

Lappeenrannan teknillinen yliopisto
School of Technology

Software Development Skills

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LEARNING DIARY

Software Development Skills: Full-Stack MODULE

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LEARNING DIARY

15.05.2025

I enrolled in the course

Environment Setup.

Installing and connecting applications.

16.05.2025

1 NODEJS PART

Video:

[“Node.js Crash Course”](#)

Content:

Node.js as an open-source JavaScript runtime.

Usage, advantages.

How Node.js Works.

Making project `nodejs-crash-2024`, files in repo.

2 MONGODB PART

Video:

[“MongoDB Crash Course 2022”](#)

Content:

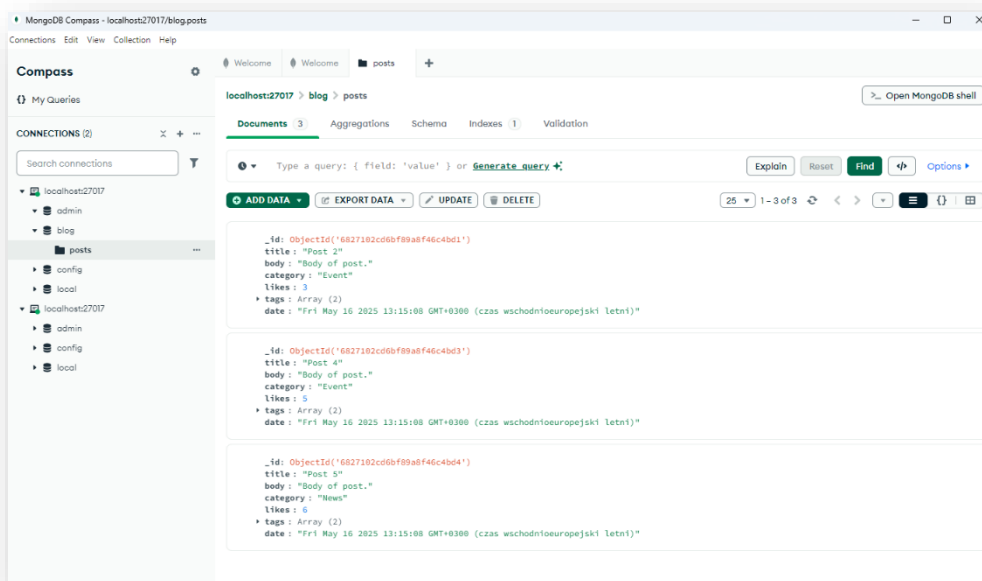
MongoDB as NoSQL (NotOnly SQL) – document database JSON.

Schema comparison and structure, scaling.

The importance and operation of the program.

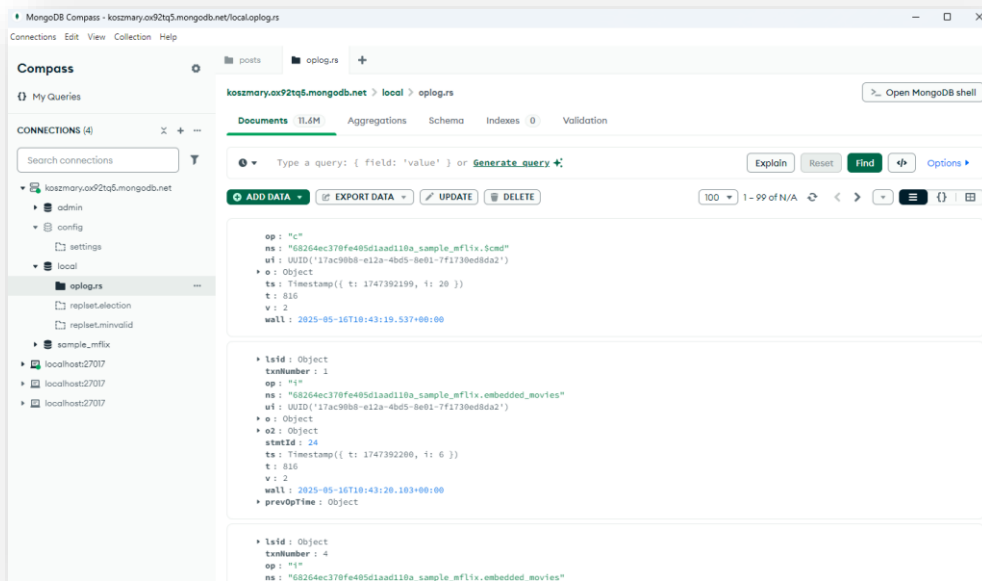
I started working with MongoDB and added text file in repo.

Everything worked and here are results after using cmd:

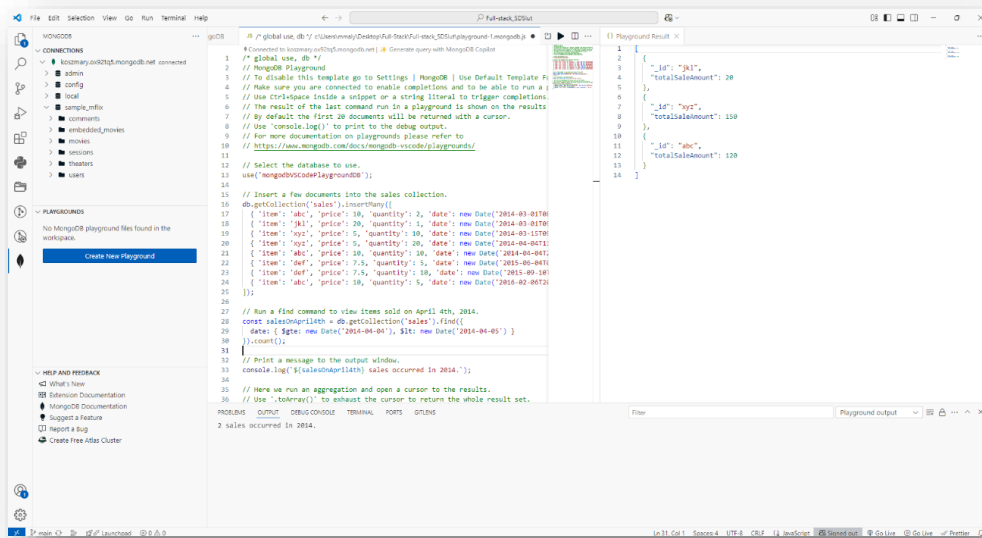


```
blog> db.posts.find()
[
  {
    _id: ObjectId('6827102cd6bf89a8f46c4bd1'),
    title: 'Post 2',
    body: 'Body of post.',
    category: 'Event',
    likes: 3,
    tags: [ 'news', 'events' ],
    date: 'Fri May 16 2025 13:15:08 GMT+0300 (czas wschodnioeuropejski letni)'
  },
  {
    _id: ObjectId('6827102cd6bf89a8f46c4bd3'),
    title: 'Post 4',
    body: 'Body of post.',
    category: 'Event',
    likes: 5,
    tags: [ 'news', 'events' ],
    date: 'Fri May 16 2025 13:15:08 GMT+0300 (czas wschodnioeuropejski letni)'
  },
  {
    _id: ObjectId('6827102cd6bf89a8f46c4bd4'),
    title: 'Post 5',
    body: 'Body of post.',
    category: 'News',
    likes: 6,
    tags: [ 'news', 'events' ],
    date: 'Fri May 16 2025 13:15:08 GMT+0300 (czas wschodnioeuropejski letni)'
  }
]
blog> |
```

Added new database with sample data:



Database in VS:



MongoDB

Username: admin

Password: admin

```
mongosh "mongodb+srv://koszmary.ox92tq5.mongodb.net/" --apiVersion 1 --username admin
```

17.05.2025

3 EXPRESS PART

Video:

[“Express Crash Course”](#)

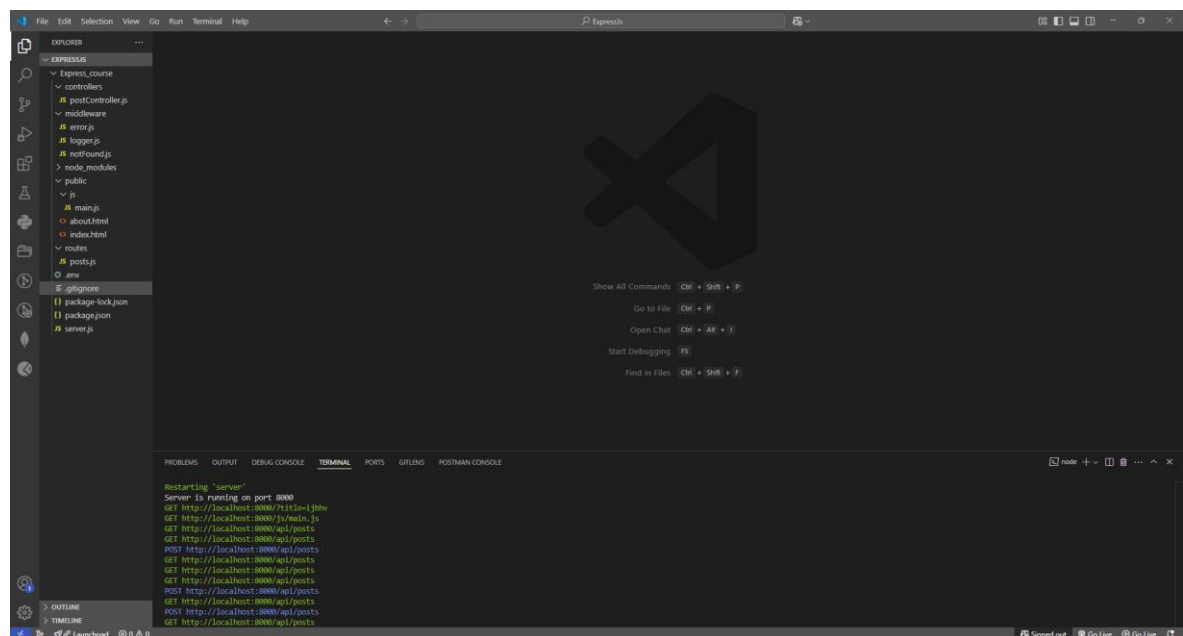
Content:

Express as framework for Node.js.

Usage, importance.

Opinionated vs Unopinionated framework.

Making project, files in repo.



Everything is working properly.

Working localhost:
Get Post

Posts

Title:

Add Post

Get Posts

Post One

Post Two

Post Three

Add Post “Maria”

Posts

Title:

Maria

Add Post

Get Posts

Post One

Post Two

Post Three

Maria

Maria

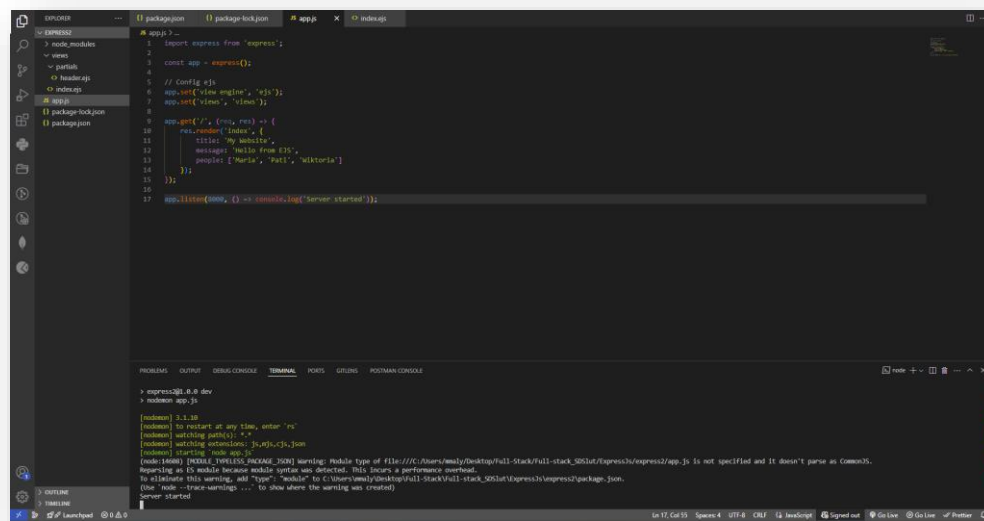
Maria

Maria

Maria

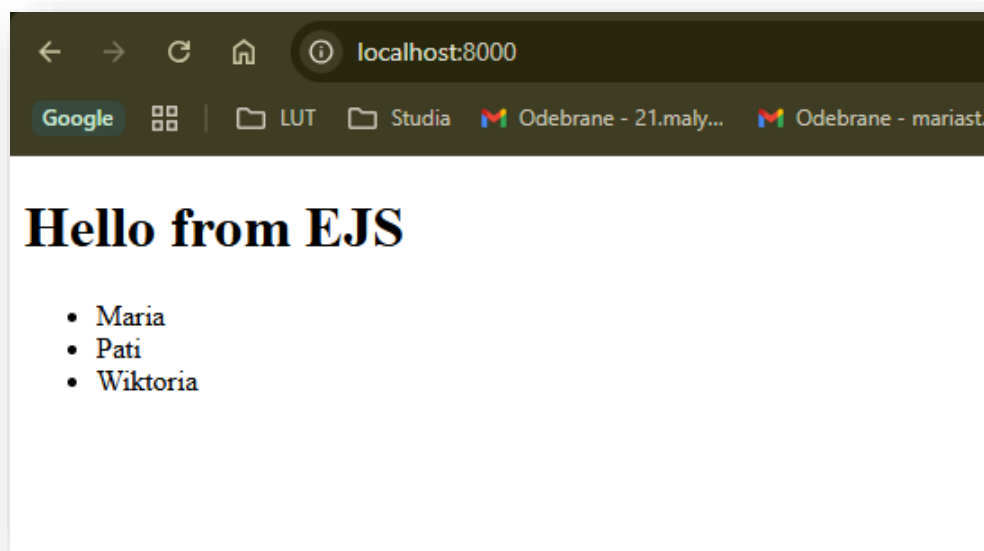
Maria

EJS part:



```
1 import express from 'express';
2
3 const app = express();
4
5 // Config ejs
6 app.set('view engine', 'ejs');
7 app.set('views', 'views');
8
9 app.get('/', (req, res) => {
10   res.render('index', {
11     title: 'My website',
12     message: 'Hello from EJS',
13     people: ['Maria', 'Pati', 'Wiktorja']
14   });
15 });
16
17 app.listen(3000, () => console.log('Server started'));
```

```
> express@0.0.0 dev
> nodemon app.js
[nodemon] 2.1.10
[nodemon] to restart at any time, enter 'rs'
[nodemon] watching path(s): *.*
[nodemon] watching extensions: js,mjs,cjs,json
[nodemon] starting 'node app.js'
node [warn] DEPRECATED PACKAGE_JSON Warning: Module type of file:///C:/Users/maly/Desktop/full-stack/full-stack_SSOat/express/app.js is not specified and it doesn't parse as CommonJS.
Requiring as ES module because module syntax was detected. This incurs a performance overhead.
To eliminate this warning, add "type": "module" to C:\Users\maly\Desktop\full-stack\full-stack_SSOat\express\package.json.
(Use 'node --trace-warnings ...' to show where the warning was created)
Server started
```



4 REACT PART

18.05.2025

Project: <https://react.dev/learn>

Content:

Using components, markup and styles.

Data display and share, conditions and lists.

Video: “[React JS Crash Course](#)”

React as a library for building user interfaces – front end framework.

Importance , usage.

Components.

Working with State

Working project:

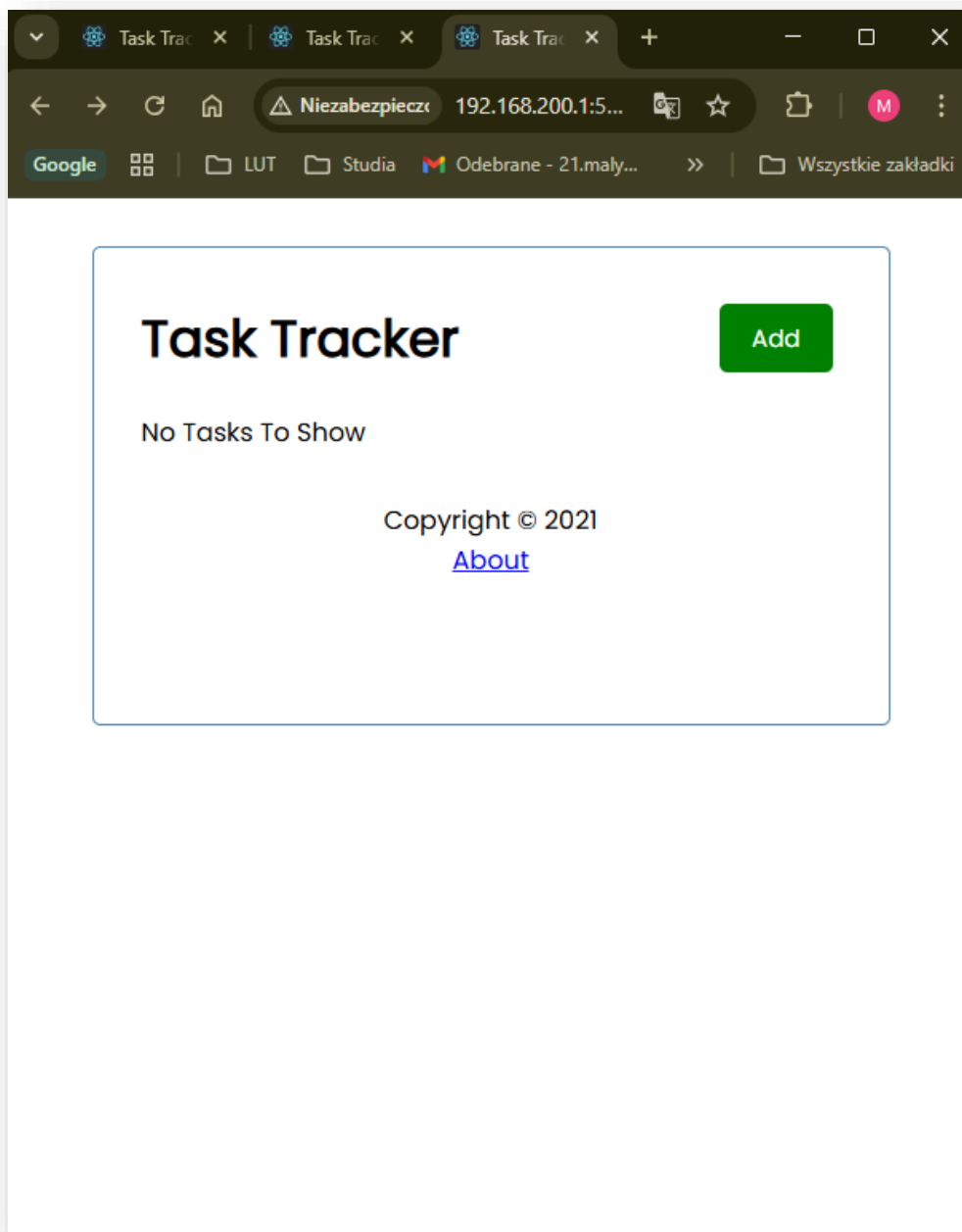
```
C:\Users\mmaly\Desktop\Full-Stack\Full-stack_SDSlut\React\react-task-tracker>serve -s build

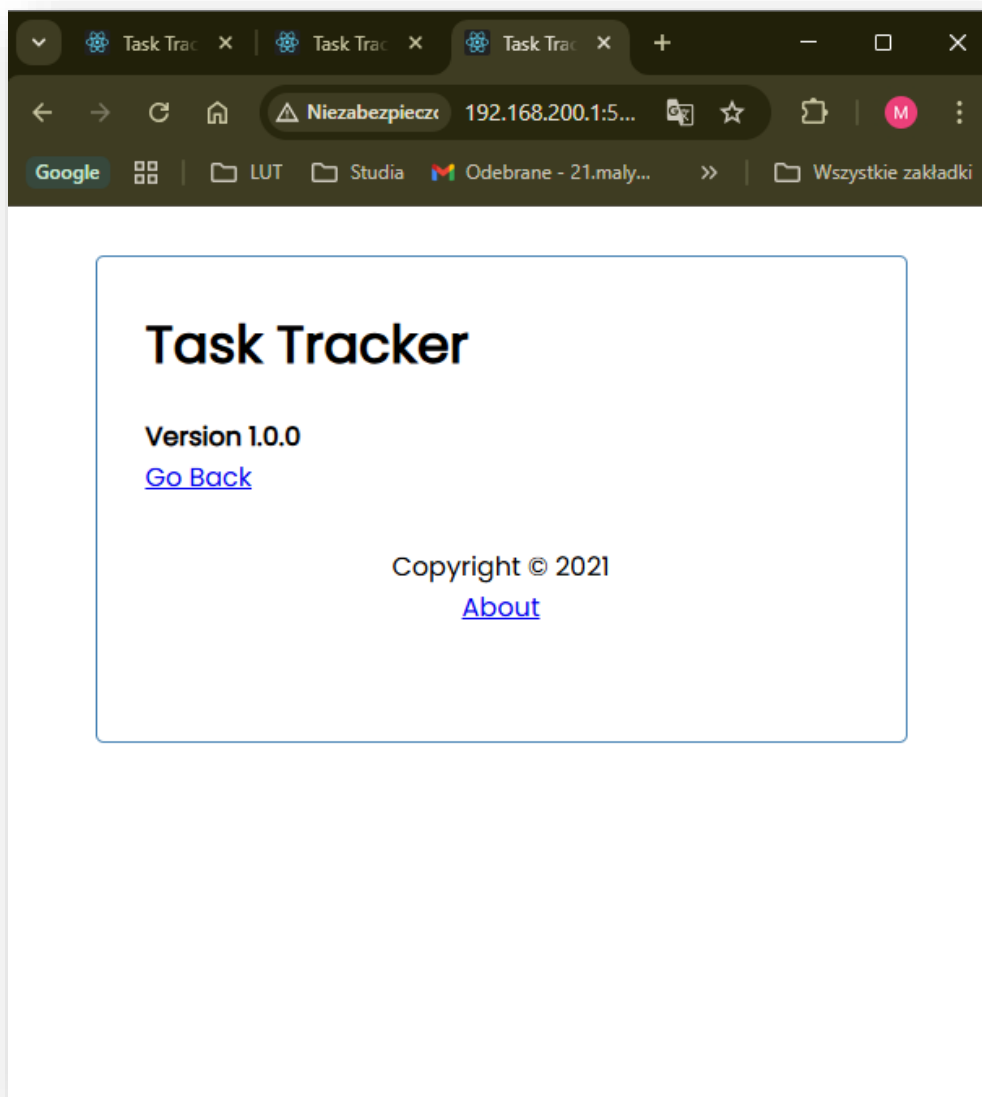
  Serving!

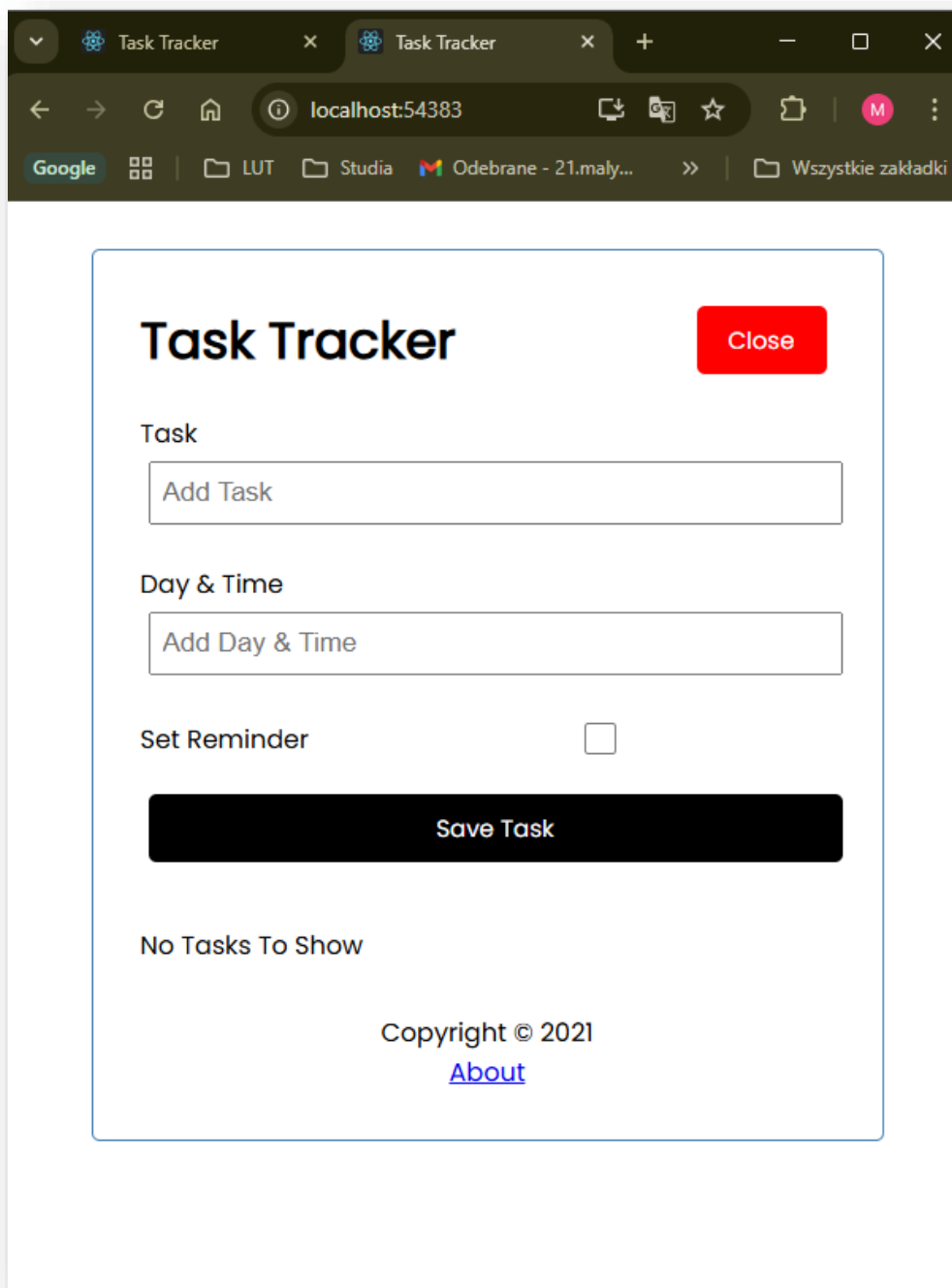
  - Local:    http://localhost:3000
  - Network:  http://192.168.200.1:3000

  Copied local address to clipboard!

HTTP 17.05.2025 18:21:56 ::1 GET /
HTTP 17.05.2025 18:21:56 ::1 Returned 200 in 18 ms
HTTP 17.05.2025 18:21:56 ::1 GET /static/js/main.d6e62091.js
HTTP 17.05.2025 18:21:56 ::1 GET /static/css/main.4c567228.css
HTTP 17.05.2025 18:21:56 ::1 Returned 200 in 5 ms
HTTP 17.05.2025 18:21:56 ::1 Returned 200 in 9 ms
HTTP 17.05.2025 18:21:56 ::1 GET /manifest.json
HTTP 17.05.2025 18:21:56 ::1 GET /favicon.ico
HTTP 17.05.2025 18:21:56 ::1 Returned 200 in 5 ms
HTTP 17.05.2025 18:21:56 ::1 Returned 200 in 4 ms
```







5 MERN STACK

19.05.2025

Course work from [playlist](#)

```
PROBLEMS  OUTPUT  DEBUG CONSOLE  TERMINAL  PORTS  GITLENS  POSTMAN CONSOLE

Compiled successfully!

You can now view frontend in the browser.

  Local:            http://localhost:3000
  On Your Network:  http://192.168.200.1:3000

Note that the development build is not optimized.
To create a production build, use npm run build.

webpack compiled successfully
█
```

```
C:\Users\mmaly\Desktop\Full-Stack\Full-stack_SDSlut\MernStack\mern-tutorial\frontend>n
pm run build

> frontend@0.1.0 build
> react-scripts build

Creating an optimized production build...
Compiled successfully.

File sizes after gzip:

  80.91 kB  build\static\js\main.8178a1b7.js
  2.96 kB   build\static\css\main.5f0bdb62.css

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  serve -s build

Find out more about deployment here:

  https://cra.link/deployment
```

```
(node:11068) [MONGODB DRIVER] Warning: useNewUrlParser is a deprecated option: useNewUrlParser has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version
(Use `node --trace-warnings ...` to show where the warning was created)
(node:11068) [MONGODB DRIVER] Warning: useUnifiedTopology is a deprecated option: useUnifiedTopology has no effect since Node.js Driver version 4.0.0 and will be removed in the next major version
Server started on port 5000
MongoDB Connected: ac-7xhkmu-shard-00-01.spcnpip.mongodb.net
```

GoalSetter

[Login](#) [Register](#)

➡ Login

Login and start setting goals

Submit

6 MY PROJECT

I created the application as a simple and interactive platform for practicing basic mathematical operations. Its main goal is to enable users – especially children or people who want to improve their mathematical foundations – to practice adding, subtracting, multiplying and dividing on a daily basis.

I wanted the application to be quick, intuitive and motivating to use, which is why I introduced features such as:

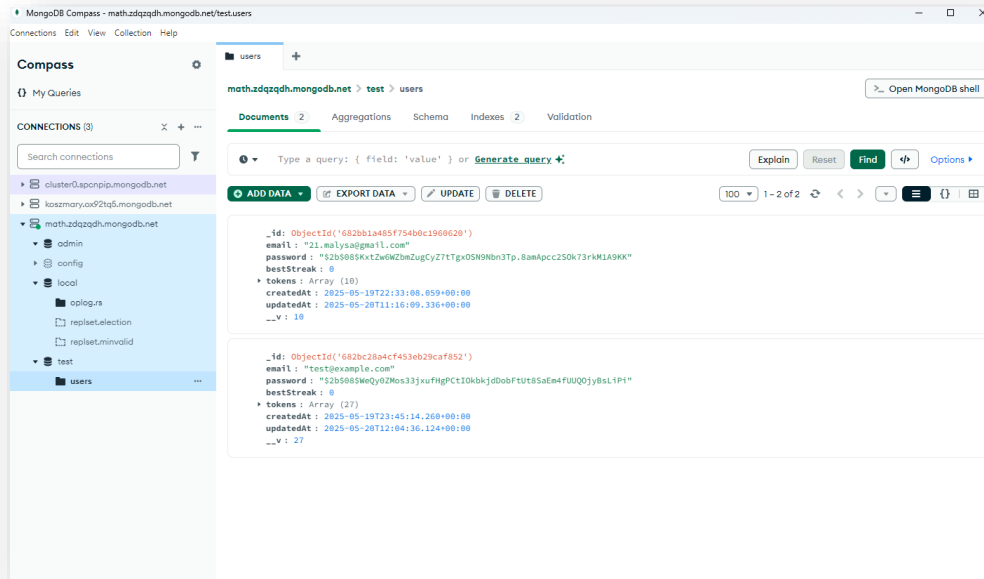
- ❖ counting the result and the current series of correct answers (streak),
- ❖ a system of messages informing about the correctness of the answer,
- ❖ a simple and clear interface.

I used a modular approach – each component has its own responsibility. Thanks to the backend with JWT authorization, you can log in and track your progress.

My goal was to create something that could be expanded – e.g. with new game modes, ranking, daily challenges, achievements or integration with a teacher account.

Working backend:

MongoDB compass:



Register

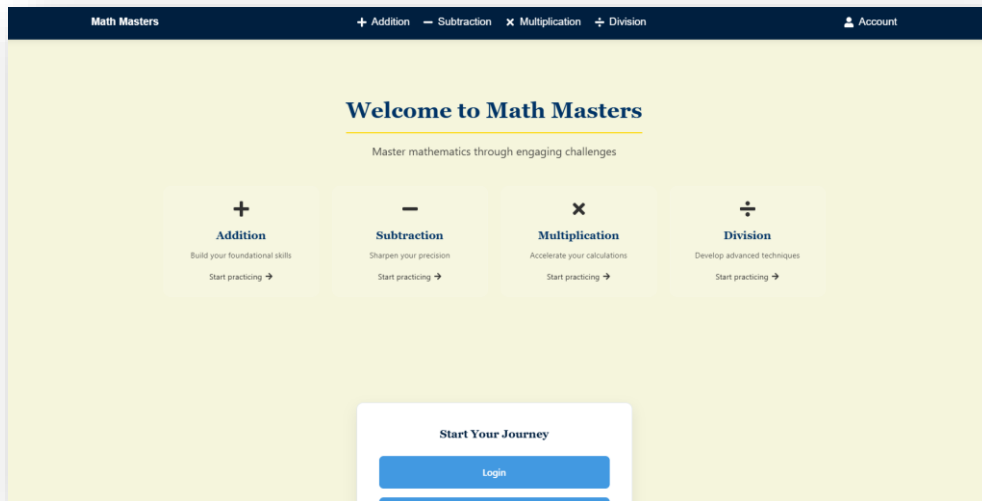
```
C:\Users\mmaly\Desktop\Full-Stack\Full-stack_SDSlut\Project\MathMasters\backend>curl -X POST http://localhost:5000/api/auth/register -H "Content-Type: application/json" -d '{"email":"test@example.com","password":"test123"}'
{"user":{"email":"test@example.com","password":"$2b$08$WeQy0ZMos33jxuFHgPctIOkbbjdDobFtUt8SaEm4fUUQ0jyBsLiPi","bestStreak":0,"_id":"682bc28a4cf453eb29caf852","tokens":["token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJfcm9udGkiOiI2ODJiYzI4YTRjZjQ1M2ViMjI0NTIiLCJpYXQiOiJlZ3NDc2OTgzMTR9.NwiZL9sS1Y-ubHu70KFwMNd5Yq3pzIUfK-oReUC40Y","_id":"682bc28a4cf453eb29caf852"}],"createdAt":"2025-05-19T23:45:14.260Z","updatedAt":"2025-05-19T23:45:14.330Z","__v":1},"token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJfcm9udGkiOiI2ODJiYzI4YTRjZjQ1M2ViMjI0NTIiLCJpYXQiOiJlZ3NDc2OTgzMTR9.NwiZL9sS1Y-ubHu70KFwMNd5Yq3pzIUfK-oReUC40Y"}
```

Login

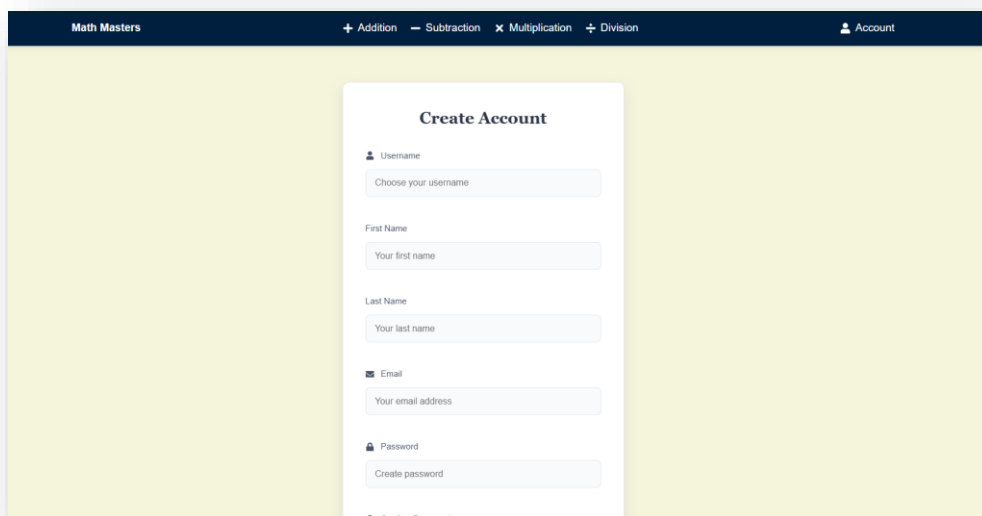
```
C:\Users\mmaly\Desktop\Full-Stack\Full-stack_SDSlut\Project\MathMasters\backend>curl -X POST http://localhost:5000/api/auth/login -H "Content-Type: application/json" -d '{"email":"test@example.com","password":"test123"}'
{"user":{"_id":"682bc28a4cf453eb29caf852","email":"test@example.com","bestStreak":0,"token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJfcm9udGkiOiI2ODJiYzI4YTRjZjQ1M2ViMjI0NTIiLCJpYXQiOiJlZ3NDc2OTgzOTJ9.m6N6u1lb82rYPDTqEcA-BPrll1lbaEbsBk2VBeO0fo"},"token":"eyJhbGciOiJIUzI1NiIsInR5cCI6IkpXVCJ9.eyJfcm9udGkiOiI2ODJiYzI4YTRjZjQ1M2ViMjI0NTIiLCJpYXQiOiJlZ3NDc2OTgzOTJ9.m6N6u1lb82rYPDTqEcA-BPrll1lbaEbsBk2VBeO0fo"}
```


Frontend:

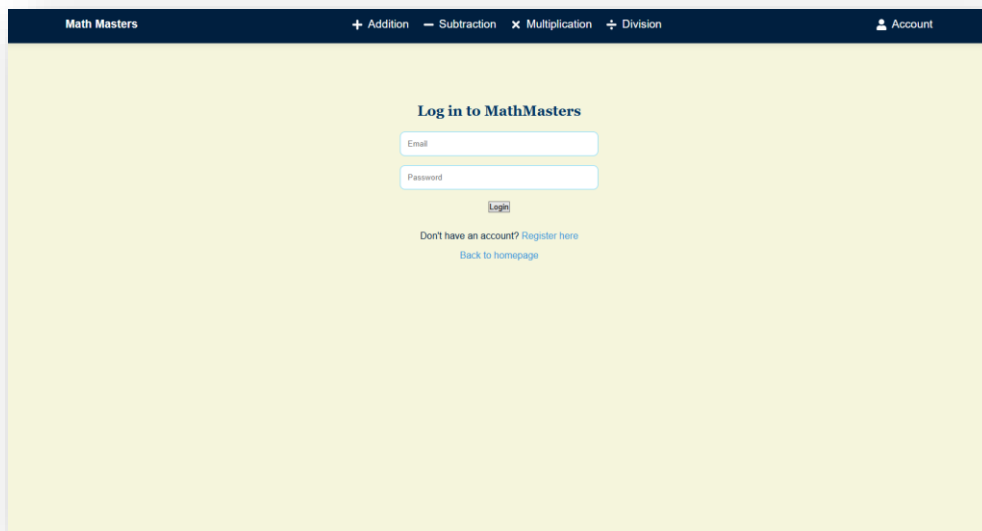
Home page



Register page



Login page



The screenshot shows the login page of the MathMasters application. The header is dark blue with the text 'Math Masters' on the left and navigation links '+ Addition', '- Subtraction', 'x Multiplication', and '÷ Division' in the center. On the right is an 'Account' link with a user icon. The main content area is light yellow and contains a 'Log in to MathMasters' section. This section has two input fields for 'Email' and 'Password', followed by a 'Login' button. Below the button are links for 'Register here' and 'Back to homepage'.

Math Masters + Addition - Subtraction x Multiplication ÷ Division Account

Log in to MathMasters

Email

Password

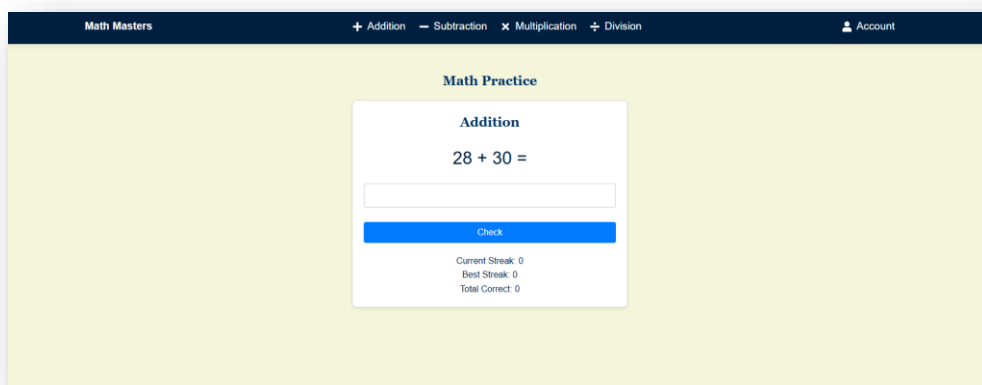
Login

Don't have an account? [Register here](#)

[Back to homepage](#)

Example credentials:
Email: test@example.com
Password: test123

Practice page



The screenshot shows the practice page of the MathMasters application. The header is identical to the login page. The main content area is light yellow and features a 'Math Practice' section. This section is titled 'Addition' and displays the problem '28 + 30 ='. Below the problem is an input field for the answer, a blue 'Check' button, and a statistics box showing 'Current Streak: 0', 'Best Streak: 0', and 'Total Correct: 0'.

Math Masters + Addition - Subtraction x Multiplication ÷ Division Account

Math Practice

Addition

28 + 30 =

Check

Current Streak: 0
Best Streak: 0
Total Correct: 0

Math Masters

+ Addition

- Subtraction

x Multiplication

÷ Division

Account

Math Practice

Subtraction

16 - 6 =

Check

Current Streak: 0
Best Streak: 0
Total Correct: 0

Math Masters

+ Addition

- Subtraction

x Multiplication

÷ Division

Account

Math Practice

Multiplication

6 × 11 =

Check

Current Streak: 0
Best Streak: 0
Total Correct: 0

Math Masters

+ Addition

- Subtraction

x Multiplication

÷ Division

Account

Math Practice

Division

50 ÷ 10 =

Check

Current Streak: 0
Best Streak: 0
Total Correct: 0

Math Practice

Division

$$50 \div 10 =$$

Check

Correct! 🎉

Current Streak: 1

Best Streak: 0

Total Correct: 1

Math Practice

Division

$$30 \div 5 =$$

Check

Incorrect. The answer was 6

Current Streak: 0

Best Streak: 0

Total Correct: 1

Video of my project running:

<https://youtu.be/T7u3N2qqn2o>