Implementation exercise

1. Requirements / Intro

You need to implement a simple web application that allows you to take notes, tag and filter them. The development is divided in two phases:

- Phase 1: note creation
- Phase 2: tag application and filtering

IMPORTANT CONSIDERATIONS:

- **Phase 1 is mandatory** to pass this exercise, while Phase 2 will provide extra points if done.
- **Content should be persisted in a relational database by using an ORM** - in-memory storage or mocks are not allowed.

2. Deliverables

To pass this exercise, in addition to the implementation, you must

- Upload the code to a private **GitHub repository** given by Ensolvers HR staff and use git properly. **Both the frontend and the backend should be pushed to that repository**, in folders named backend and frontend respectively.
- Include a bash / zsh script allowing to run the app - ideally, the app should start in a Linux/macOS environment just **running one command**. This command should set up everything that is required to run the app like, for instance, setting up a DB schema, pre-creating any config file, etc.
- Include a **README.md** file describing all the runtimes, engines, tools etc. required to run the app, with their concrete versions - for instance, MySQL 5.7, Spring Boot 2.1, React 16.10, etc.

3. Technologies

There is no restriction about the technology to be used, if the **implementation satisfies the following**:

- Structure the app as a **Single Page web Application**, i.e. frontend and backend are different apps. That is the general case when you use React, Angular, Vue.js or any other similar UI framework. Please consider that rendering a web page on the server-side (by using JSP, EJS, Smarty, Blade, etc.) but using a bit of JS to, for instance, fetch some data, is not a pure SPA. You need to implement an isolated app, **in a separate folder, with its custom package.json and dependencies**.
- The backend app exposes a **REST API** that is the way in which the frontend app communicates with the backend
- The backend app is **separated into layers** (e.g., Controllers, Services, DAOs/Repositories, etc.). **It is important to mention that Laravel (PHP) and Django (Python) DO NOT SUPPORT that layer separation by default when building apps, so if you submit a backend done directly with those technologies without any further adjustment in the architecture, it might probably need to be improved or the exercise will be rejected directly.** On the other hand, Spring Boot (Java) and Nestjs (Node.js) are two technologies

that enforce and/or ease the use of this layer separation. For more information, you can check the definition of the Service Layer pattern and an example in Spring Boot

4. User Stories and mockups

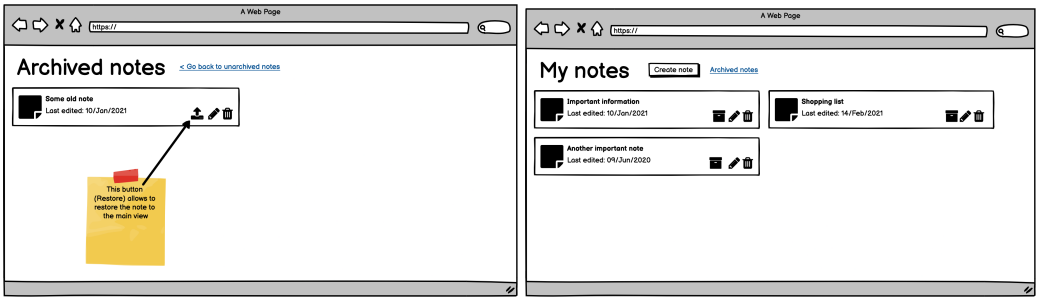
Phase 1

User Stories

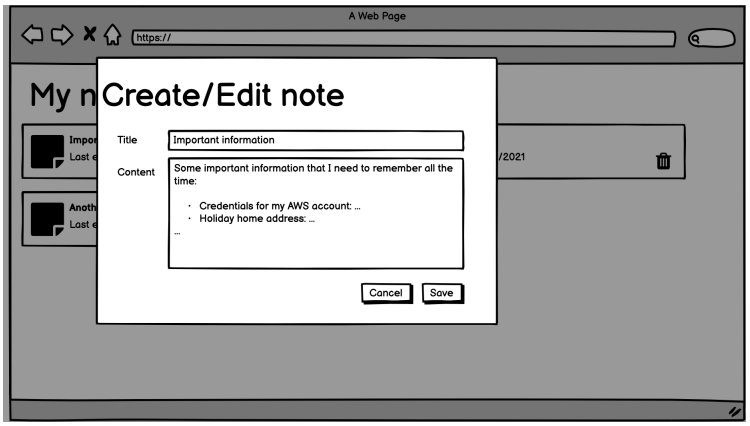
- As a user, I want to be able to create, edit and delete notes
- As a user, I want to archive/unarchive notes
- As a user, I want to list both my active notes
- As a user, I want to list both my archived notes

Mockups for active and archived notes

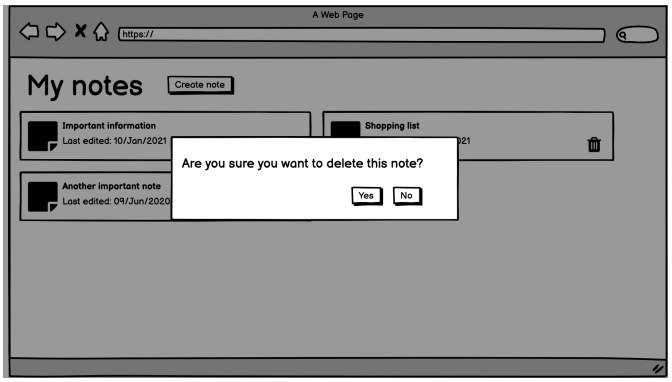
NOTE: these mockups are for reference purposes only, different variants of user interface can be accepted if they match the desired functionality as described in the user stories.



Expected look and feel of the create/edit functionality



Confirmation dialog for the delete note

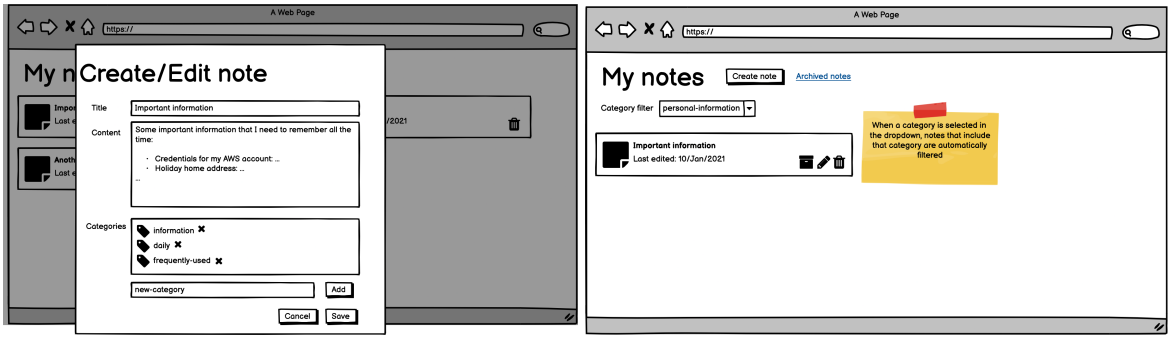


Phase 2

User stories

- As a user, I want to be able to add/remove categories to notes
- As a user, I want to be able to filter notes by category

Mockups



5. Extra functional and non-functional requirements

These features will provide **EXTRA POINTS** to your exercise results if done

- **Login**: If you provide a login screen that allows users to log in and out from the app - you need to document the default user/password used in README.md.
- **Live deployed version**: If you deploy the app (for instance via Heroku) and you share the URL of the live running version.