

Modern Javascript development

<i>Duration</i>	8 weeks
<i>Number of students (group size)</i>	16 groups of 1 to 3 students
<i>Can be done multiple times</i>	yes
<i>Availability</i>	1st & 2nd semester
<i>Difficulty</i>	Beginner

Description

Get started with learning Javascript by building a chat app

At the end of the module you should:

- Know a bit of NodeJS (Promises, async/await, events, streams)
- Know a bit of React (State management, routing, api call, local storage)
- Know a package manager (yarn / npm)
- Know socket.io
- Know what a message broker is (rabbitmq / redis)
- Know what a cache is (redis)
- Know what a REST API is
- Have worked with a NoSQL database (mongo)
- Know how to test an application (using jest, cypress and Gherkin)

Project

For this project, you will have to recreate a web chat app using javascript.

One may register and authenticate in the app.

One may create a chat room and invite one or many "friends" to that chat room (either at creation, via search or via email)

One may send messages to a room, said message being received "immediately" by other room members. If a member is disconnected messages will be fetched at the member next connection.

Your application must work at scale, that is, several instances of the server will exist.

Your application must be fully tested and respect Clean Architecture and SOLID principles.

User stories

As a user, I want to register

When I first open to the app, I land on the `login page`, which contains a `Sign up` button.

When I click on it, I am redirected to the `Recover` page. If I filled the `Username` page in the login page before clicking:

- The email field of the register page will contain the `Username` value if it contains an arobase
- The username field of the register page will contain the `Username` value if it does not contains an arobase

If any field is missing, it is errored (borders set to red) with a message stating this field is required.

If the username already exists, the message placeholder is filled with "It seems this account already exists. Do you want to recover your password?" (The latest being a link to the `Recover` page, which if clicked will have the username pre-filed with the email that was set).

If the email already exists, the message placeholder is filled with "It seems this account already exists. Do you want to recover your password?" (The latest being a link to the `Recover` page, which if clicked will have the username pre-filed with the email that was set).

An email will also be sent to the email address with a message stating that someone tried to access the account, and if it was him, he can just click the provided recover link; if not, he better contact the support.

If the registration was successful, the user will be prompted with the "A confirmation email has been sent. Please click on the link in it to confirm your account", and an email is sent to the user with a confirmation link. Said confirmation link has a 24h lifespan.

As a user, I cannot connect if I have not confirmed my account

When I open the app, I land on the login page. If I have already initiated the registration flow, and fill the form with my username/password and click the `sign in` button, and the username/password are correct, I am prompted with a "Your account has not yet been confirmed". An email with another confirmation link will be resent, with a 24h lifespan.

As a user, I can confirm my account

After I completed the initial registration step, I receive a confirmation email with a link in it.

If I click this link, I am redirected to the confirm page which will activate my account and redirect me to the `Contact` page.

If the link has expired, I am prompted an error message and need to register again filling all my information.

As a user, I can authenticate

When I open the app, I arrive on the `Login` page.

If I click on the "Sign in" button:

- Each empty field is errored (red border) with a message stating the field is required.
- If the user is not found or the password does not match, I am prompted with the "The credential you provided do not match. Do you want to recover your password" (the latest being a link to the `Recover` page).
- If the password matches the user's, the "You have been authenticated" message will be displayed, and the user will be redirected 0.5s later to the `contact` page.

Upon successful login, the user will be sent an email stating he authenticated.

After a successful login, the user will not have to authenticate again for the next 3 months.

As a user, I can recover my password

Assuming my registration is completed, I can click a "recover my password" link which will redirect me to the `Recover` page, with my email prefilled if possible.

If the email field is empty or does not at least contains something that looks like an email (i.e. does not have an @ in it), the field is errored (red border) with a message stating it is required.

If it is filled, clicking the `Recover` button will display a message to the user "A recover email has been sent to this email. Please follow the instructions in it to recover your account".

If the email actually belong to a user, a recover email will be sent with a link which will expire after 24h OR after a successful login on that account, whichever comes first.

The confirmation link will redirect to the `Reset` page. Both passwords must be filled and match otherwise the fields will be errored (red borders) with a message stating the field is required or the password do not match, respectively.

If the password are successfully updated:

- The user will be displayed with "Your password has been successfully reset", and the user will be redirected to the contact page 1s later
- an email will be sent to the user confirming the success of the operation

As a user, I don't want to be spammed

Each time an altering email has to be sent, only one of each kind (e.g. authenticate) can be received until no events of that kind are received for an hour.

For example:

- I login at 6pm: I receive an log in email
- I login at 6:30pm: I do not receive anything (because an hour has not passed since last event)
- I failed to enter my password at 7:14: I receive an email (because it is not the same kind of event)
- I login at 7:15pm: I do not receive anything (because an hour has not passed since last login notification event)
- I receive an email at 8:15 stating that two login were made at 6:30pm and 7:15pm
- I do not receive an email at 8:14 because it was the first and only event of this type

As an authenticated user, I can create a room

In the `Contact` page, I can create a room, setting its name and inviting people.

As the creator of the room, you are now it's owner.

Inviting people you already know (as in you have at least one chat room in common) will make them join the room immediately.

Inviting people you don't know (with either their username or email) will send them an invite by email where they can either accept the invitation or decline it.

- If they accept the invitation, they will be added to the room
- If they refuse, you will never be able to add them to this room again (and no invitation should be send ever again - for that room)
- If they ignore the email for more than a week, the invitation link would expire thus they will not be able to either accept nor decline the invitation. They can be re-invited.

People who accept the invitations are now members (and so is the owner)

As a member, I can access messages from a room

For each room I am a member of, I can access all of the messages that were sent in said room, as well as who sent said message, and whether they are presently connected in the room (green), connected in the app (yellow) or disconnected (grey).

As a member, I can send a message to all other members

When I send a message to a room, all of its members receive it "immediately" (immediately being in less than a minute, without any actions from the user).

As the author, I can see:

- If the message was actually sent from my device to the server
- To how many members the message was dispatched to

- How many members have read that message (assuming the reading speed is 130 word per minute)

As a member, I can identify messages that were sent while I was disconnected

If I am in a room and messages are sent in that room while I am not connected, the next time I connect, I will see the messages that were sent, in the order they were sent, as well as who sent them.

A message is considered read when all the messages displayed on the screen has been displayed for enough time for a user to read it (assuming a reading speed of 130 word a minute).

The last unread message will be displayed. In order to read a long conversation (that is, one that does not fit in the screen), the user must scroll up to the last unread message and scroll back down at the reading speed.

As an owner, I can promote a user to be the owner

Only another member (that is, someone who has accepted the invitation) can be promoted as the owner.

As a member, I can archive/leave a channel

If I am the owner, the next member will become the owner.

Archiving/leaving means that I can still access the history of messages that were sent while I was in the room but not those sent after I left.

If I am invited again in that room, I will have access to said messages

Wireframes

C.f. <https://www.figma.com/file/7t2Wslo\UXElxaVygwFfawU/Untitled?node-id=0%3A1>

Speaker

Quentin FORAND, Techlead @ Trusk.

Trusk is the leader of "last mile" delivery, specialized in large parcels, with a 0 day delivery in two hours. Trusk also integrates its system with merchants such as IKEA to provide delivery for its customers (B2B2C) and manage warehouses (buffering orders, returning deliveries etc...).

As of today, Trusk operates 72 micro-services and its stack includes NodeJS, koa, rabbitmq, redis, mongodb, postgres, react, react native and docker.

My role, as a tech lead, is to make sure my team (of 8 engineers) delivers quality software in time and to mentor them (and occasionally to intervene in production).