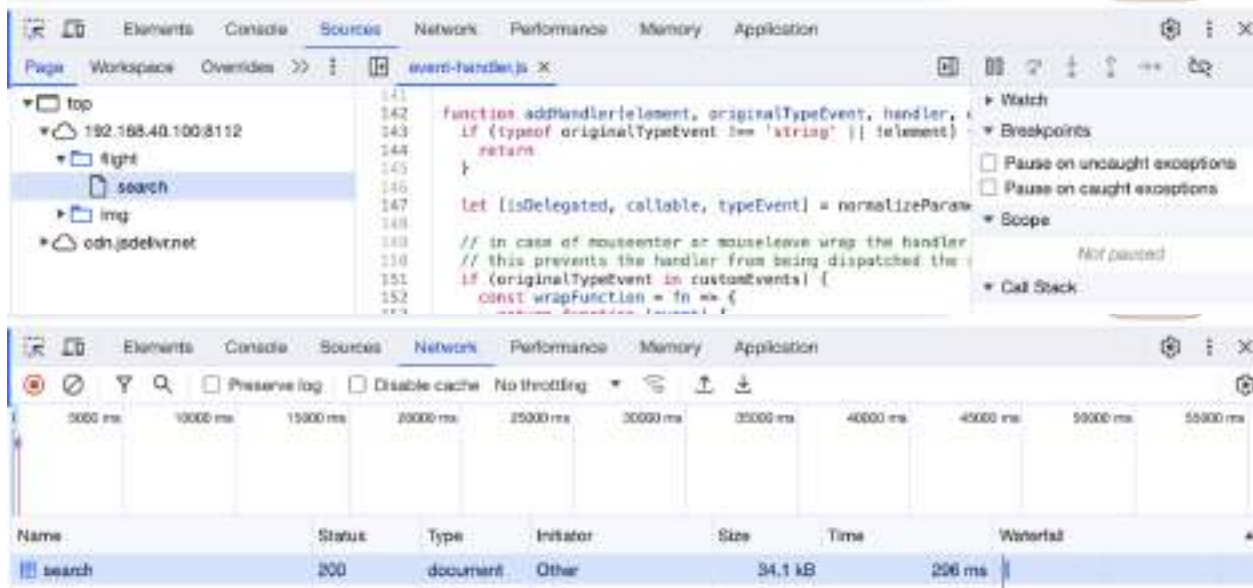
Search a Flight

From	To	Departure Time
<input type="text" value="Helsinki-Vantaa Airport"/>	<input type="text" value="Nick Ovtine"/>	<input type="text" value="dd/mm/yyyy"/>
<input type="button" value="Search"/>		

In View Source and in Elements we can observe information about method: **POST**, label class, select class, id, name:

```
<form action="/flight/search" method="post">
<label class="col-form-label"
for="departureAirport">From</label>
<select class="form-control" id="departureAirport"
name="departureAirport">
```

In this case on Developer Tools in **Sources** and **Network** there is search request:



In case of searching through Airport list (scrolling pages) gives results analogical to p.1:

3. UPDATE

Here in form names of the fields are not corrected:

Add New Airport

Airport code	Airport Name	
<input type="text" value="32fdsf325-4gd"/>	<input type="text" value="New Heathrow"/>	
<u>Polis</u>	<u>County</u>	Country
<input type="text" value="London"/>	<input type="text"/>	<input type="text" value="UK"/>
<input type="button" value="Edit"/>		

In View Source and in Elements we can observe information about method: POST,

```
<form action="/airport/edit/?airportId=136" method="post">
```

Here 1 of the them:

```
<label class="col-form-label" for="airportCode">Airport code</label>
<input class="form-control" id="airportCode" name="airportCode" placeholder="" required value="LHR" type="text">
```

In this page there is nonconformance.

Wrong name of the field (label)

```
<label class="col-form-label" for="city">Polis</label> Police instead of City.
```

We can see it in Elements and in the HTML.

Wrong name of the field (label + form-control):

```
<label class="col-form-label" for="state">County</label>
<input class="form-control" id="state" name="county" placeholder="" required="" value="" type="text"> - County instead of state.
```

The same in the Elements and in the HTML.

Header of the page should have name **Edit airport** instead of Add New Airport in my opinion.

For chosen airport (airport_id = 136) there is no airport_code on the DB (but its appear on the UI).

Grid	airport_id	airport_code	airport_name	city	country	state
1	136		New Heathrow	London	UK	

I've changed airport code and State on the UI.

We can see that **just** Airport Code changed, State is without changes on the UI:

Airports List

ID	Airport Code	Airport Name	City	State	Country	
136	LHR	New Heathrow	London		UK	Delete Edit

Add New Airport

Airport code:

Airport Name:

Polis:

County:

Country:

[Fire!](#)

It is described in p.1.

On networks there is a record about the change:

Request URL: <http://192.168.40.100:8112/airport/edit?airportId=136>

Request Method: [POST](#)

Status Code: [302 Found](#)

Remote Address: 192.168.40.100:8112

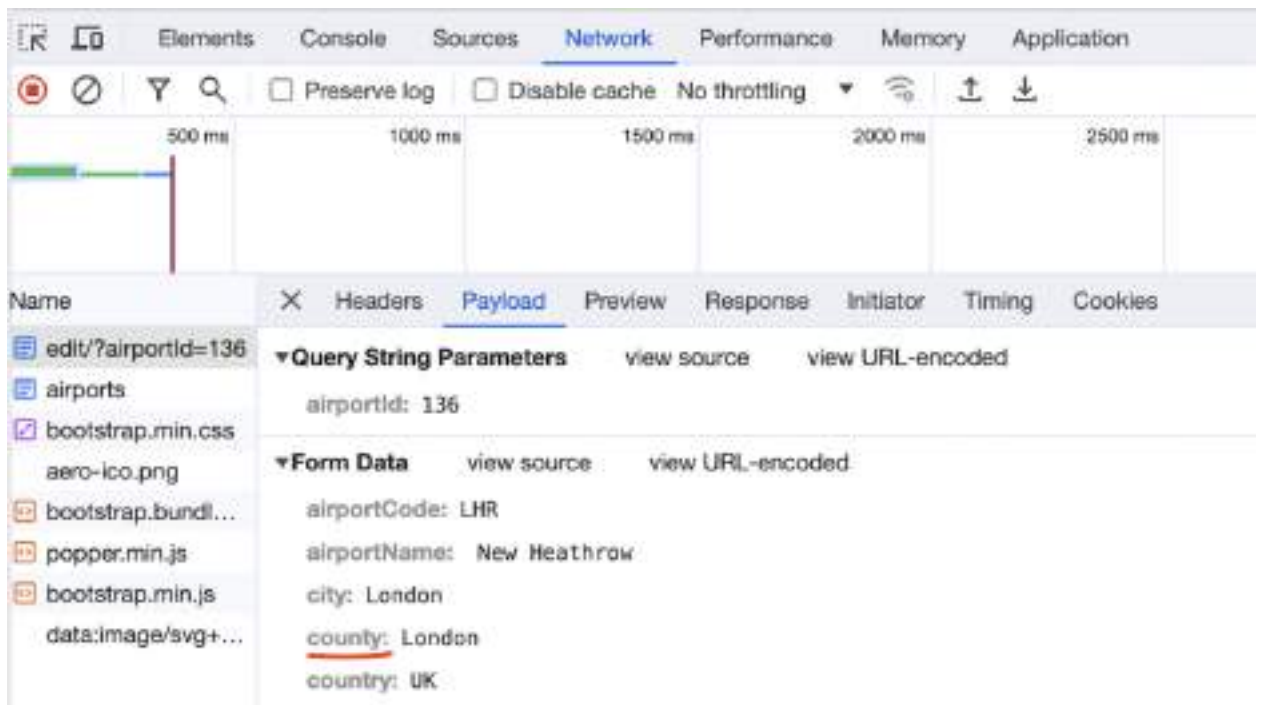
Referrer Policy: strict-origin-when-cross-origin

But on the BD changed just airport_code, state without changes (I guess similar problem as I described above in p.1):

```
select * From airport
where airport_id = 136
```

Grid	airport_id	airport_code	airport_name	city	country	state
1	136	LHR	New Heathrow	London	UK	(NULL)

Here **county** instead of state:



4. DELETE

I tried to delete `airport_id = 229`

Get the message on the page and in the Elements:

```
{
  "timestamp": "2023-12-24 18:33:56:109883473 +0000",
  "status": "400 BAD_REQUEST",
  "message": "could not execute statement; SQL [n/a]; constraint [null]; nested exception is org.hibernate.exception.ConstraintViolationException: could not execute statement",
  "details": [
    "could not execute statement; SQL [n/a]; constraint [null]; nested exception is org.hibernate.exception.ConstraintViolationException: could not execute statement",
    "could not execute statement",
    "Cannot delete or update a parent row: a foreign key constraint fails"
  ]
}
```

Console:

delete:1

GET http://192.168.40.100:8112/airport/delete?airportId=229 400 (Bad Request)

Sources:

```
{
  "timestamp": "2023-12-24 18:33:56:109883473 +0000",
  "status": "400 BAD_REQUEST",
  "message": "could not execute statement; SQL [n/a]; constraint [null]; nested exception is org.hibernate.exception.ConstraintViolationException: could not execute statement",
  "details": [
    "could not execute statement; SQL [n/a]; constraint [null]; nested exception is org.hibernate.exception.ConstraintViolationException: could not execute statement",
    "could not execute statement",
    "Cannot delete or update a parent row: a foreign key constraint fails"
  ]
}
```


Not Secure 192.168.40.100:8112/airport/delete?airportid=229

14:18:33:56:109883473

could not execute constraint [null]; nested

ConstraintViolationException: statement", "details": {element: SQL [a/a];}ed exception is ConstraintViolationException: statement", "could not execute constraint [null]; nested

Name	Status	Type	Initiator	Size	Time
delete?airportid=229	400	document	Chrome	660 B	108 ms

For airport_id = 297 there is no connection to flights.

In Elements we see refreshed Airports list page. The same in HTML.

Not Secure 192.168.40.100:8112/airport/delete?airportid=297

Uncaught TypeError: Cannot read property 'type' of undefined

normalizeParameters @ chrome-extension://efdaa171-1000-4000-9000-000000000000/js/background.js:139

139 function normalizeParameters(originalTypeEvent, handler, delegationFunction) {
140 const isDelegated = typeof handler === 'string'
141 // todo: tooltip passes 'false' instead of selector, so we need to check
142 const callable = isDelegated ? delegationFunction : (handler || delegationFunction)
143 let typeEvent = getTypeEvent(originalTypeEvent)
144
145 if (!nativeEvents.has(typeEvent)) {
146 typeEvent = originalTypeEvent
147 }
148
149 return [isDelegated, callable, typeEvent]
150 }
151

The screenshot shows the browser's developer tools with the 'Network' tab selected. A request to `192.168.40.100:8112/airport/delete?airportid=297` is highlighted. The 'Headers' sub-tab is active, showing the following details:

- Name:** delete/airportid=...
- Request URL:** http://192.168.40.100:8112/airport/delete?airportid=297
- Request Method:** GET
- Status Code:** 200 OK
- Remote Address:** 192.168.40.100:8112
- Referrer Policy:** strict-origin-when-cross-origin

The airport deleted from the UI, and from the DB.

- **What sources are used to form the page? Scripts, images, other?**
To form the **Airports list** page, **Add airport** page, Edit airport or Delete airport used:

Image (png): [aero-ico.png](#)

Scripts:

<https://cdn.jsdelivr.net/npm/bootstrap@5.2.1/dist/js/bootstrap.bundle.min.js>

<https://cdn.jsdelivr.net/npm/@popperjs/core@2.11.6/dist/umd/popper.min.js>

<https://cdn.jsdelivr.net/npm/bootstrap@5.2.1/dist/js/bootstrap.min.js>

stylesheet: <https://cdn.jsdelivr.net/npm/bootstrap@5.2.1/dist/css/bootstrap.min.css>

svg + xml: `data:image/svg+xml,%3csvg xmlns='http://www.w3.org/2000/svg' viewBox='0 0 30 30'%3e%3cpath stroke='rgba%28255, 255, 255, 0.55%29' stroke-linecap='round' stroke-miterlimit='10' stroke-width='2' d='M4 7h22M4 15h22M4 23h22'/%3e%3c/svg%3e`

The difference is - document (airports-page, new, edit or delete).

- **Are there any requests going from WebUI to the server?**

API requests:

GET /login – open form login

GET /airport/new – open form for adding a new airport.

GET /airport/edit/{airportId} – open form for editing an airport.

GET /airports – open 1st page of Airport list .

GET /airports{pageNo} - open specified page of Airport list.

GET /airport/delete/{airportId} – delete airport.

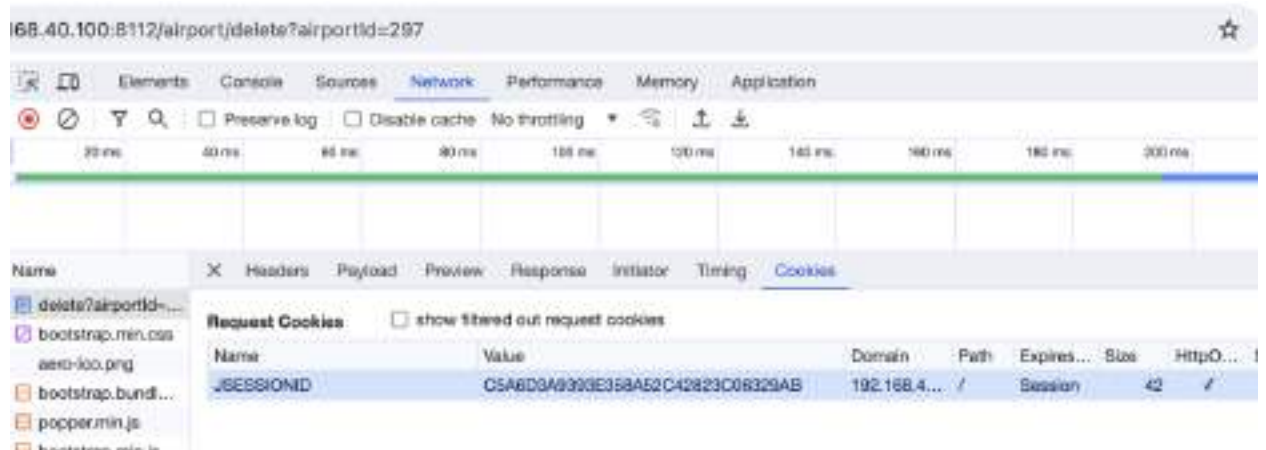
POST /login – entering in a system.

POST /airport/new - adding a new airport to DB.

POST /airport/edit/{airportId} – changing an airport in DB.

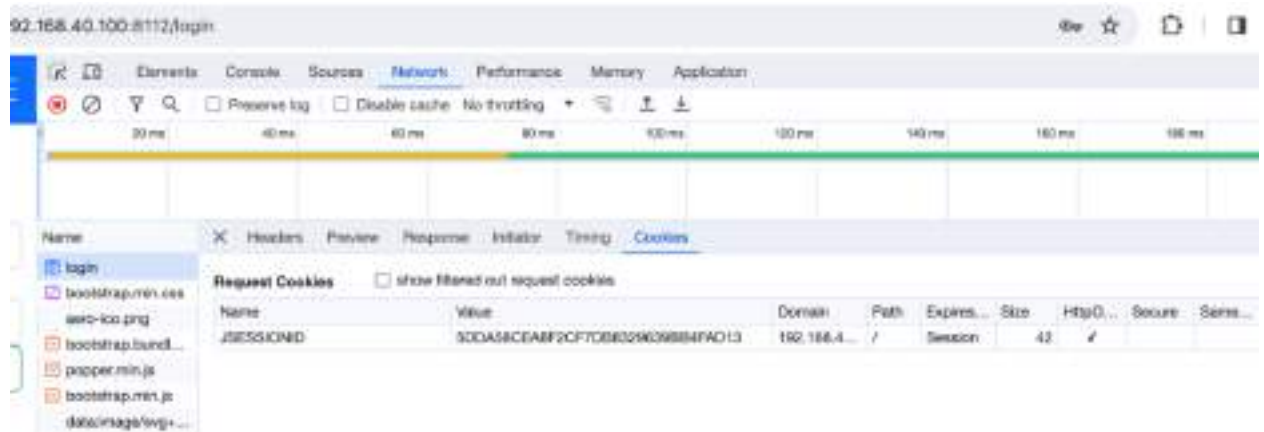
- **Clear browser data (cash and cookies). What has been changed?**

Data before clearing:

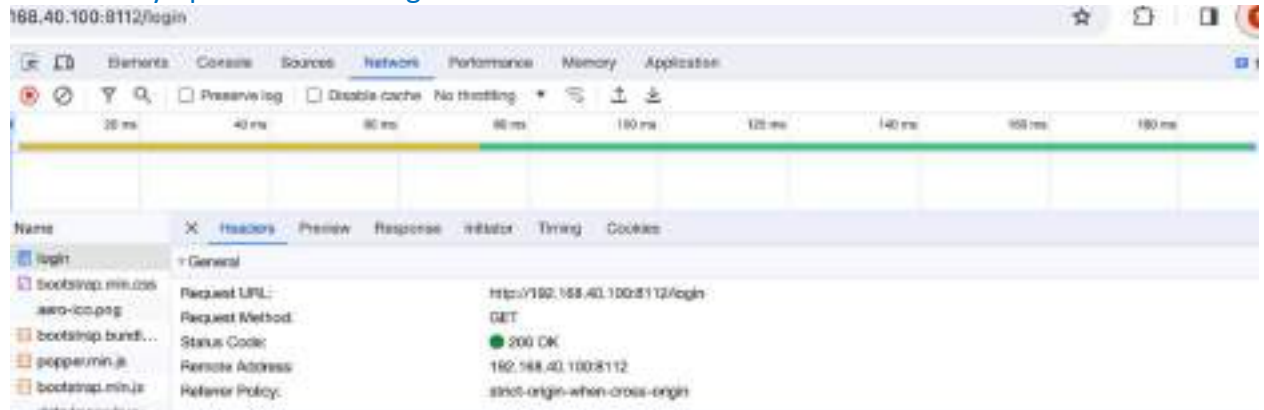


After clearing browser data the user logged out. Login form appeared.

After starting entering login changed cookies value:



Successfully opened form of login:

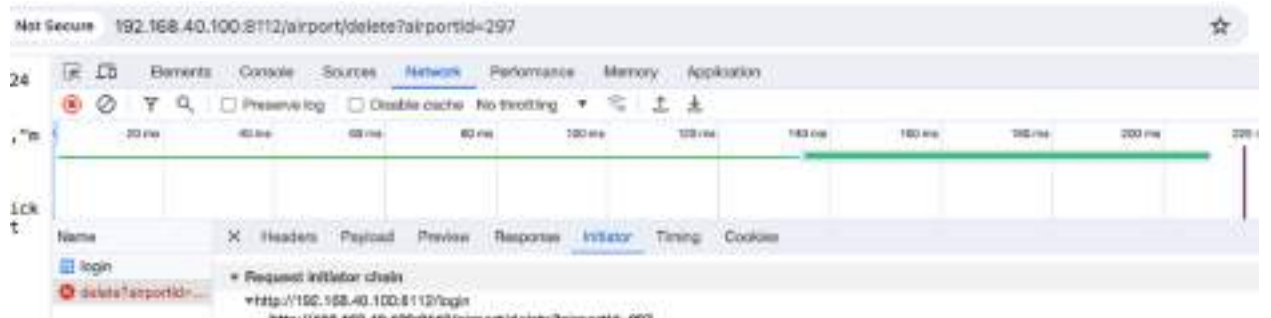


After entering in a system opened the last page from where I've initiated a clearing site data (successfully deleted airport_id = 297) with the error:

delete:1

GET http://192.168.40.100:8112/airport/delete?airportId=297 500 (Internal Server Error),

we can see here that the initiator – login.

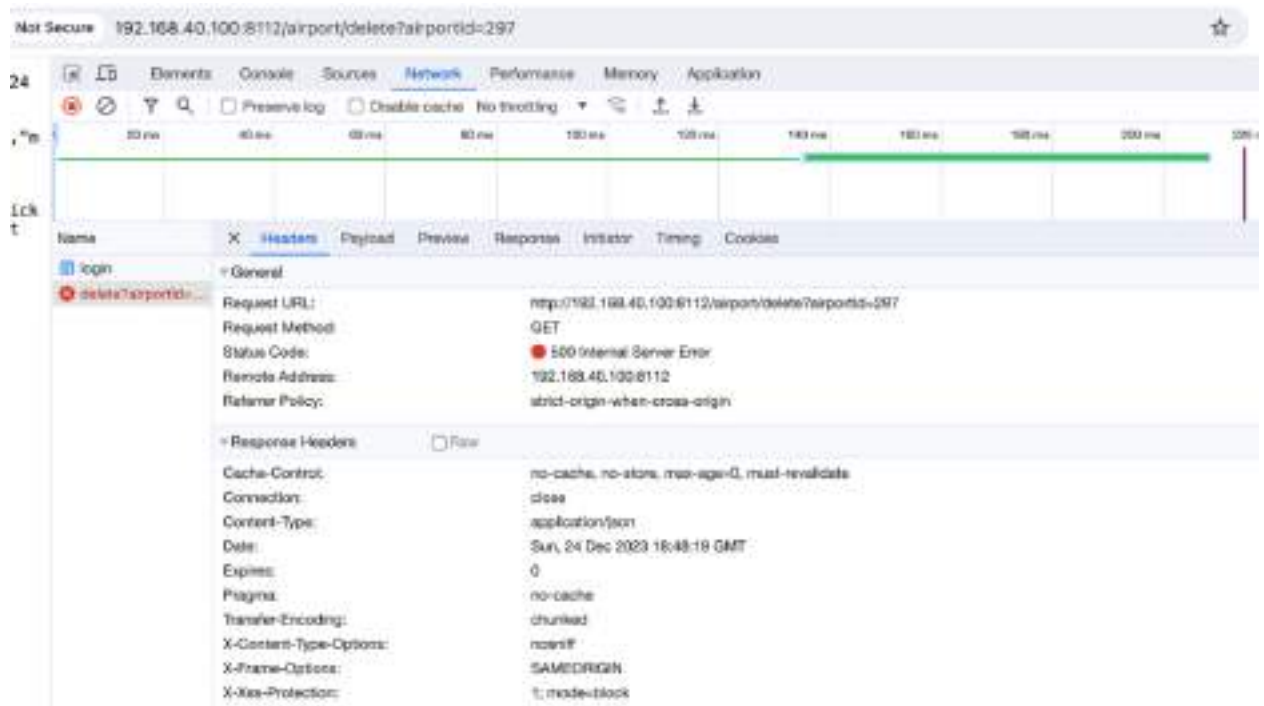


Preview:

```
{timestamp: "2023-12-24 18:48:19:627606066 +0000", status: "500
INTERNAL_SERVER_ERROR",...}
  details: ["No class com.aerotravel.flightticketbooking.model.Airport entity with id
297 exists!"]
  message: "Server Error"
  status: "500 INTERNAL_SERVER_ERROR"
  timestamp: "2023-12-24 18:48:19:627606066 +0000"
```

Response:

```
{
  "timestamp": "2023-12-24 18:48:19:627606066 +0000",
  "status": "500 INTERNAL_SERVER_ERROR",
  "message": "Server Error",
  "details": [
    "No class com.aerotravel.flightticketbooking.model.Airport entity with id 297 exists!"
  ]
}
```



- What errors do you see in the Console tab when running the scenarios?
What are they about?

In the Console tab I saw 2 errors:

1. **400 (Bad Request)** – when tried to delete an airport - according to DB and the UI there is flight from that airport. It is a correct system behavior.

For example:

```
"status": "400 BAD_REQUEST",
"message": "could not execute statement; SQL [n/a]; constraint [null]; nested exception is org.hibernate.exception.ConstraintViolationException: could not execute statement",
"details": [
  "could not execute statement; SQL [n/a]; constraint [null]; nested exception is org.hibernate.exception.ConstraintViolationException: could not execute statement",
  "could not execute statement",
  "Cannot delete or update a parent row: a foreign key constraint fails"
```



2. **500 (Internal Server Error)** – after entering in a system after clearing cash and cookies: (described above). Some Internal Server Error.

For example:



***Grab the traffic using a proxy server. Describe what did you and did you found any issues.**

Met hod	URL	Domain	Response Size	Comment
POST	http://192.168.40.100:8112/login	192.168.40.100	21:54:29.709	entering in a system
GET	http://192.168.40.100:8112/	192.168.40.100	21:54:29.851	open main page
GET	http://192.168.40.100:8112/airports	192.168.40.100	21:54:35.547	open 1 st page of Airport list
GET	http://192.168.40.100:8112/airport/new	192.168.40.100	21:54:37.048	open form for adding a new airport
POST	http://192.168.40.100:8112/airport/new	192.168.40.100	21:54:52.927	adding a new airport to DB
GET	http://192.168.40.100:8112/airports?pageNo=19	192.168.40.100	21:54:58.913	open 19 page of Airport list
GET	http://192.168.40.100:8112/airports?pageNo=21	192.168.40.100	21:55:01.212	open 21 page of Airport list
GET	http://192.168.40.100:8112/airport/edit?airportId=52	192.168.40.100	21:55:04.289	open form for editing an airport, airport_id=52
POST	http://192.168.40.100:8112/airport/edit?airportId=52	192.168.40.100	21:55:13.753	changing an airport in DB, airport_id=52
GET	http://192.168.40.100:8112/airports	192.168.40.100	21:55:13.883	open 1 st page of Airport list
GET	http://192.168.40.100:8112/airport/delete?airportId=251	192.168.40.100	21:55:20.034	delete airport, airport_id=251 (unsuccessful) here I expected to get some info about it, but get just this information
GET	http://192.168.40.100:8112/airports	192.168.40.100	21:55:22.294	open 1 st page of Airport list
GET	http://192.168.40.100:8112/airports?pageNo=22	192.168.40.100	21:55:24.446	open 22 page of Airport list
GET	http://192.168.40.100:8112/airport/delete?airportId=85	192.168.40.100	21:55:28.263	delete airport, airport_id=85 (unsuccessful) here I expected to get some info

				<i>about it, but get just this information</i>
GET	http://192.168.40.100:8112/airports?pageNo=22	192.168.40.100	21:55:29.898	open 22 page of Airport list
GET	http://192.168.40.100:8112/airports?pageNo=30	192.168.40.100	21:55:33.730	open 30 page of Airport list
GET	http://192.168.40.100:8112/airport/delete?airportId=69	192.168.40.100	21:55:36.838	delete airport, airport_id=69 <i>(unsuccessful) here I expected to get some info about it, but get just this information</i>
GET	http://192.168.40.100:8112/airports?pageNo=30	192.168.40.100	21:55:38.478	open 30 page of Airport list
GET	http://192.168.40.100:8112/airports?pageNo=34	192.168.40.100	21:55:42.597	open 34 page of Airport list
GET	http://192.168.40.100:8112/airport/delete?airportId=272	192.168.40.100	21:55:50.440	delete airport, airport_id=272 <i>(successful) here I expected to get some info about it, but get just this information</i>