



Second Year Internship Report

Epitech, Toulouse

Harry Viennot
August to December, 2022

Special thanks

I would like to thank the whole team and its managers who allowed me to carry out this internship in good conditions:

- **Yohan Rousseau**, my internship tutor, director, and founder of Strateg.in
- **Laura Ferrier**, Project Manager
- **Lisa Veillot**, Human Resources
- **Mazigh Abdedou**, DevOps Manager
- **Romain Catry**, Lead Developer
- **Nicolas Hacala**, Lead Developer
- **Ghada Mokhtari**, Lead Developer
- **Noémie Béague**, Web Designer

Introduction

This is my internship report for the internship I carried out at Strateg.in, which started on the 1st of August 2022 until the 30th of December 2022, as part of the curriculum for my 2nd year at EPITECH Toulouse.

Throughout my internship, I was supervised by Yohan Rousseau, director of the company, and Lily Alice Ward, innovation hub manager at EPITECH.

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The Context

Presentation of the company

- Strateg.in contact information

Company	Strateg.in
Address	83 chemin de Ribaute, 31400 Toulouse
Phone number	+335 61 81 18 79
Website	https://strateg.in/
Legal status	Simplified joint-stock company
Professional Contacts	Mr Yohan Rousseau Director yohan.rousseau@strateg.in +336 37 80 37 53

- The company

Strateg.in is an IT development company that helps business leaders in small and medium-sized enterprises (SMEs) to accelerate their growth using digital transformation tools. It was founded by Yohan Rousseau on the 9th of January 2017.

In 2022 more than 80% of these companies have still not taken the leap toward digital transformation. However, up to 75% of prospects search for information about a company and its activities on the internet before starting a business relationship.

The company's approach combines the practicality of small businesses with the innovation and energy of startups to provide businesses with the digital tools they need to improve their productivity through the rationalisation and automation of key processes. This allows businesses to increase their productivity in a meaningful and significant way.

- Services

The company offers three different services.

Consulting and training

The consulting and training offer aims to help and guide client companies in their digital transformation. To do so, the Strateg.in team manages the entire digitalisation process of the company by following the key steps to guarantee the success of the project. At the beginning of the project, it is necessary to identify the important business processes to be digitised in order to ensure that we understand the client's needs. Next, a specification is drawn up listing the tools that meet the identified needs in order to determine the most appropriate solution. Once the solution has been chosen, the team takes care of implementing the solution.

Software Engineering & Custom Development

All stages of the development process, from the design stage through the manufacturing and maintenance of the program, are covered by the software engineering and custom development service. Market research is conducted to identify the most suitable solution for the client's needs, and ongoing project management is put in place to ensure that the solution meets the client's expectations throughout development.

Software

Strateg.in created Findee, a SaaS (Software as a Service) application that uses artificial intelligence and Big Data to enable companies to locate new B2B (Business to Business) customers. This application simplifies commercial prospecting and uses Machine Learning to identify the best prospects. The company also offers an application called Box to Lead, which is designed to record contact details of prospects at events in real time as well as maintaining contact through an emailing system.

Glossary

APP

An APP (Application) is a software program designed to perform a specific task or set of tasks.

API

An API (Application Programming Interface) is a set of rules, protocols, and tools for building software and applications.

Back end

Back-end refers to the behind-the-scenes part of a website or web application, including the server-side logic, database management, and server-side APIs.

DevOps

DevOps is a set of practices that aims to improve the collaboration and communication between the development and operations teams in an organization, with the goal of delivering high-quality software products more efficiently.

ERP

An ERP (Enterprise Resource Planning) is a type of software that helps businesses manage and integrate their core business processes, such as accounting, human resources, and supply chain management.

FrontEnd

Front-end refers to the user-facing part of a website or web application, including its layout, design, and user interface elements.

Internship Mission

My assignment during the internship

Over the course of my internship, I was assigned to three different projects.

The first project I worked on was **La Méthode Citoyenne**, a project management software that was in its final stages of development when I started working on it. My main responsibility was to fix errors that the client had identified and to finish a few minor features that weren't quite ready such as the generation of pdf, word, and excel files. The majority of my time was spent testing and debugging the software to make sure everything was working as it should. Overall, the project was difficult yet gratifying and required a lot of attention to detail and problem-solving skills.

The second project I was assigned to, **AEP Formation**, was in the early stages of development. It included two different software components: an enterprise resource planning (ERP) system and a website. The website is a platform for hosting training courses created by the trainers at AEP Formation. The ERP system is used to manage the website, such as creating new courses, managing course sessions, and handling user reports. My role in this project was crucial as I had to complete unfinished features, fix bugs, and develop new features from scratch. Some of the most challenging tasks included creating an algorithm to suggest courses to users based on their interests or course history, and developing a system to track course progress.

The last project I was assigned to was a mobile application called **Car Co**, which was in its final stages of development. Car Co is a social media platform specifically designed for car enthusiasts. Users can set up virtual garages to display the vehicles they possess or have previously owned, organise and participate in events centred around cars, "like" the vehicles of other users, and more. My main task on this project was to fix bugs that the client had identified. This involved closely reviewing the code, identifying the root cause of the issue, and implementing a solution to fix it.

The company's tools and work ethic

- Work method

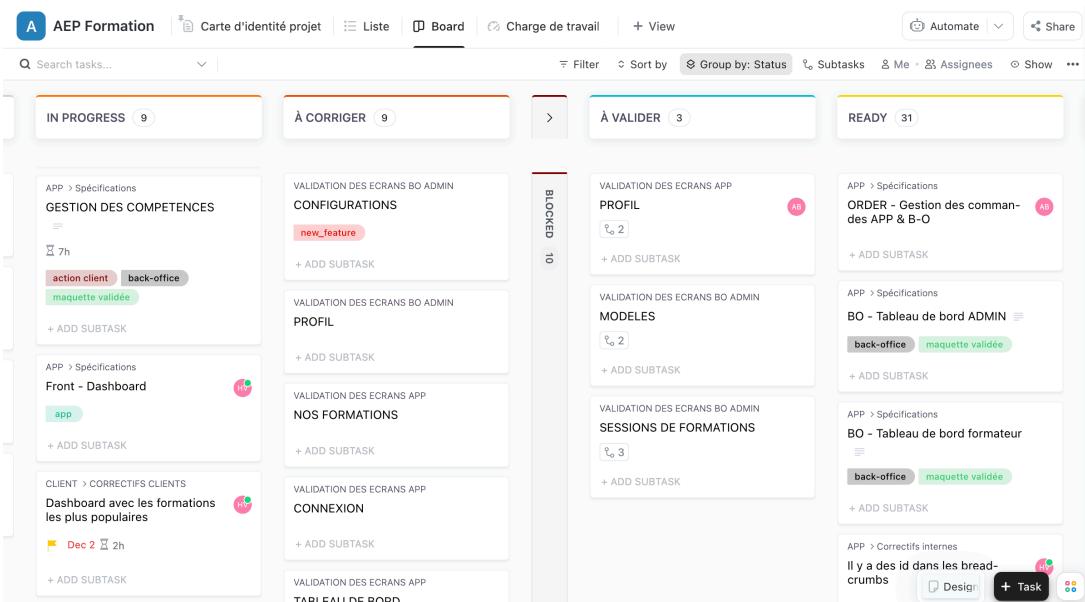
At Strateg.in, we follow a development process inspired by the agile method, which involves dividing our work into short, focused sprints centred around a particular functionality. This approach allows us to make rapid progress and continuously improve the software as we go. After each sprint, we collect feedback from our clients to identify any bugs or areas that need adjustment. In addition, we hold daily meetings within the development team to monitor the progress of our projects and resolve any issues or technical difficulties that come up. By following this approach, we are able to efficiently manage the development process and deliver high-quality software to our clients.

- Different tools used

A variety of software tools are used to optimise and organise the work that needs to be done, making it easier to complete tasks efficiently.

ClickUp

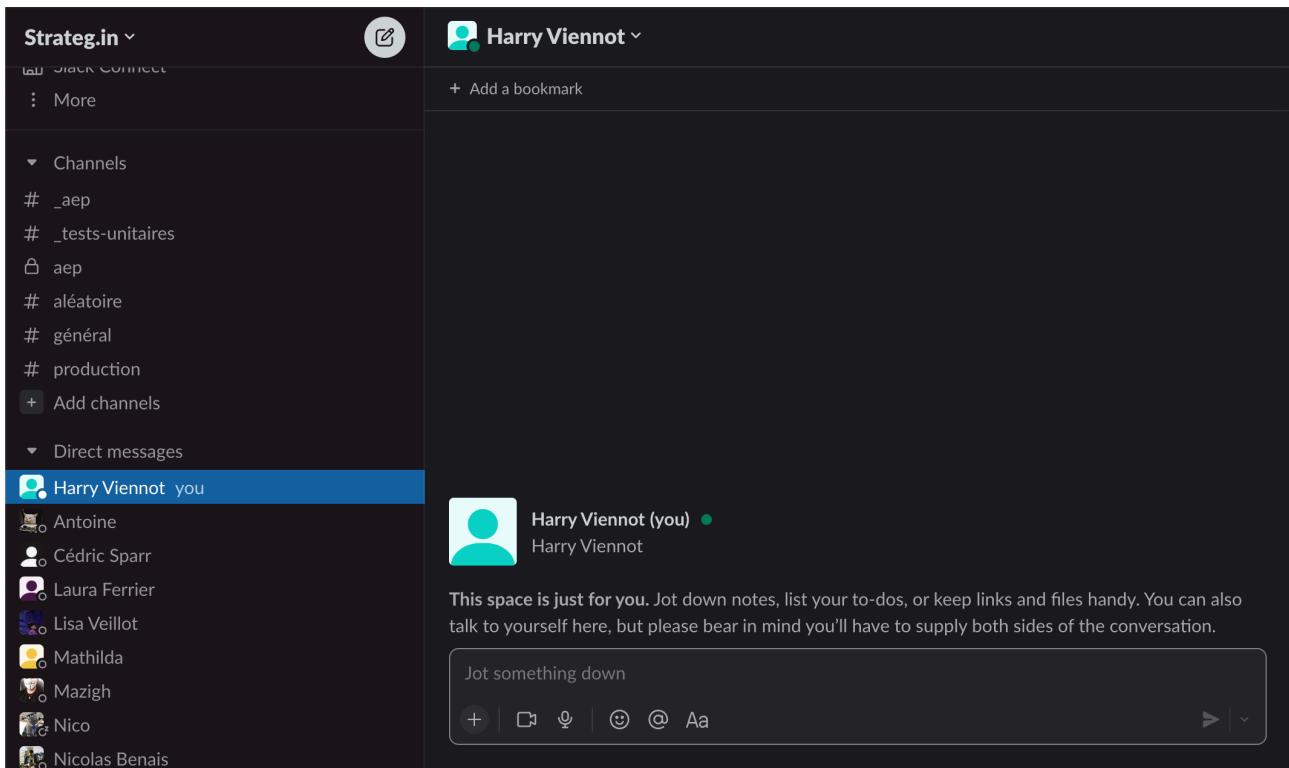
ClickUp is a project management and productivity tool. It is particularly useful during sprints as it helps the company organise, time-track, and share out tasks between the developers.



This is the board for the project AEP Formation. Tickets are organised by their status: TO DO, IN PROGRESS, A CORRIGER, BLOCKED, A VALIDER, READY, CUSTOMER REVIEW, CUSTOMER VALIDATION, and TERMINE.

Slack

The team uses Slack, a collaboration platform that allows them to communicate and work together in real-time. The main feature is instant messaging but it also offers file sharing, and video calls. Slack is designed to make communication more efficient and improve productivity within teams by providing a central location for all team communication and resources. Users can join channels for specific projects or topics, and can also communicate directly with individual team members through private messages.

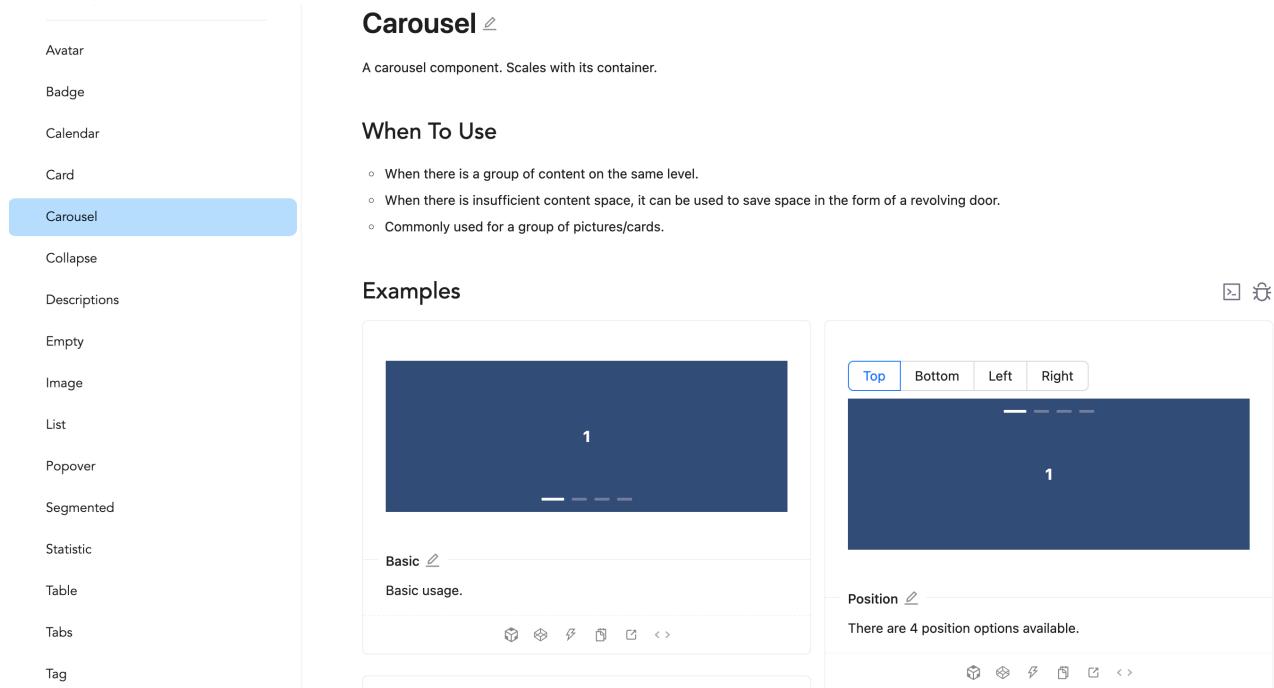


In Strateg.in's slack workspace, there are multiple channels dedicated to a certain topic. For example, in the «_tests-unitaires» channel, every question or message related to unit tests should be in this channel to avoid cluttering the other channels. Finding specific messages and information is much quicker, which improves the workflow.

External libraries and APIs

- **Ant design (antd)** is a popular user interface (UI) design system and library for React applications. It provides a set of reusable UI components that can be used to build modern, responsive, and visually appealing web applications which helps save time and effort. The library offers components such as calendars, carousels, notifications, and more.

Here is an example of documentation for the Carousel component by Antd:



The screenshot shows the Antd documentation page for the Carousel component. On the left, there is a sidebar with a list of components: Avatar, Badge, Calendar, Card, **Carousel**, Collapse, Descriptions, Empty, Image, List, Popover, Segmented, Statistic, Table, Tabs, and Tag. The 'Carousel' item is highlighted with a blue background. The main content area has a title 'Carousel' with a link icon. Below it is a brief description: 'A carousel component. Scales with its container.' Under the heading 'When To Use', there is a bulleted list: 'When there is a group of content on the same level.', 'When there is insufficient content space, it can be used to save space in the form of a revolving door.', and 'Commonly used for a group of pictures/cards.' Below this is a section titled 'Examples' with two examples. The first example, 'Basic', shows a dark blue rectangular area with a small number '1' in the center, representing basic usage. The second example, 'Position', shows the same dark blue area with the number '1', but with four position options labeled 'Top' (selected), 'Bottom', 'Left', and 'Right' at the top. Both examples include a toolbar at the bottom with various icons.

- **SendInBlue** is a platform designed to help businesses grow through their various services. They provide SMS and email marketing, and live chat tools. Businesses can send and create transactional emails, SMS messages and marketing campaigns that they can monitor and track on the SendInBlue platform. By integrating the SendInBlue API into the software we produce, we can utilise SendInBlue to send automated emails in response to user actions.

Strategin's library

In order to speed up the creation of applications, Strateg.in has created a custom JavaScript library that is consistently utilized in their projects. The library contains several components including data tables, headers, export buttons, and templates for apps and APIs. The library is regularly updated with new components built for particular projects that can be reused in subsequent projects or across many projects.

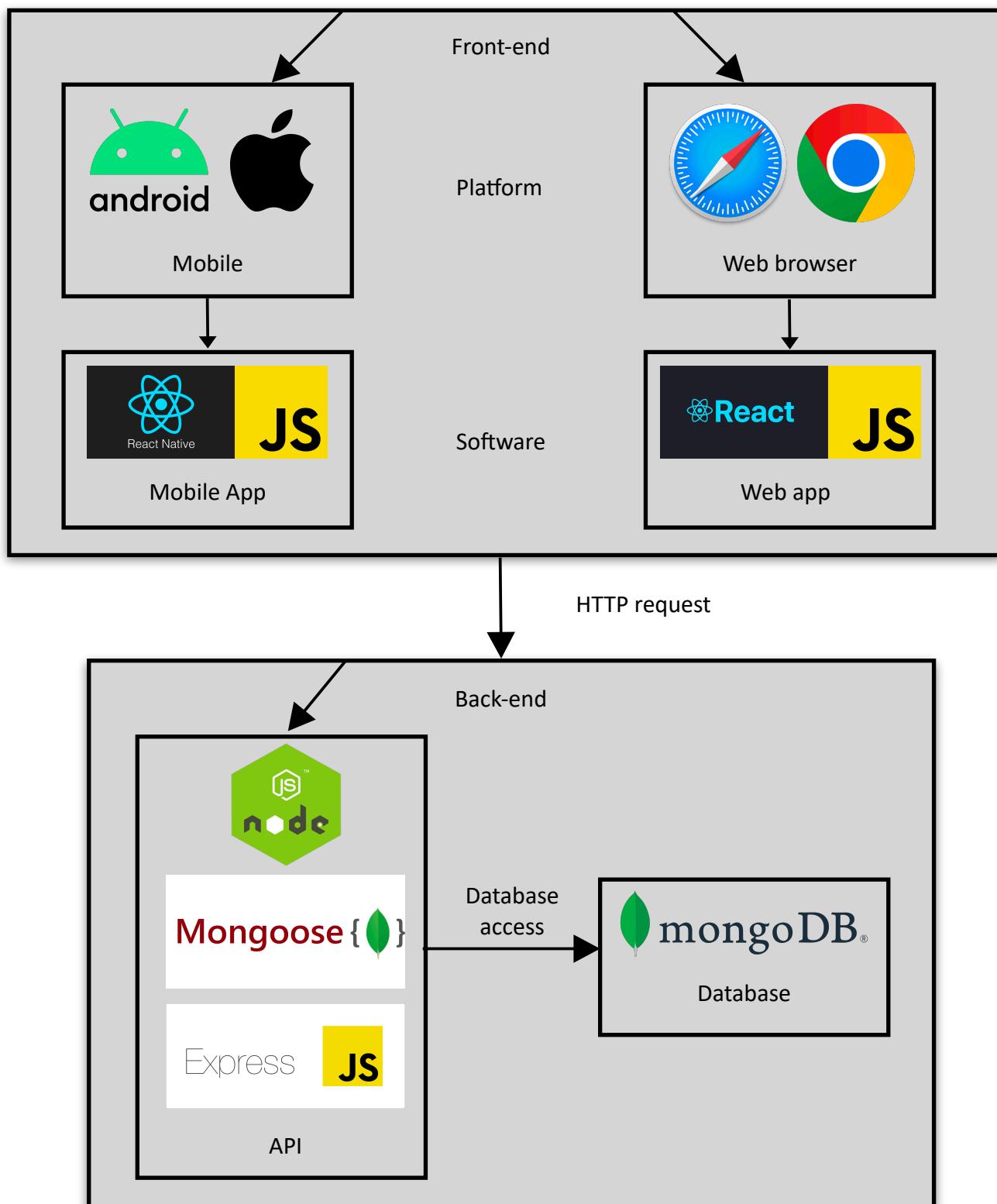
Here is an example of the dataTable component:

Liste des formations						
Intitulé de la formation	Formateur	Statut	Dernière session	Prochaine session	Catégories	
Formation test1	Antoine Belloni	PUBLIÉE	28/11/2022 - 02/12	Non planifiée	BUSINESS COMMUNICATION	 
harry	Antoine Belloni	PUBLIÉE	27/11/2022 - 11/12	Non planifiée	COMMUNICATION	 
Apprendre à dessiner	Antoine Belloni	PUBLIÉE	20/10/2022 - 26/10	Non planifiée	ARTS COMMUNICATION DÉVELOPPEMENT BUSINESS GESTION	 
Une formation assez cool	Jeanjean Jean	PUBLIÉE	Non planifiée	Non planifiée	ARTS	 
Formation Importante	Jake Sully	NON PUBLIÉE	Non planifiée	Non planifiée	BUSINESS	 
zagrgza	Antoine Belloni	EN ATTENTE DE VALIDATION	Non planifiée	Non planifiée	BUSINESS	 
Jeux de cartes	Jeanjean Jean	NON PUBLIÉE	Non planifiée	Non planifiée	ARTS DÉVELOPPEMENT COMMUNICATION	 
TEST VIMEO	Antoine Belloni	PUBLIÉE	Non planifiée	Non planifiée	TEST	 

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Project architecture

Most projects developed at Strateg.in follow this type of architecture:

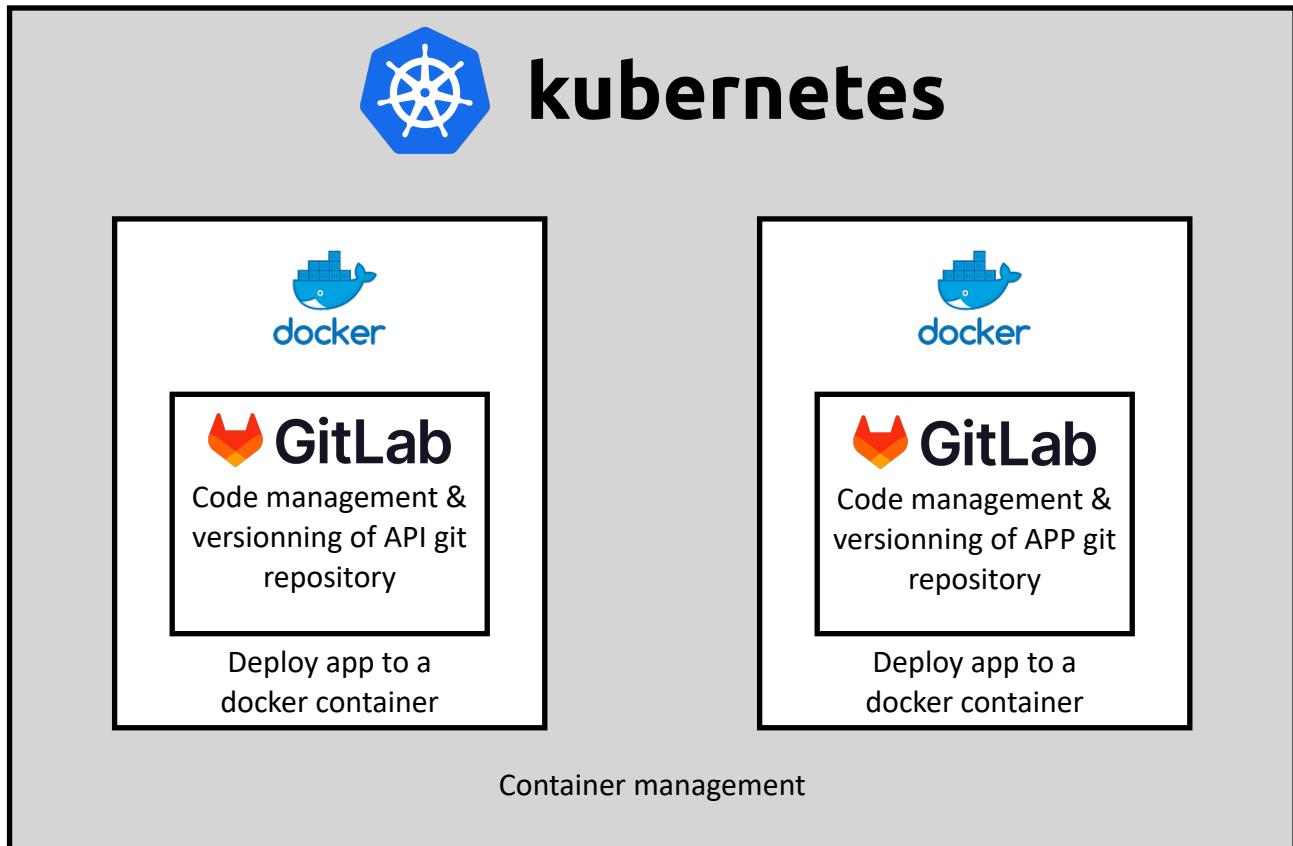


Project deployment

To deploy a project, we need to use three different tools:

- **GitLab** is a web-based platform that offers software development teams access to versioning and project-management tools. Through tools like source code management, continuous integration, and issue tracking, users can host, monitor, and manage the progress of projects. GitLab provides tools for code review and project management, as well as facilitating team collaboration. It is utilised in a range of projects, including small personal projects and large enterprise-level initiatives.
- **Docker** is a containerisation platform that enables developers to package and deploy applications in a portable, isolated environment. It allows users to run multiple applications on the same host without the need for dedicated resources or additional infrastructure. Docker uses containers, which are lightweight and standalone execution environments that include all the necessary dependencies and libraries needed to run an application. By using Docker, we can easily build, test, and deploy applications without worrying about compatibility issues or conflicts with other applications on the host system.
- **Kubernetes** is an open-source container orchestration platform that is used to automate the deployment, scaling, and management of containerised applications. It allows users to deploy and manage applications flexibly, allowing them to use it across various cloud environments or on-premises infrastructure without any issues. Kubernetes is designed to be highly scalable and can handle complex applications with multiple components and dependencies. It also provides robust features for managing and monitoring the health and availability of applications, including automatic recovery and self-healing capabilities.

This diagram illustrates the interaction between Kubernetes, Docker, and GitLab:

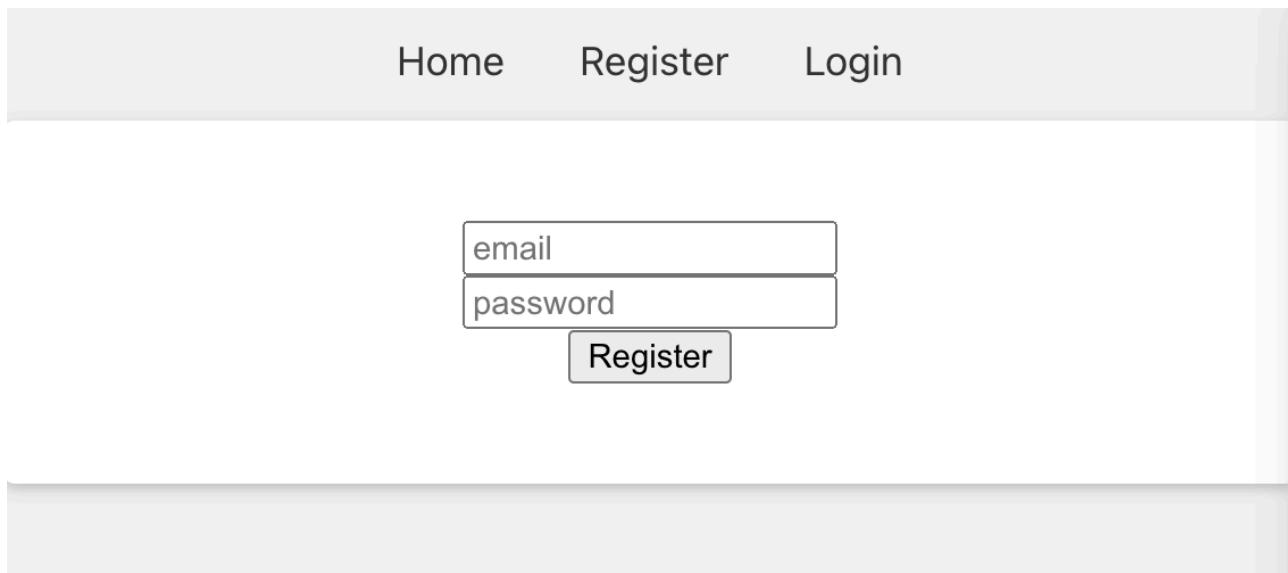


Internship Accomplishments

My accomplishments

- **Initiation project**

On my first day, I was asked to develop a web application using the React framework that included user registration and authentication. Once a user was logged in, they would have access to a to-do list manager, where they could create, delete and validate tasks in different projects.



After completing this mini-project, I was asked to incorporate components from the Strateg.in JavaScript library into my project to gain familiarity with the tools and technologies used by the company. It took about a week and a half to complete this task, after which I was assigned to my first actual project, La Méthode citoyenne.

- La Méthode Citoyenne

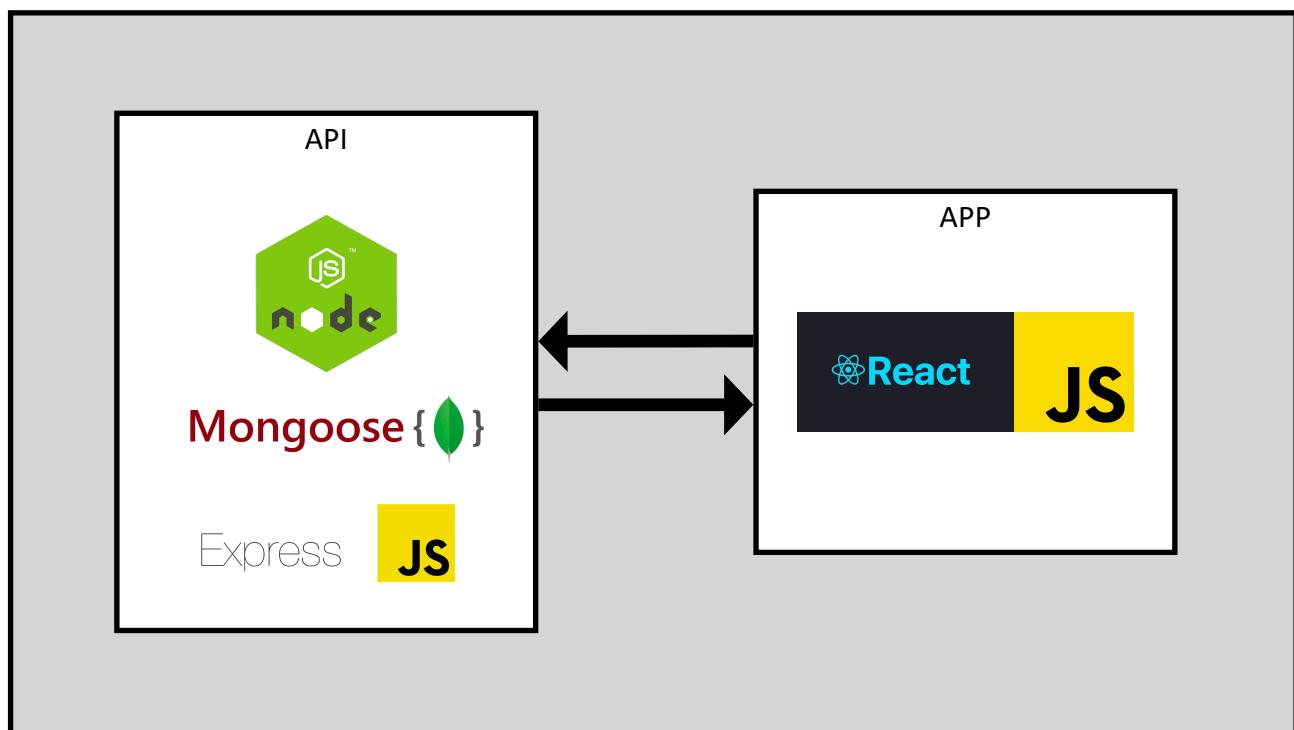
This was the first project I was assigned to. The developer who had previously been working on it provided me with a thorough overview of the project, including its purpose and function, as well as the structure and organization of the code. By the time I began working on it, the project had already been completed and was in the process of being maintained.

This software is intended to assist with the organization and management of projects, offering a range of features and tools to support project management.

The software is divided into two different parts:

- an API
- an APP

Here is a diagram representing the project's architecture:



My task for this project was to fix bugs identified by the client in the software. The majority of these bugs were related to generating PDF and Excel files with project data, which was intimidating for me as I had never worked on this type of issue before. However, once I began working on it, I found it became easier to understand.

Here are a few bugs I had to fix.

There were some missing pieces of information in the generated PDF, so I had to insert them into the appropriate places in the document. I also had to fix spelling errors, rearrange the order of some table columns, and add charts where they were absent.

One of the most challenging features I had to implement was in the Excel file that displayed all the data that was modified during the project. I had to identify what data had been changed compared to previous versions of the project and highlight the cells in red where the information was altered, and in green if the information was new or different than the previous version.

Conclusion

My role in this project was heavily focused on generating PDF and Excel files, which was a very valuable learning experience for me as it introduced me to a new skill that I was previously unaware of and will be able to utilize in future projects. It also taught me that even if something seems challenging or difficult at first, it can become much easier to understand once you start working on it.

- **AEP Formation**

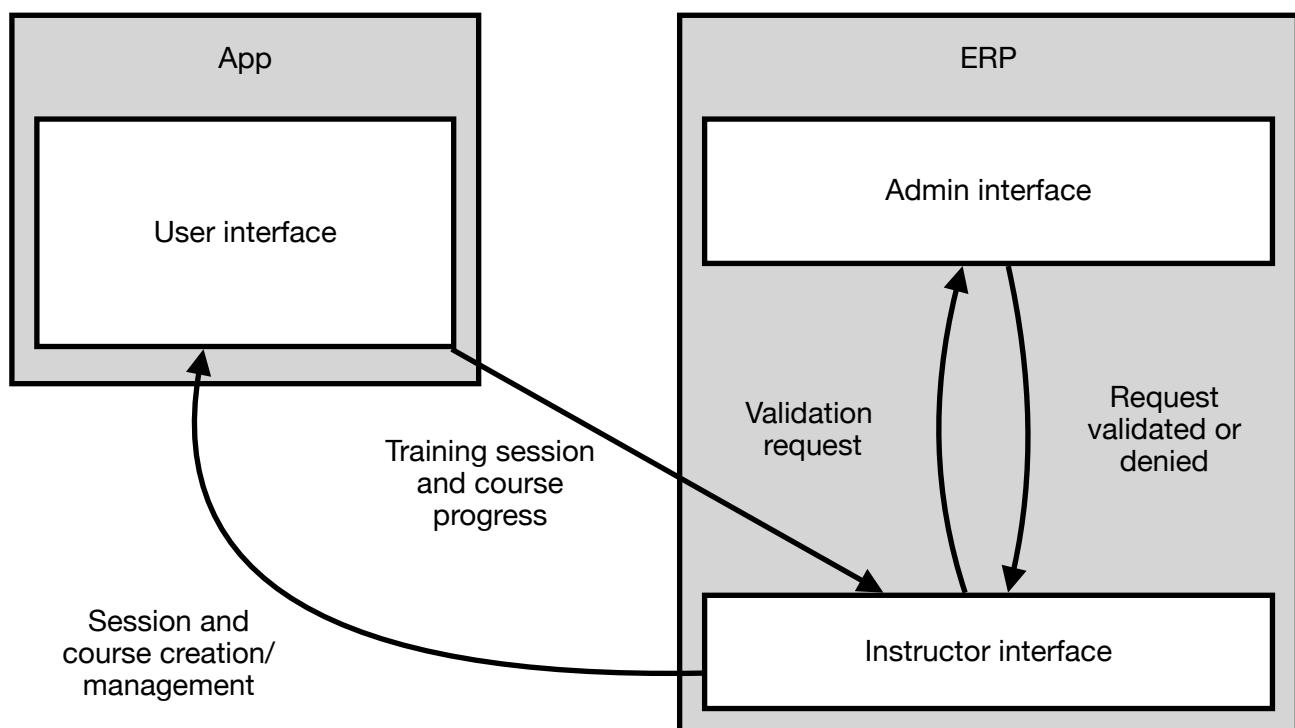
This project was the one I contributed to the most during my internship as I was assigned to it from start to finish. The development of the project was just starting, so there were many features to be developed.

AEP Formation is a platform that allows users to participate in training sessions for various courses that may include videos, quizzes, virtual classes, challenges, and more. Instructors can create their courses and set up training sessions for users to join. Upon completion of a training session, users can earn a certificate based on their progress and achievements.

The software is divided into three different parts:

An **API**, an **APP** for users to discover courses, participate in training sessions and receive certificates, and an **ERP** for instructors to create, modify courses, and manage training sessions. They can also track the progress and results of their training session subscribers. The ERP also enables admins to approve, publish, delete, and cancel training sessions and courses, manage transactions, view user reports, and perform other tasks.

This diagram illustrates the connections between the ERP, the app, and the different types of users, including admins, instructors, and regular users.



One of the main challenges of this project was that it did not use the same technologies as the company's other projects, particularly Next.Js, for the front end. These technologies prevented the use of the company's component library, making it more difficult to implement certain simple features and receive assistance from other developers.

Here are some functionalities that I developed for this project.

Course creation, modification, and status (ERP side)

I was asked to improve the module and chapter creation page by adding icons corresponding to different chapter types, such as quizzes, videos, text, and homework deposits. This was a challenging task for me as I was still learning React, but I improved as I continued working on it.



The screenshot shows a user interface for course management. On the left, there is a sidebar with a dark header containing the word "Modules". Below this, there are two main sections: "Python" and "Java". The "Python" section is expanded, revealing a list of course items, each with a small icon and a title:

- Base de python
- Devenir formateur occasionnel
- Savoir maîtriser le cycle de vie de vos offres : recycler ou innover
- Retranscrire le cycle de vos offres sous forme de diagramme
- Quel challenge allez-vous relever ?
- Challenges : semaine 1

The "Java" section is collapsed, indicated by a right-pointing arrow. At the bottom of the sidebar, there is another collapsed section labeled "Evaluation finale".

I was also asked to implement different statuses for courses, including DRAFT (created by the instructor), PENDING VALIDATION (submitted by the instructor for review by admins), PUBLISHED (available for users to sign up for), UNPUBLISHED (not available for users to join, but still validated and not deleted), and ARCHIVED (saved for record-keeping purposes instead of being deleted). I was able to complete this task more easily because I had gained an understanding of the project architecture and code.

Redirect after login and navigation bar

The APP part of the project was started once the ERP was functional enough to be able to post, create and manage training sessions and courses.

On the app side, only the user authentication feature was completed. However, once the user entered their password, nothing would happen. I needed to redirect the user to the dashboard page, which did not yet exist. Additionally, I added some buttons to the app header to allow the user to access messages, view notifications, and access their account details and parameters, as shown below.



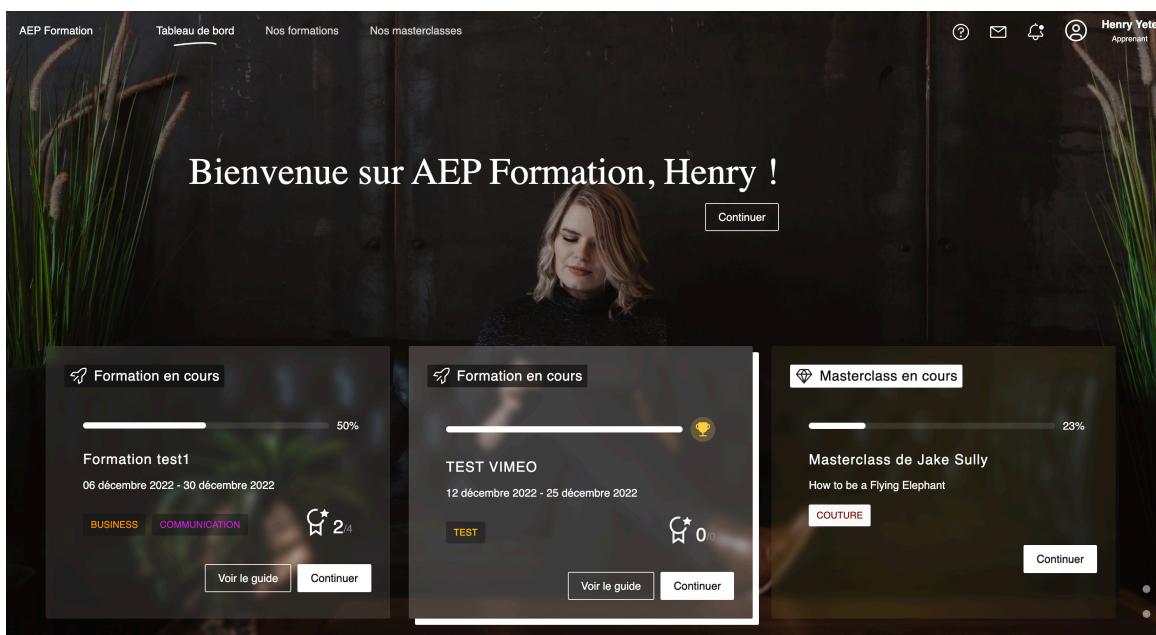
Handle user progress detection

After the other developers working on this project completed the course program feature on the app side, I was responsible for tracking user progress. This proved to be challenging because different types of chapters required different methods of being marked as completed by the user. For instance, simple text or Google Slides chapters were automatically marked as completed, as the Google Slides API did not allow us to determine if the user had reached the end of the slideshow. Homework deposits were only marked as completed once they had been reviewed by the instructor, and video chapters were marked as completed when the video had been watched. However, in the database, user progress was stored as a simple percentage, but we needed to keep track of which specific chapters had been completed or not in order to display this information to the user. To solve this issue, I had to make some modifications to the user model on the API in order to keep track of chapter completion.

Dashboard (APP side)

One of my responsibilities was to create the dashboard page from scratch, using a mockup provided by the web designer that met the client's requirements. The dashboard included a feature that allowed the user to switch between views of upcoming, current, and completed training sessions, as well as suggestions for new courses based on the user's course history. I had to devise an algorithm to generate these recommendations, which was the most challenging aspect of this task. The dashboard also displayed the most popular courses.

Here is the dashboard that I developed:



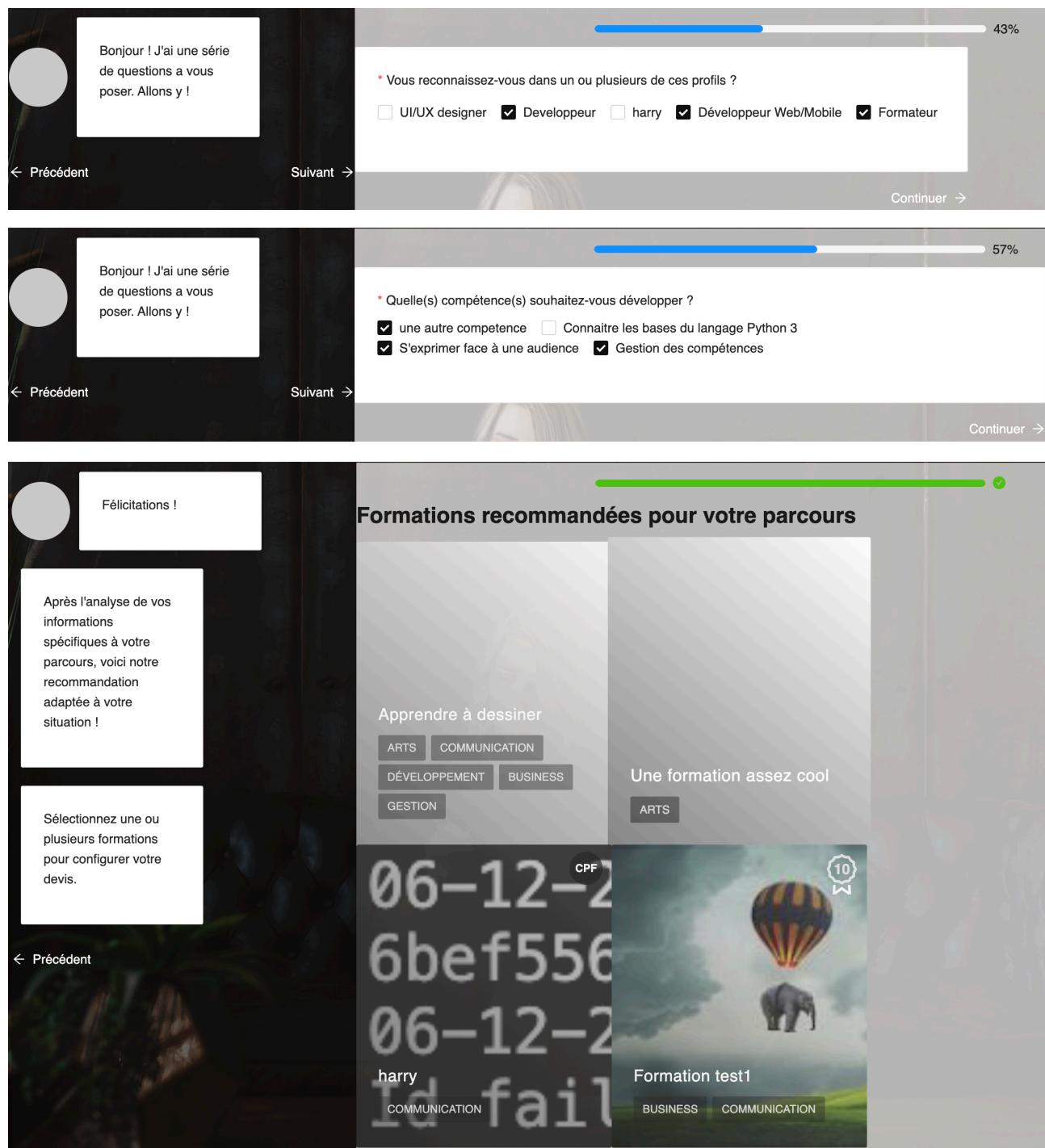
To create the algorithm for course suggestions, I first obtained all of the courses completed by the user through the API. I then retrieved all of the categories associated with those courses and counted the number of times each category appeared. This allowed me to identify the most prominent categories by assigning a point to each category every time a course belonged to it.

Next, I obtained a list of courses that had matching categories and assigned points to them based on the number of categories that matched. For instance, if a course had both the "development" and "art" categories, and the "development" category had 4 points and the "art" category had 2 points, the course would receive a total of 6 points.

Finally, I returned only the courses with the highest number of points. This algorithm ensured that the suggested courses were closely related to the ones the user had already completed.

Course suggestions for new users

One of the last tasks I was assigned for this project was to implement a form that contained specific questions that would help determine which courses are most suitable for the new user. The form is accessible when the user does not yet have an account and visits the website. After completing this form, a series of courses and training sessions are displayed for the user, who can then request a quote for these options.



The image consists of three vertically stacked screenshots of a web application interface. Each screenshot shows a dark-themed page with a sidebar on the left containing a user profile picture placeholder and some text.

- Screenshot 1:** Shows a message: "Bonjour ! J'ai une série de questions à vous poser. Allons y !" Below it are navigation buttons "Précédent" and "Suivant →". On the right, there's a progress bar at 43% and a section asking "Vous reconnaissiez-vous dans un ou plusieurs de ces profils ?" with several checkboxes: UI/UX designer (unchecked), Développeur (checked), harry (unchecked), Développeur Web/Mobile (checked), and Formateur (checked).
- Screenshot 2:** Shows a message: "Bonjour ! J'ai une série de questions à vous poser. Allons y !" Below it are navigation buttons "Précédent" and "Suivant →". On the right, there's a progress bar at 57% and a section asking "Quelle(s) compétence(s) souhaitez-vous développer ?" with several checkboxes: une autre compétence (checked), Connaitre les bases du langage Python 3 (unchecked), S'exprimer face à une audience (checked), and Gestion des compétences (checked).
- Screenshot 3:** Shows a message: "Félicitations !" Below it is a section titled "Formations recommandées pour votre parcours" showing a list of recommended courses. One course is visible: "Apprendre à dessiner" under categories ARTS, COMMUNICATION, DÉVELOPPEMENT, BUSINESS, and GESTION. To the right, there's another course snippet: "Une formation assez cool" under ARTS, featuring a hot air balloon and an elephant icon.

It is worth noting that the examples above are not the final product. It is the web designer's responsibility to implement the design once the developer has completed a feature.

The algorithm behind this process is simpler than it may appear. The admin will create "skill profiles," which consist of a name and associated categories and skills. Skills and categories are also associated with a course when an instructor creates one. When the user selects a field of work (a category), they are then presented with a list of profiles that contain that category (as shown in the first image). After selecting their preferred profiles, the associated skills of those profiles are displayed, and the user can choose which ones they want to develop. When the form is completed, all courses that cover the desired skills are displayed to the user. This helps narrow down the courses and only show the ones the user is most likely to be interested in purchasing.

Conclusion

Overall, I would say that this project was by far my favorite. I had the opportunity to work on developing new features myself, which allowed me to progress much more quickly than I had on other projects. I was able to fully immerse myself in the development process and watch the project grow and evolve from start to finish. It was a truly enriching and rewarding experience and one that I will always look back on with a sense of pride and accomplishment.

- Car Co

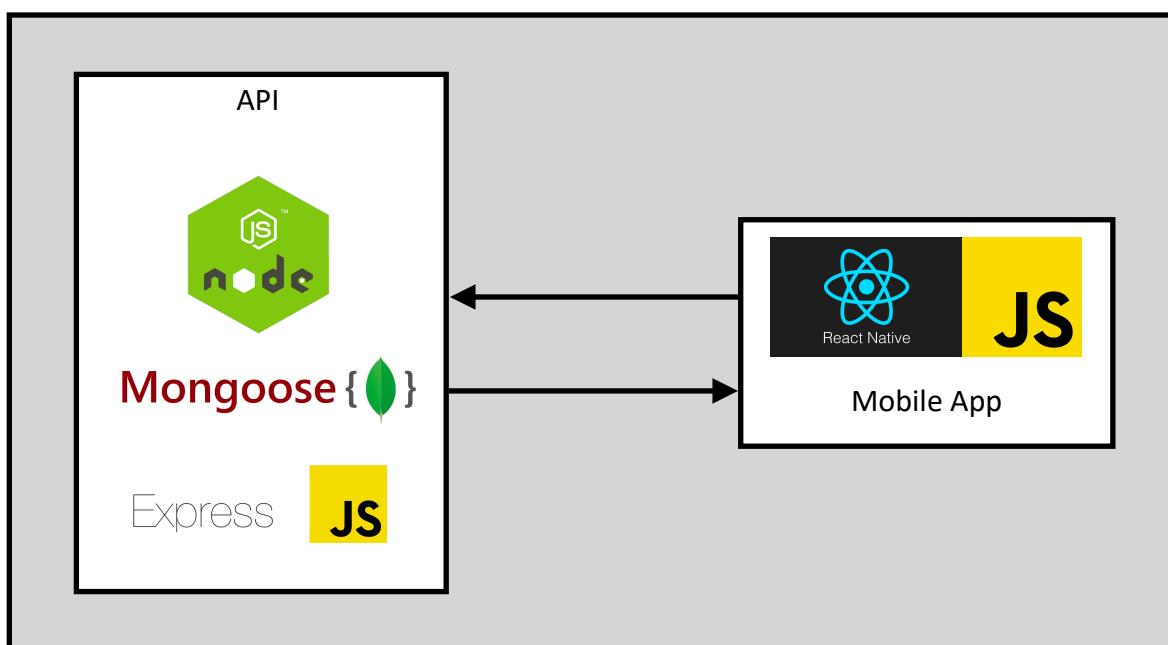
I was given the opportunity to work on this project during the second half of my internship, after expressing my interest to the project manager about wanting to work on a mobile app. For a brief period, I focused mainly on fixing small bugs and contributing to the overall development of the app.

Car Co is a social media platform designed for car enthusiasts. It offers a range of features to help users connect with one another, including the ability to create and attend car-related events, both private and public. The app also includes a digital garage feature that allows users to share information about their current and past automotive projects with others. Additionally, users can participate in private or public groups, connecting with other car enthusiasts and sharing knowledge and expertise.

The software is divided into two different parts:

- an API
- a mobile app

Here is a diagram representing the project's architecture:



Here are a few minor repairs I made to the app.

Emailing bug fixes

I was tasked with ensuring that the email notifications sent to users when they are invited to join a group or event include the correct name and last name of the person sending the invitation. To do this, I used the SendInBlue API to access and modify the email template to resolve this issue.

This process allowed me to learn more about how the SendInBlue API works and how it can be used to improve the user experience on the app.

Other bugs and features

I also had to develop several additional features. One of these was the implementation of a "pull to refresh" feature, which is commonly found in many mobile apps and allows users to quickly update the content displayed on their screen. I also implemented a feature that allows users to cancel events they have created, and add text to display when a user does not have any cars in their virtual garage or is not participating in any events.

Conclusion

Although I did not have a lot of time to work on this project, I still found it to be a valuable learning experience as it was my first time using React Native. I enjoyed discovering how it works and how it can be used to develop mobile apps. Even though my contribution was limited, I feel that I gained valuable knowledge and skills that will be useful in my future development projects.

Conclusion

Conclusion

This internship was a very valuable and educational experience for me. In my role at Strategin, I was given responsibilities and tasks that were similar to those of a salaried developer. I was actively involved in the entire development process and participated in the management of projects. My primary responsibilities included developing features that met the needs of the client and attending weekly meetings to review the progress of the projects and the features that had been developed during the week with the client. This opportunity allowed me to gain hands-on experience in the field and develop my skills as a developer.

This internship also represented my transition from academic studies to working life. I learned what it was like to work in a corporate environment and gained a better understanding of the differences and similarities between the classroom and the workplace. One of the key lessons I learned was that, while there are certainly differences between the two, there are also many similarities. For example, in both settings, we are often left to our own devices and must find ways to solve problems and overcome challenges on our own.

I also acquired and deepened many skills during this internship. I learned a new language, JavaScript, as well as new frameworks such as React, React Native, and NodeJS, which are commonly used in the world of web apps, an area I would like to explore further after my internship. I not only gained technical skills but also professional skills. I learned how to manage my time better using tools that allow me to prioritize and estimate the time required for each task that I need to complete. I also had the opportunity to deepen my interpersonal skills through the various meetings in which I participated and the various conversations I had with other employees and interns.

Before beginning this internship, my goal was to gain the necessary skills to be able to complete my personal project: a mobile app that would allow users to organize private events with friends, featuring various functionalities to facilitate this process. Upon completing this internship, I am now confident enough to start working on this project and can say that my goals have been achieved.

This internship also helped me in my decision about which direction to take in the field of computer science. I now know that I enjoy web development, whether it is front-end or back-end, and that I would like to learn more about the DevOps field, an area in which I have little knowledge. This desire to learn more about DevOps came from having various conversations with the DevOps manager.

Overall, my internship at Strateg.in was a valuable and enriching experience that allowed me to gain hands-on experience in the field and develop a wide range of skills that will be useful in my future career. I learned a new language, JavaScript, and gained familiarity with various frameworks such as React, React Native, and NodeJS. I also acquired professional skills, including time management and interpersonal skills. Additionally, I discovered my interest in web development, both front-end and back-end, as well as the DevOps field. Through this internship, my personal and professional goals were achieved, and I now feel confident in my ability to pursue my desired career path.