NUI Galway
OÉ Gaillimh

Project Definition Document

Project Management and Employee Scheduling application (Industry Project)

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Table of Contents

1. Introduction

1.1 Statement of Problem

Sidero is a company which deals with various projects from clients and assigns them to teams of employees. There are various Project Management and Employee Scheduling apps out there but both of these types of apps will never not be useful. I want to create an app which implements both of these factors. I believe the idea is a realistic one and not an overly ambitious one which could run into too many problems down the line.

From speaking to my Sidero adviser Sourav, he recommended doing any form of end to end app which makes use of their technologies, which includes java with maven for the backend (Sidero are Java heavy), react for the frontend and any kind of database. Basically a full stack app. One of my Sidero advisor Sourav's example ideas was some form of a skill management app although he is satisfied with the idea I chose as long as I make use of Sidero's technologies and get experienced in them. I am however considering adding some form of a skill section to my app should I have the time.

But the base idea is to create an app with CRUD functionality and expand on it. I will start with the front end using react on the Visual Studio Code IDE, then the backend using Java with Spring Boot built via Maven on the Eclipse IDE and finally the database which will more than likely be MySQL on phpMyAdmin although I may consider using a H2 database which is based on Java so arguably more convenient. I plan on adding security to the app with account registration and a login along with some form of search mechanism. It will have various sections with the two essential ones of course being the Project Management section and the Employee Scheduling section. Others will be added as I go along. Some are already planned, some may be discarded and some may be subject to change. In terms of the app's official name, this will be decided on as I go along.

1.2 Stakeholders

- Steven Curran – Student / Developer
- Adrian Clear – NUIG Advisor
- Sourav Bhattacharya – Sidero Advisor
- Enda Barrett – Course Director
- The end users

1.3 Goals

- To provide a user friendly app which is easy to use.
- To provide an app which stands out from competitors.
- To develop an app with CRUD functionality
- To develop an app which fulfils the bare minimum requirements.
- To develop an app which includes all desirable (but not essential) features.

1.4 Project Success Criteria

- Project is delivered on time.
- Plan is adhered to with minimal deviations.
- Objectives are realistic.
- Determine essential deliverables and desirable ones with desirables only being done if time allows it.
- Any changes or updates to project must be clearly documented.

1.5 Essential Deliverables

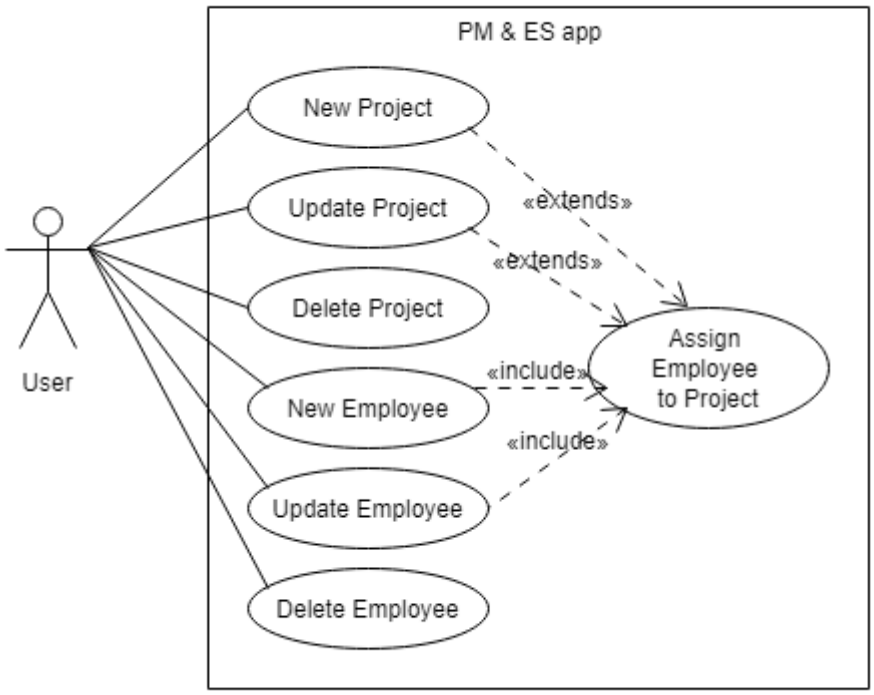
- A full stack end to end app which achieves CRUD functionality.
- A frontend UI designed using react.
- A backend built by Java with RESTful API and a database.
- Project Management and Employee Scheduling sections with security login / registration and search bar.

1.6 Desirable Deliverables

- Section on employee skills.
- Comment section / Forum.
- Timetable maker section.

2. User Requirements

2.1 Use Case Diagram



After passing the security check, the user can go to the project page in the navbar or the employee scheduling page. The specific projects will have a start time and an end time. The option to edit will always be available. The user can leave the project without any employees at first and add them later. This can be done for projects planned for the future where the employees haven't been decided on yet. When the user creates an employee, they need to be assigned to a team and project on creation. These cannot be left blank but the employees team and project can be edited. The employee can only be assigned to one project and a project can have many employees.

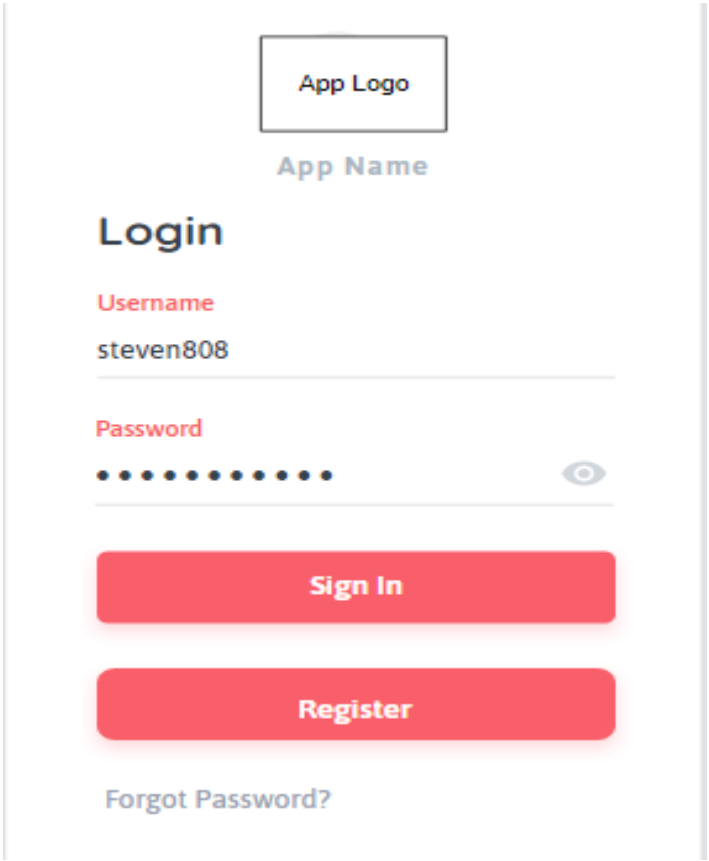
Note: Only essential deliverables are shown.

2.2 Scenario

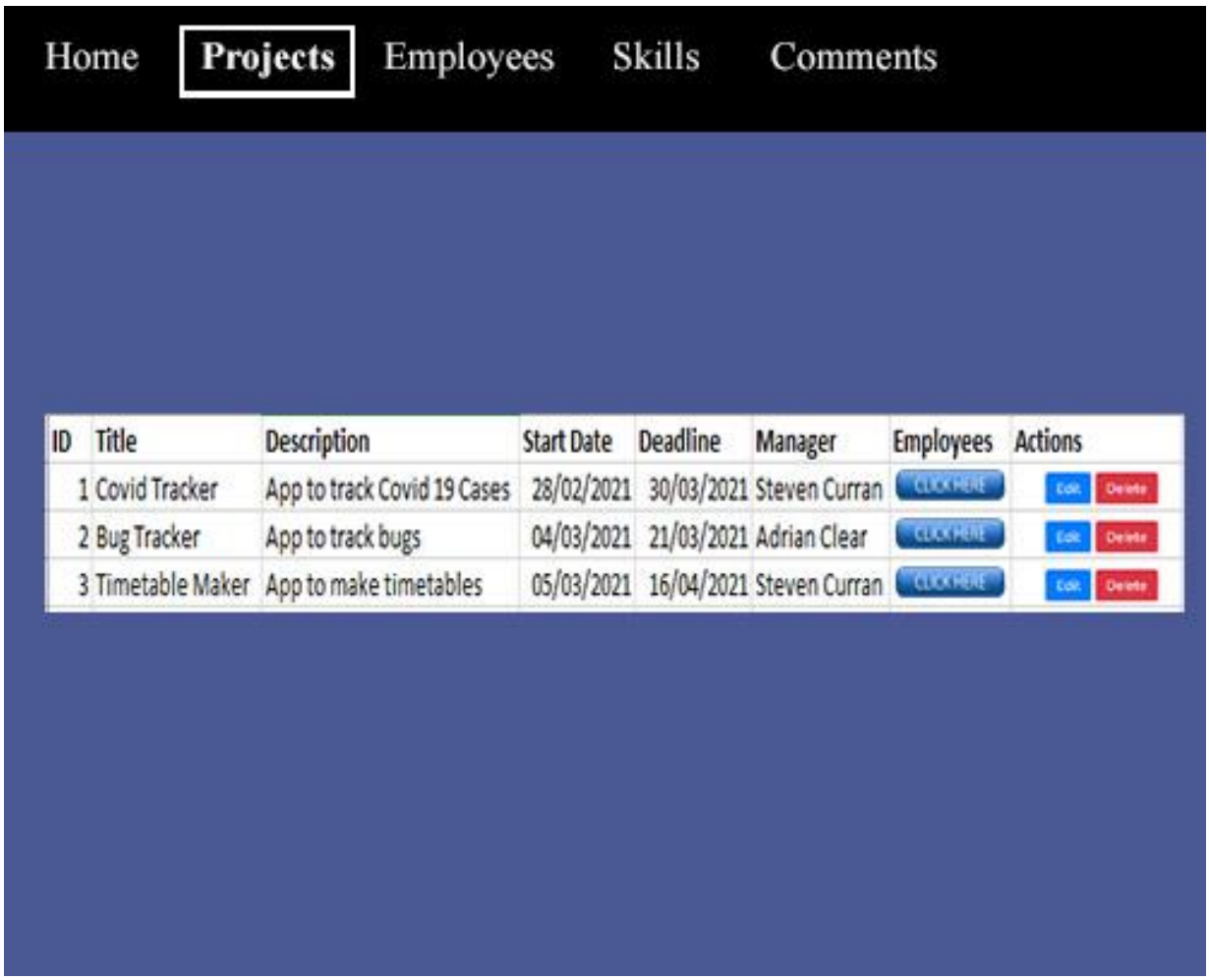
John opens up the app and is immediately greeted with a login screen asking for a username and password. John enters his username and password as they are already registered. John goes to the projects page in the navbar. He then decides to update one of his companies projects. He updates the “Covid tracking app” project with some new details and changes the deadline. He then decides to assign another employee to it. All of this new information is now saved in the connected database. John then exits the app.

2.3 Prototypes

Below is a graphical prototype of the UI login screen:



Below is a graphical prototype of the UI projects page:



Note: The UI graphical images presented are entirely hypothetical and subject to change once the real UI is being created.

Below is the architecture of the system:

Note: The RESTful API is initialized using Spring boot. React will then present the User Interface. The database will be hardcoded in eclipse.

3. Technologies

- Java with Spring Boot built via maven on the Eclipse IDE. This will be the core backend language
- React using the Visual Studio Code IDE. This javascript library is will be used to create the frontend UI.
- HTML, CSS, Javascript and Bootstrap will all feature for the frontend.
- RESTful API to achieve HTTP methods like GET, PUT, POST and DELETE. Almost essential in order to achieve a CRUD app.
- MySQL database using phpMyAdmin. This will simply be the database for the app. Subject to change as may switch to H2 based on Java for convenience.
- JWT framework will be implemented.
- Backend will be integrated using JPA and hibernate.
- Adobe Photoshop and other Adobe applications may be used to create a possible logo to go along with the app name.

4. Project Plan (Subject to change)

Week	Start Date	Actions
Week 1	08/02/2021	• Determine technologies with NUIG advisor and Sidero advisor. • Watch videos and read about unused technologies.
Week 2	15/02/2021	• Determine idea with NUIG advisor and Sidero advisor. • Practice with technologies.
Week 3	22/02/2021	• Design Requirements document. • Get started on System Design.
Week 4	01/03/2021	• Finish System Design. • Get started on frontend using react.
Week 5	08/03/2021	• Combine react and Spring Boot to begin full stack application
Week 6	15/03/2021	• Beginning of Spring Boot REST API.
Week 7	22/03/2021	• Connect react UI to RESTful API. • Show off prototype to advisors.
Week 8	29/03/2021	• Add security to application. • Create login / register UI.
Week 9	05/04/2021	• Implement JWT framework. • Make database.
Week 10	12/04/2021	• Integrate backend using JPA and Hibernate. • Finish essential deliverables.
Week 11	19/04/2021	• Work on desirable deliverables. • Begin Test and Design document.
Week 12	26/04/2021	• Work on desirable deliverables. • Finish Test and Design document. • Have project ready for presentation.

5. Conclusion and Key Challenges

5.1 Conclusion

In conclusion the project, requirements and specifications are in my view realistic. The application must be user friendly and fulfils the essential deliverables at the bare minimum. All stakeholders must be satisfied with the final project as well. The end product should be something I am proud to show off on my linkedin account or CV. If it is not, then I have not achieved my goals.

5.2 Key Challenges

The key challenges will be getting used to the new technologies I have no experience in such as react. There was also the challenge of keeping to the project plan above especially with assignments from other modules keeping me busy and potentially holding me back. Should a scenario where I am behind schedule, I must work as hard as possible to get back on schedule or at the very least make sure of essential deliverables are achieved. Discussions with my supervisors will crucial throughout the development stage, particularly when I'm running into difficulty and need some advice. There is also bound to be challenges I don't know about yet which is arise in the middle of the development stage and once they arise, I must not panic. I must consult with my supervisors, keep to my schedule and focus on how I'm going to overcome this challenge.

6. Bibliography

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