

# Final Year Project Presentation

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Summer Project Demo  
By Emily Gavin

9th May 2023



Ollscoil  
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Atlantic  
Technological  
University

# The Problem

I always found it frustrating when I would be asked for forms of ID and I had left my purse at home resulting in getting denied service, or constantly having to ensure I have my drivers license on me when I am driving anywhere.

This has become an even greater issue since the pandemic, as society has adapted to our cashless way of living, but our identification has not.

I believe that the way we prove our identity should also adapt to this trend.



# Sustainability

Traditional plastic ID cards are manufactured from non-renewable PVC materials, which can cause significant environmental damage.

Using technology-based photo ID cards can be a step towards reducing our environmental impact and promoting sustainable practices.

## Statistics

- The global plastic card market, which includes ID cards, was estimated at around 33.2 billion cards in 2019. (Average 4.213 cards per person worldwide)
- In the European Union, it is estimated that over 6,000 tons of PVC waste are generated annually from expired cards, including ID cards.



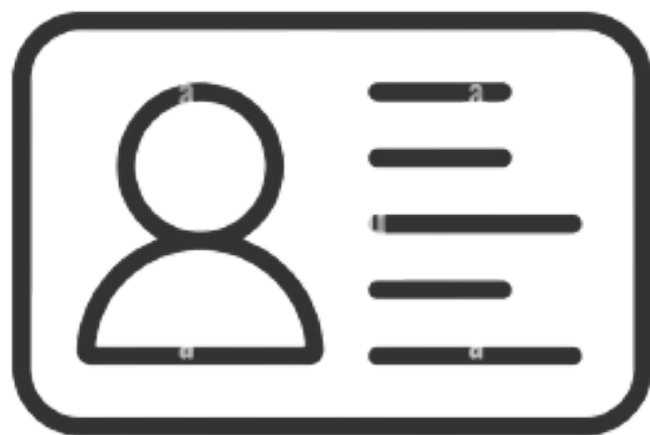
# DigiWallet

Making Identification Easy

## My Solution

I wanted to come up with a project that brought forms of ID into the digital world using an interactive app that could store your digital forms of identification in a convenient and secure manner, enhancing accessibility and promoting a more sustainable approach to identity management...

...so then DigiWallet was created!



DigiWallet is a digital identification app that allows users to store their Identification cards in one place.

# Architecture Diagram



# Front End

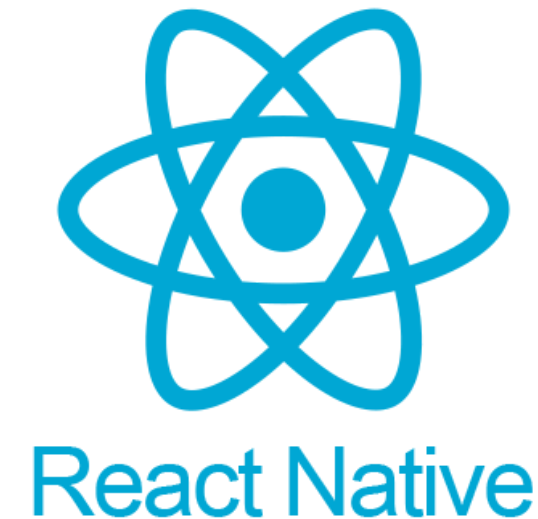
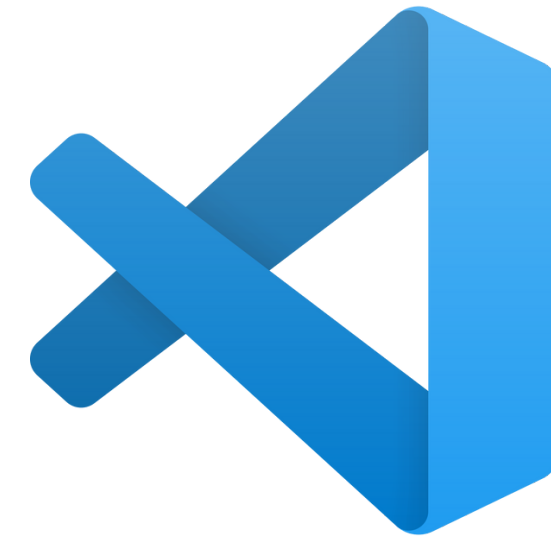
## Overview

My frontend application was created with React Native on VSCode.

I use Expo to tunnel my frontend application to my phone. This allowed me to see my projects implementations in real time.

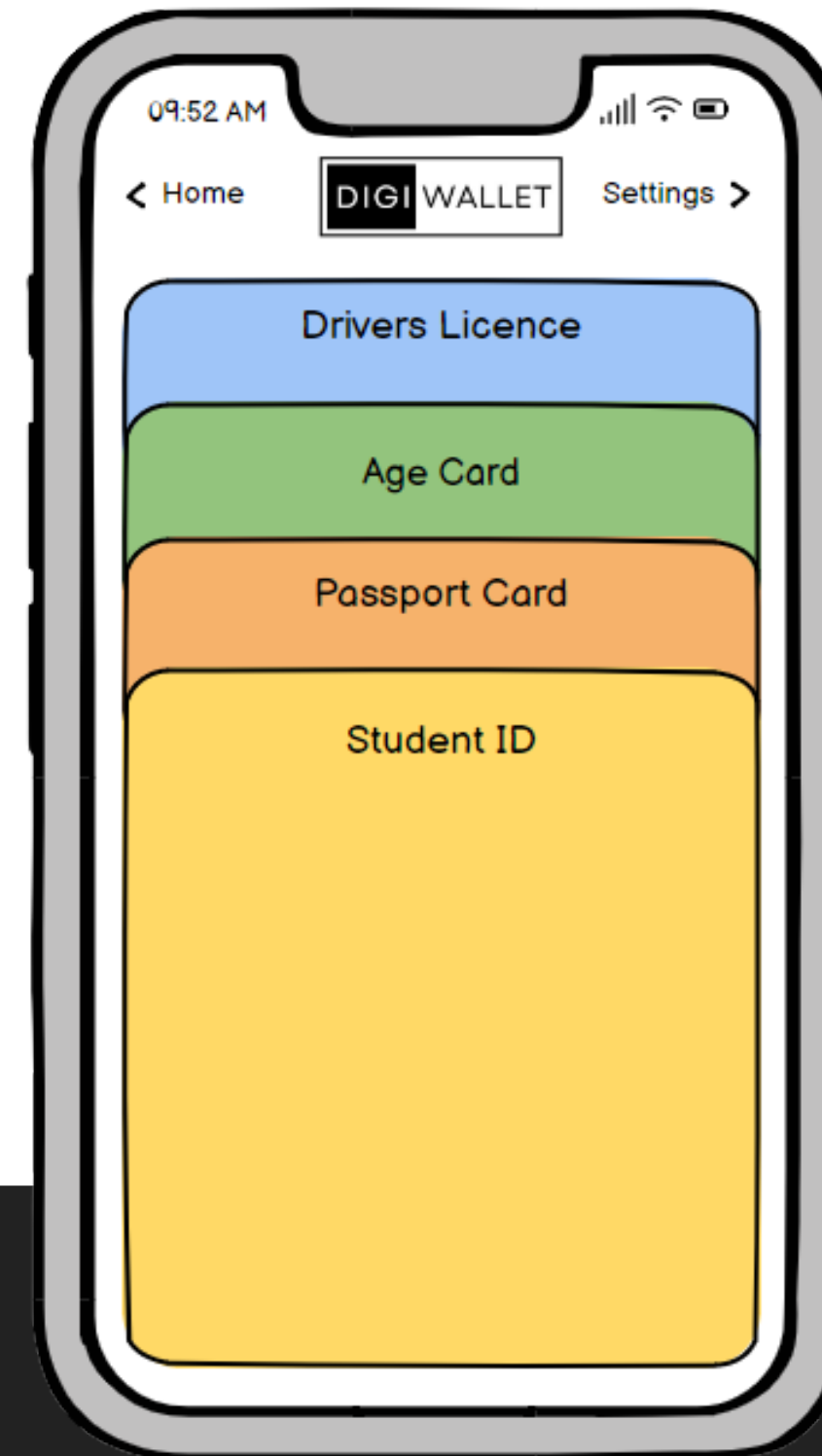
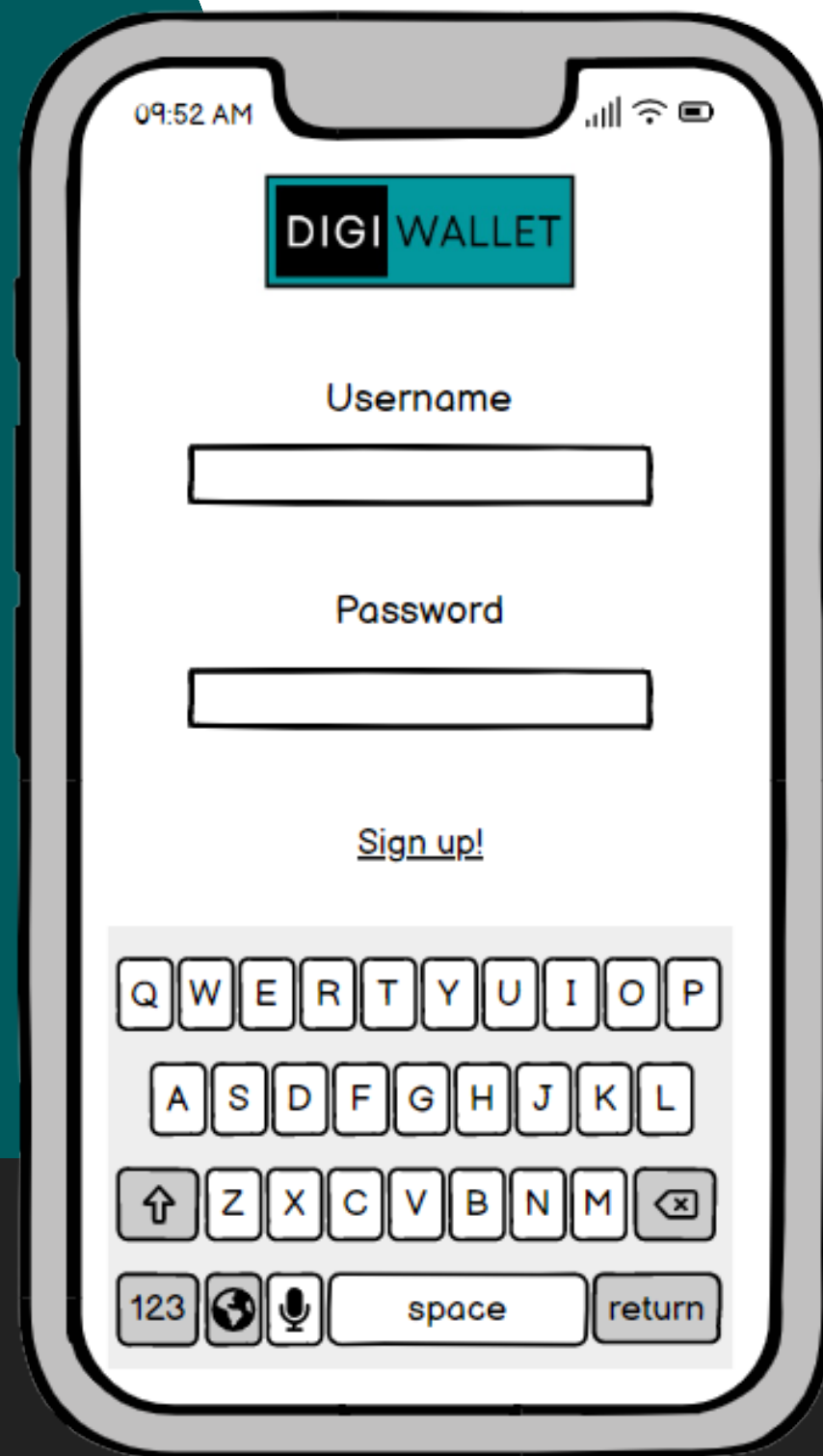
The main screens for my project are done using the React Navigation library.

Each screen is associated with a specific React component that will be rendered when the user navigates to that screen.



# Front End

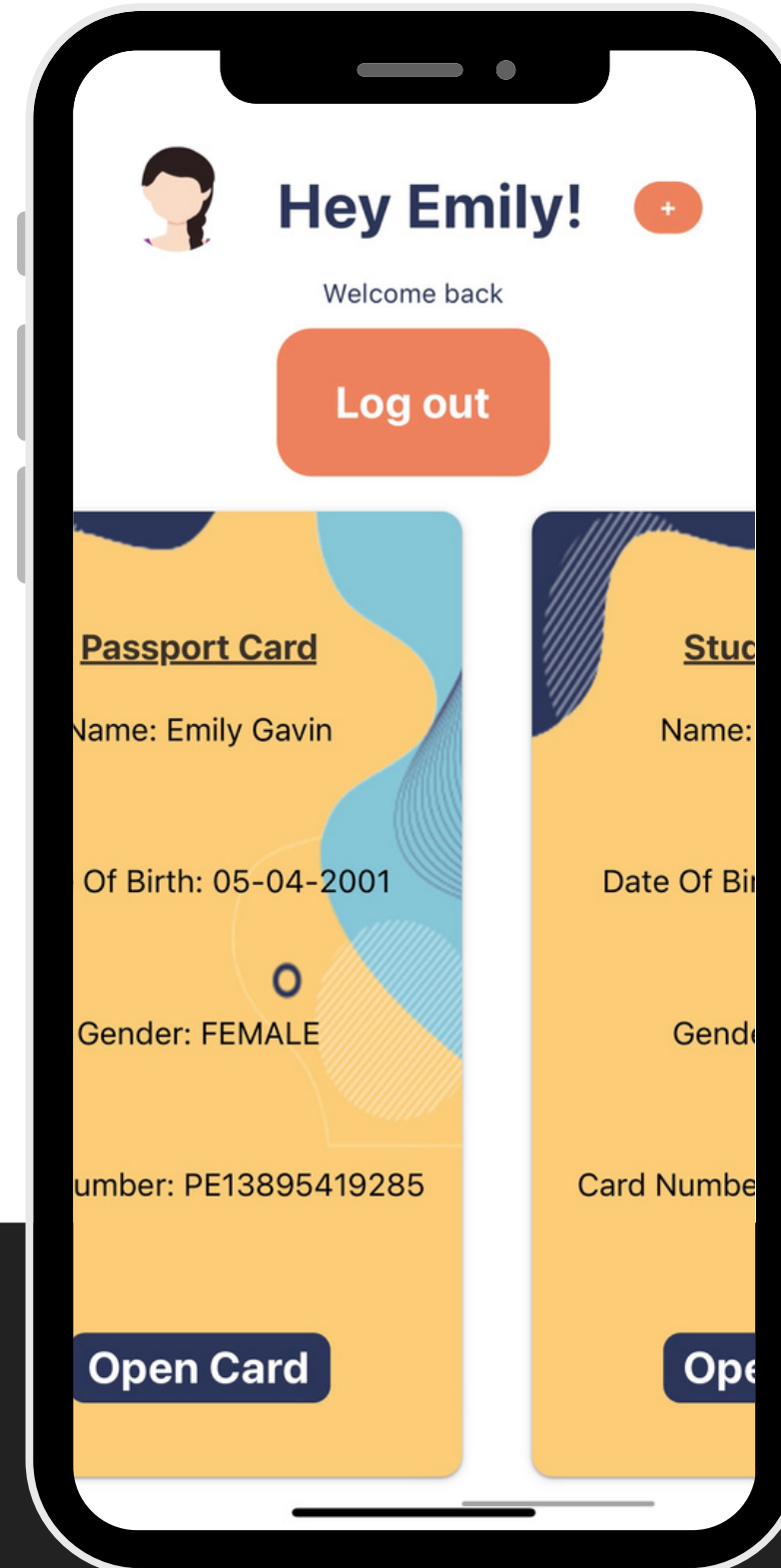
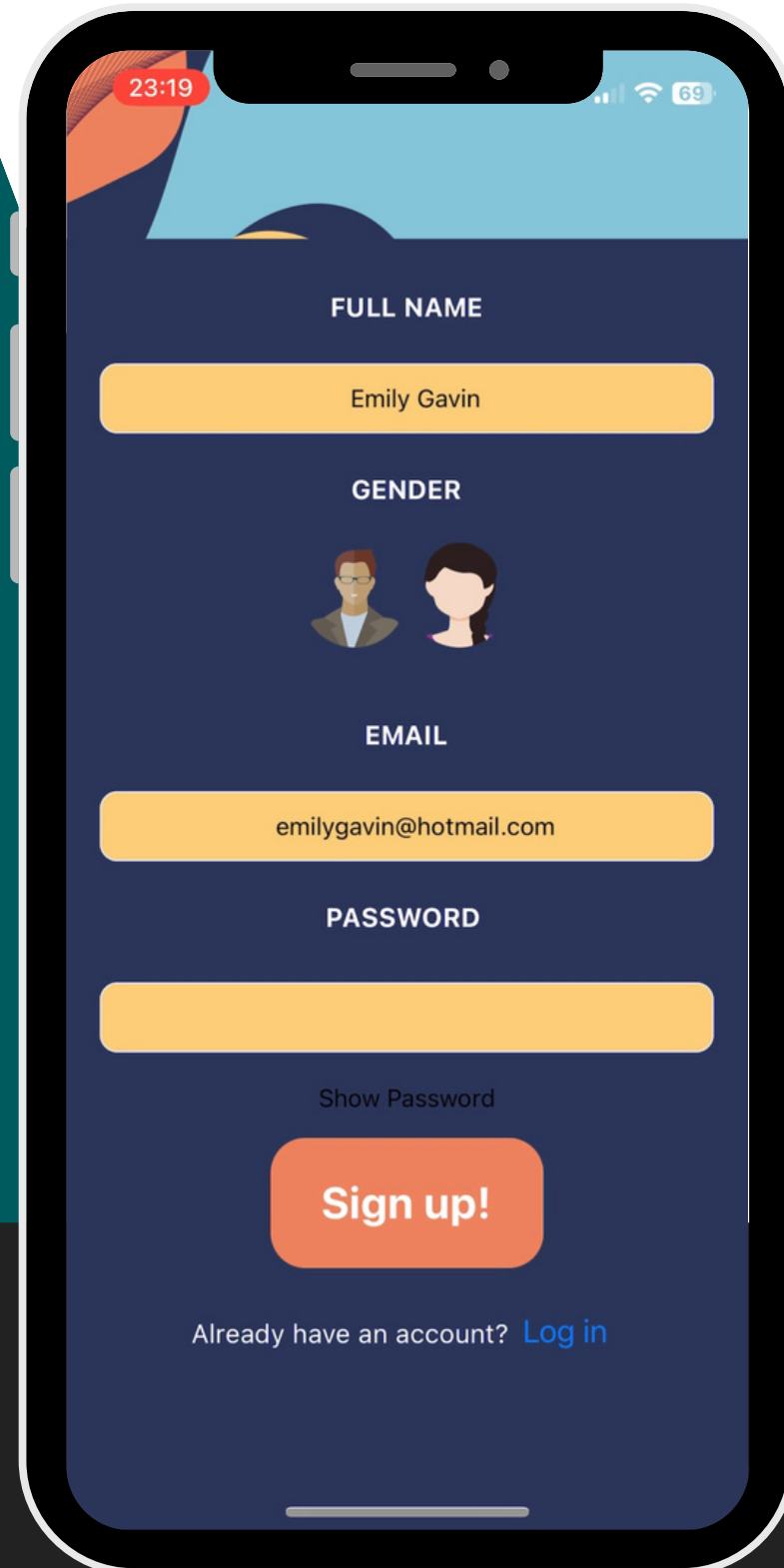
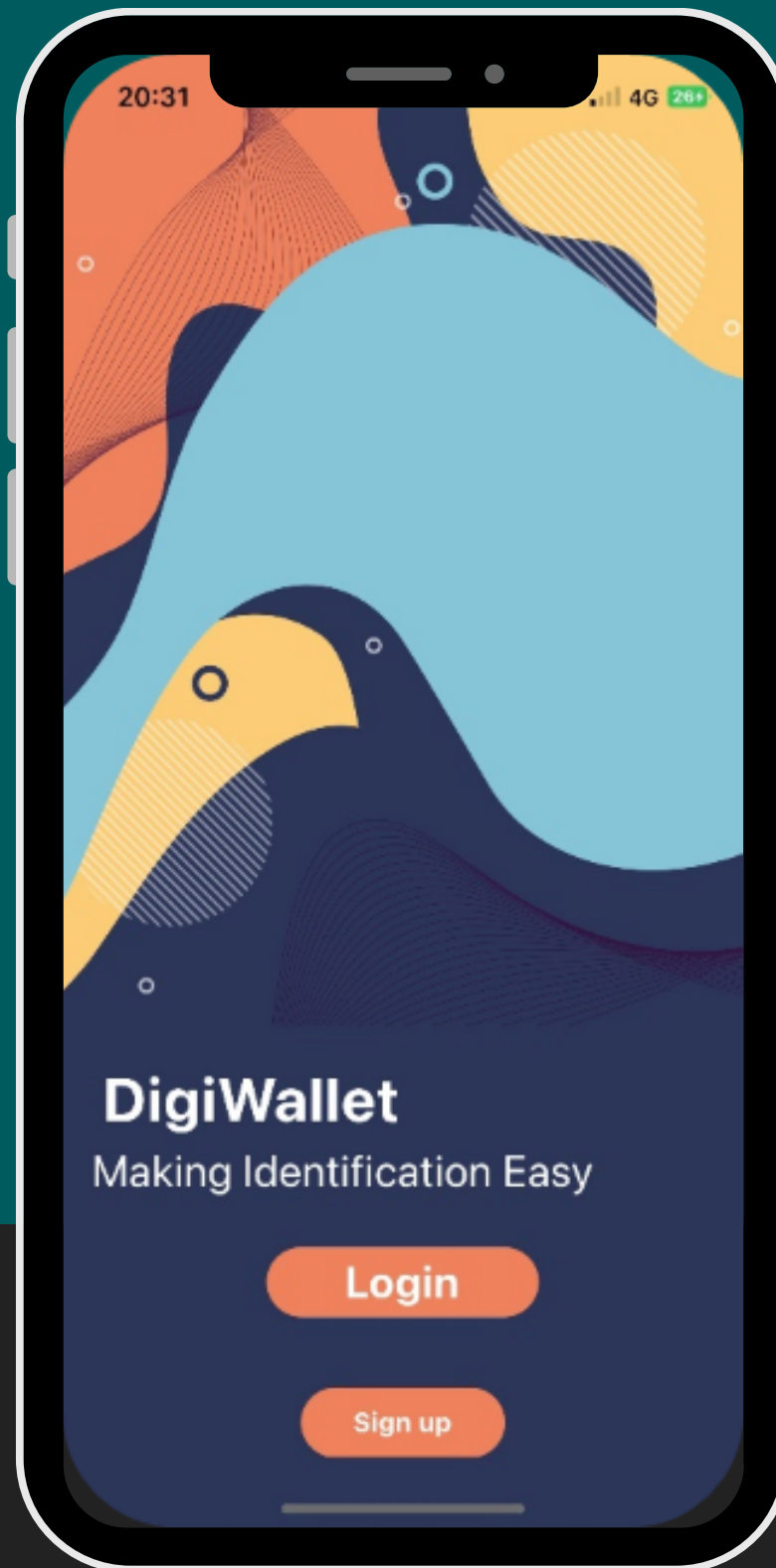
## Initial Mock-ups





# Front End

## End Result





# Back End

Spring Boot

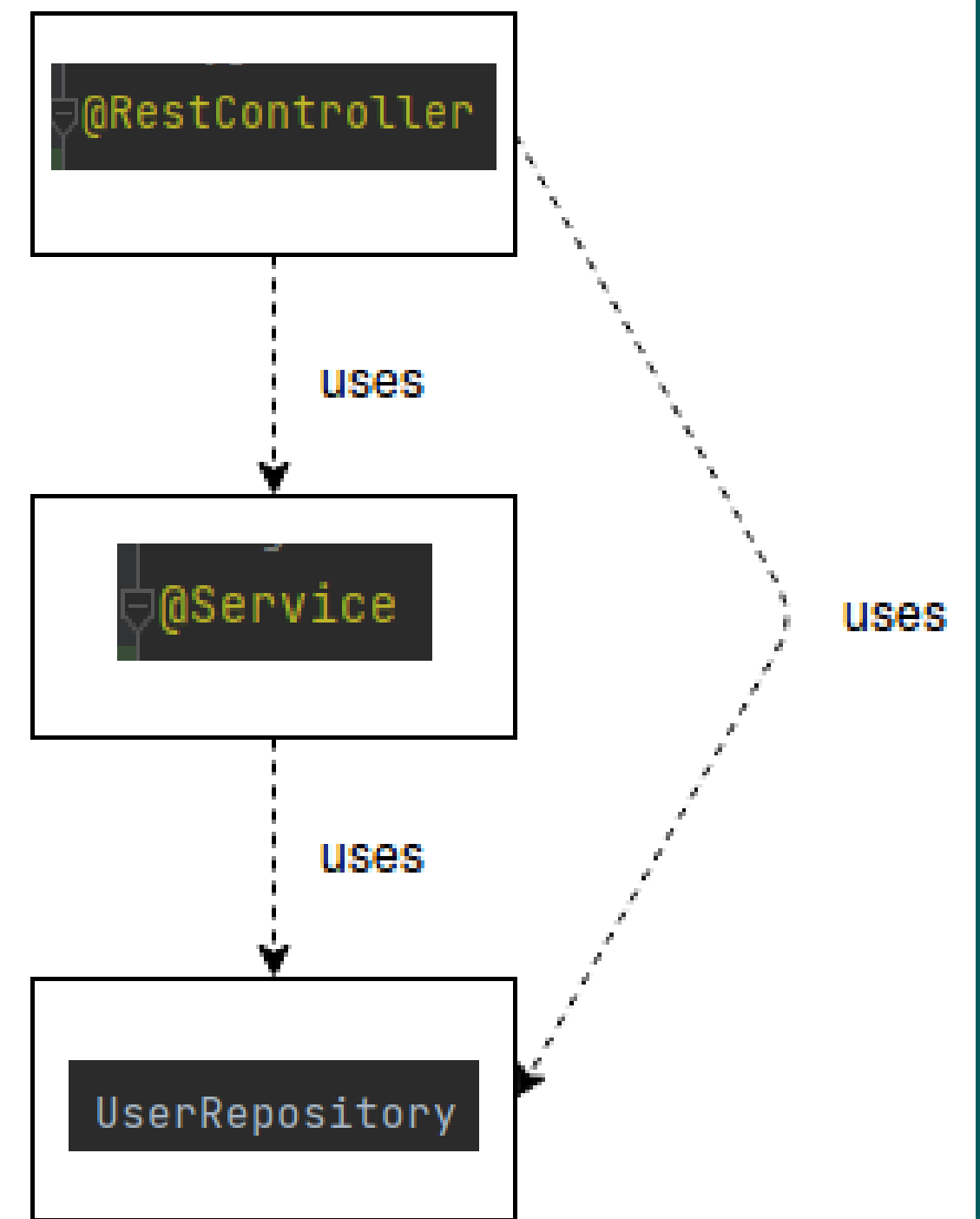


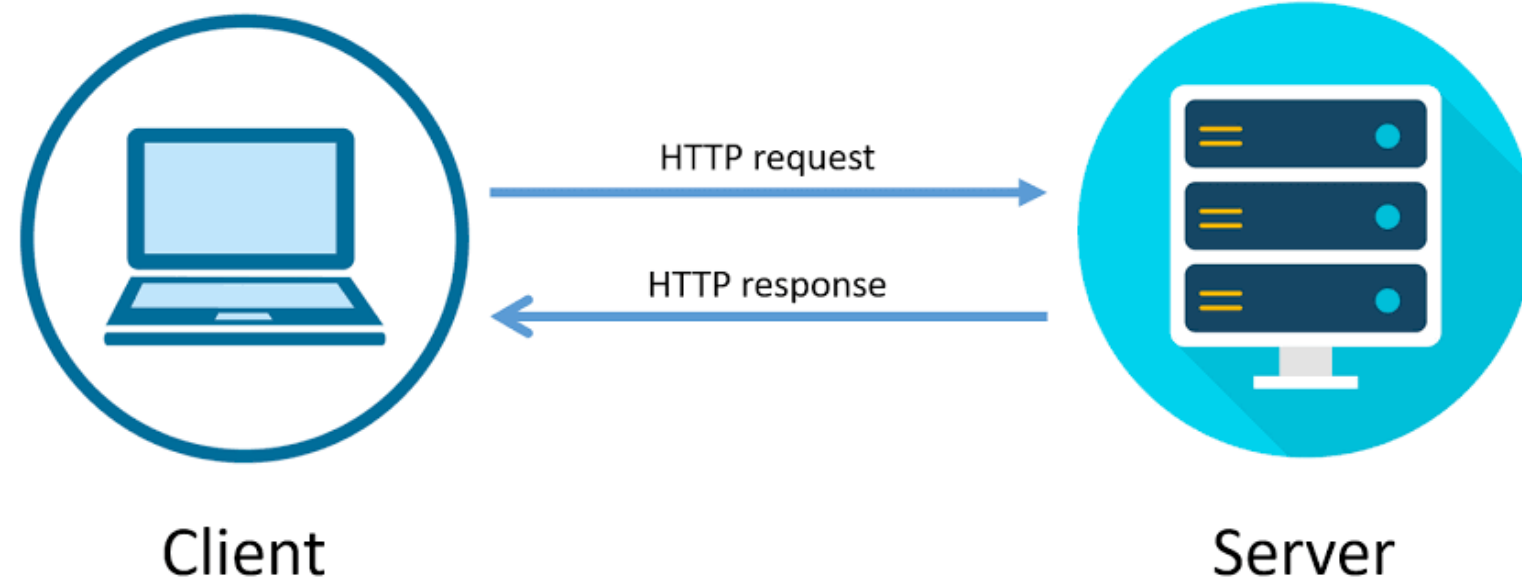
My backend is a Springboot RESTful API. It is written in Java and the IDE i'm using is IntelliJ.

Spring Initializr was used to create my Spring Boot Application which was then later connected to run on an EC2 instance.

My project consists of a standard Springboot framework using a main class, Controller, Service and Repository communication.

- Ⓒ User
- Ⓒ UserController
- Ⓘ UserRepository
- Ⓒ UserService





# HTTP REQUESTS

I have 8 functioning HTTP Calls to my database. The methods I use are GET, POST and DELETE.

These methods are used to view and create new instances into the database.

- 1 GET – Get All Users
- 2 POST – Register New User
- 3 GET – Find by email and password
- 4 POST – Add Age Card by ID
- 5 POST – Add Student Card by ID
- 6 POST – Add Drivers License by ID
- 7 POST – Add Passport Card by ID
- 8 DELETE – Delete User by ID



# Testing

## Unit Testing



I used a series of unit testing to test my backend code to ensure that all my functionality and paths work as expected.

Unit testing is crucial for creating high-quality, reliable, and maintainable applications.

For my testing, I used the `@Mock` and `@InjectMocks` to mock fake data in my test functions.

I also used Postman to test my backend endpoints to ensure that they function correctly

Postman is a great tool for being able to test all my endpoints in different collections, i.e. LocalHost, MongoAtlas and EC2

```
@SpringBootTest
public class DigiWalletApplicationTests {

    @Mock
    private UserRepository userRepository;

    @InjectMocks
    private UserService userService;

    // emilygavin
    @Test
    public void testGetAllUsers() {
        List<User> userList = new ArrayList<>();
        userList.add(new User( name: "John", gender
        userList.add(new User( name: "Mary", gender
        when(userRepository.findAll()).thenReturn

        assertEquals( expected: 2, userService.getAll

    }

    // emilygavin
    @Test
    public void testGetUserInvalidEmail() {
```

# Cloud Connection

Database and EC2

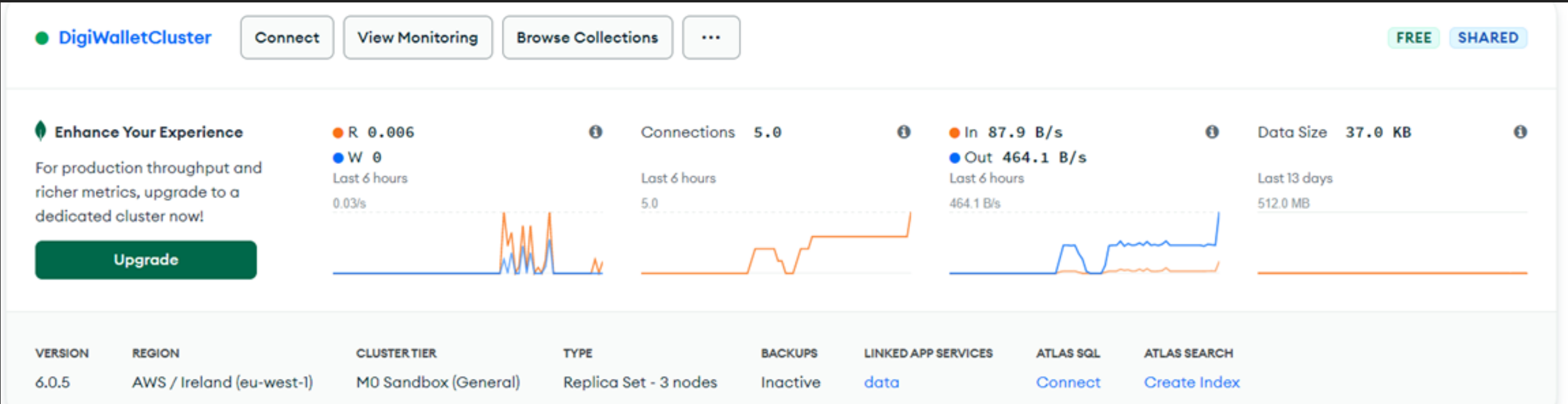


Amazon  
EC2

Initially, I had my MongoDB database running locally through a Docker container

I have since connected my database to Mongo Atlas using a connection string which is located in my application.properties. This makes my database information available on a cloud

```
spring.data.mongodb.uri=mongodb+srv://emilygavin:Password123@digiwalletcluster.ehafqae.mongodb.net/digiwallet
```



I store my database into a cloud collection called "digiwallet" making the database information available to connect to my EC2 Instance

Instances (2) Info								Connect
<input type="text" value="Find instance by attribute or tag (case-sensitive)"/>								
<input type="checkbox"/>	Name	Instance ID	Instance state	Instance type	Status check			
<input type="checkbox"/>	DigiWallet	i-0898a31a9ae819fc0	Running	t2.micro	2/2 checks passed			

# Teamwork

Every week my team and I met on a Monday to perform our weekly stand-up. Here I updated my team on my progression with my project, goals for the week, and to discuss current ongoing issues.

We recorded each of these stand-ups and the audio is available for view on OneNote.

I also collaborated with others in my class on more specific fields such as Mongo Atlas, EC2 and React Native.

This was a great way of talking through issues and using each others expertise.



Teamwork week 7

Teamwork week 8

Teamwork week 9

Teamwork week 10

Teamwork week 11

Teamwork week 14

Teamwork week 16

Teamwork week 17

Teamwork week 18

Teamwork week 19

Teamwork week 20

Teamwork week 21

Teamwork week 22

Teamwork week 23

Teamwork week 24



# TimeLine

This was the general timeline I created at the beginning of the year to plan the implementation process of my project.



I also used Microsoft Project to track more accurately my projects trajectory along side Jira to deal with different bugs and future implementations.

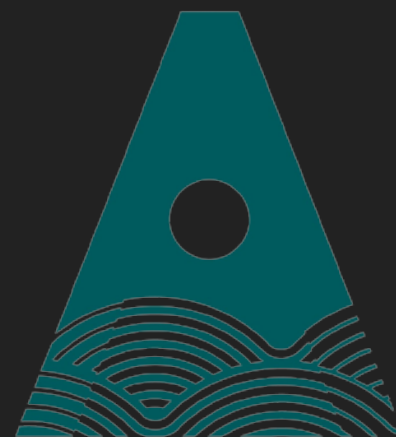




# THANK YOU

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I'll now present a demo of my project, feel  
free to ask any questions!



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