Final Year Project Expo App

Functional Specification

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Table of Contents

1. Introduction

1.1. Overview

Our product is a mobile application that is designed to replace or supplement the current Project Expo booklet for DCU. This application would include functions such as a map which would allow the users to easily locate where each of the project demonstrations are located. The map would be interactive meaning users can click onto a project which would then take them to a page or side menu containing the project information. The map can then be cleared after the expo has been completed and be repurposed for a future expo meaning it can be reused. The app will also contain a list featuring all the projects in the expo. When a user clicks on a project from the list, it will lead them to the location of the booth/stall.

1.2. Business Context

Our application is created to replace or supplement the existing physical booklet that is used for the Project Expo for DCU.

1.3. Glossary

Admin: Short for “administrator”. This is the person who is in charge of administration on the application. This gives them the privilege to change or maintain the application. In this case, they will be able to change the projects taking place at the expo in the interactive map of the app.

Back-end: This is the part of the application where it is not seen by the user. It is responsible for the storage of data required for the application overall.

Dependency: A dependency is something, say a function, that is required by another function. In this case, the venue information depends on the interactive map to display its information, making the interactive map a dependency.

Expo: Short for exhibition.

Front-end: The part of the application that the user sees and interacts with. It relies on the back-end to display its data.

Mobile application: A software application that is developed for mobile devices.

2. General Description

2.1. Product / System Functions

Here is a list of the main functions of our application. This list of functions is open for additions if we choose to increase our scope of the project:

- Interactive map
- Project list
- Side menu or page
- User feedback
- Search and filtering
- Admin control

Interactive map

This interactive map will display the floors and rooms of a venue. The user will be able to change what floor and room they are viewing. It will also display the location of the booth/stall of a project demonstration.

Project list

A page containing a list of all the projects in the expo will be implemented. This is so the user can look through a selection of projects and choose which ones interest them the most. They can find out more details about each project and where they are located in the venue.

Side menu or page

When a user selects or presses on a project booth/stall on the interactive map, it will open a side menu or page containing the details of the project. The details of the project will contain information about the project such as its description and technical details.

User feedback

The user will be able to leave feedback such as a comment on a project of their choosing in the project list.

Search and filtering

On the project list page, the user will be able to search and filter their interests. For example, they will be able to search things relating to project topics such as web applications. Another example is filtering based on the programming language, the user may want to see projects that are using Python or Java.

Admin control

This feature is necessary for the application if it is needed to be reused. The admin can clear the database for the previous expo which means clearing all the projects that are displayed on the interactive map and list. They can then upload new projects and update the map and list for the upcoming expo.

2.2. User Characteristics and Objectives

User Community Features:

- An interactive map for engineering and computing professionals attending the DCU Expo to view the final year students projects.

Objectives and Requirements:

- Easy to use
    - The system should be easy to use and navigate, ensuring that both tech-savvy professionals and those less familiar technology can easily access and explore the projects
- Accurate map
    - It is crucial that the map accurately reflects the layout of the DCU Expo venue. Users should be able to trust that the displayed information is accurate and up-to-date.
- User friendly interface
    - The interface should be visually appealing, with a clean design that enhances the user experience. Clear navigation, concise project information, and easy accessibility to additional details are essential.
    - Speed of application (Refresh rate?)

Wish List and Feasible Solutions

- User accounts
    - Providing user accounts can enhance the overall experience of the application by allowing users to connect with the project creators by letting the users leave comments.
- Real-time Updates
    - Implementing the ability to update the map to provide users with real-time information about any changes to the Expo projects (e.g location change), or any additional information.

2.3. Operational Scenarios

User opens application

The user will be greeted with a menu with two options, interactive map and the list of all the projects in the expo.

User selects interactive map
The user will be able to view an interactive map of the venue such as the McNulty or Computing building. Here they will be able to see the locations of each project demonstration on each floor and room. They will be able to change which floor and room they are viewing.

User selects project demonstration on interactive map
A side menu or page will be displayed when a user selects a project demonstration on the map. This side menu will contain information about the project such as its description and technical details.

User selects project list
The user will be able to view all the project demonstrations that are taking part in the expo.

User selects project in list
A side menu or new page will open containing information about the project. It will also open the interactive map, displaying its location in the venue. The user will also be able to leave a comment or feedback on the project they have selected as part of the user community feature.

User uses search/filter function on project list
The user can choose what they want to look for or filter the projects based on what they are interested in. For example, the user can search up web application projects and filter it by a programming language such as Python.

Admin controls
The admin will be able to refresh the venue for a future expo. This means they can remove project demonstrations from the previous year and add new ones for the upcoming year. Access to the database will be required for this scenario.

2.4. Constraints

Time constraints: The deadline for the project is the 21st April 2024. As we are encountering many new things in this project, we may encounter problems with programming in general. As a result of this, it may take longer to implement some functionalities and it will require more time to deal with leading to time constraints. This may lead to delays while doing the project.

Learning new programming languages: We need to learn new languages to create this application. Setting a timeframe to learn these languages is needed to avoid any delays in the project.

3. Functional Requirements

Interactive Map (R01)

Description

The application will display an interactive map of the expo where users can view and locate the project stalls in the DCU Expo.

Criticality

High

Technical Issues

Map should support zooming and real-time updates to ensure good user experience

Dependencies

Depends on R02 (Venue Information) for accurate projects and locations.

Others as Appropriate

The map should be responsive and optimised for various screen sizes and devices.

Venue Information (R02)

Description

The application should display relevant and accurate information about different project locations within the Expo.

Criticality

High

Technical Issues

Implementing a data structure to organise and retrieve the venue information efficiently.

Dependencies

Linked with R01 (Interactive Map) for visual representation of the venue information.

Others as Appropriate

Add a search and filtering option for users to quickly locate specific points of interest

Admin Controls - Admin User Authentication (R03)

Description
The system will provide a secure authentication mechanism for admins to access the admin controls.

Criticality
High

Technical Issues
Implement a secure login procedure, including password encryption.

Dependencies
Linked with R02 (Venue information) to maintain consistency in user data across the application.

Others as Appropriate
Provide audit track logs to track any changes made by the admins

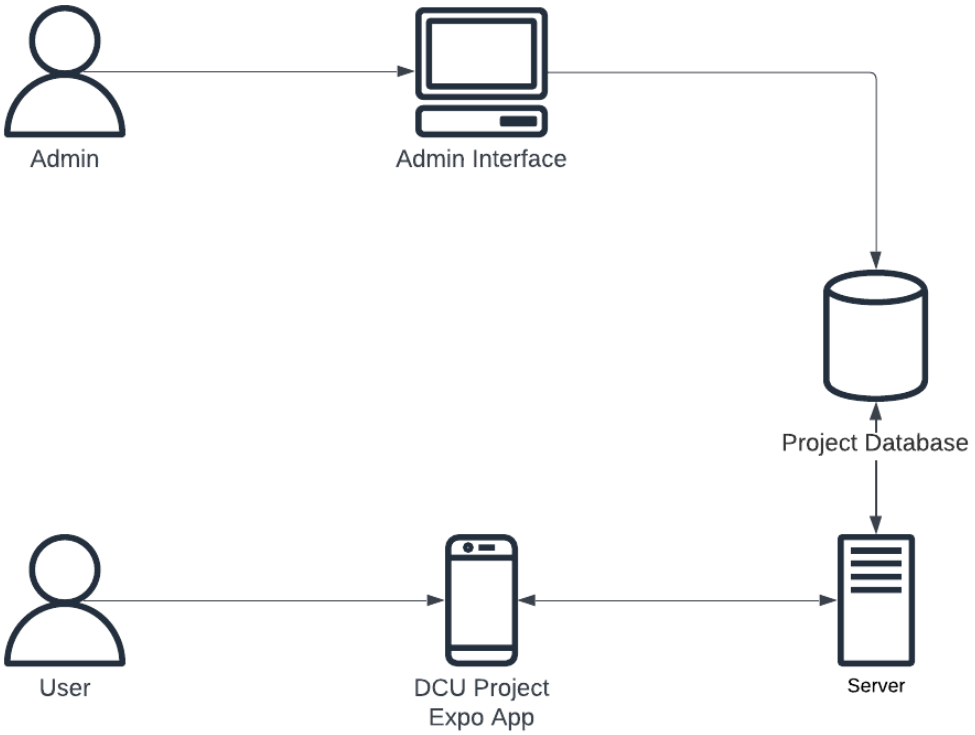
Admin Controls - Content Management (R04)
Description
The admin controls will allow them to manage the content in the application such as the content displayed on the interactive map and the venue information.

Criticality
Medium

Technical Issues
Implement a content management system for efficient handling of the venue information

Dependencies
Linked with R02 (Venue Information) to ensure a good synchronisation of data between the admin controls and the user-facing application.

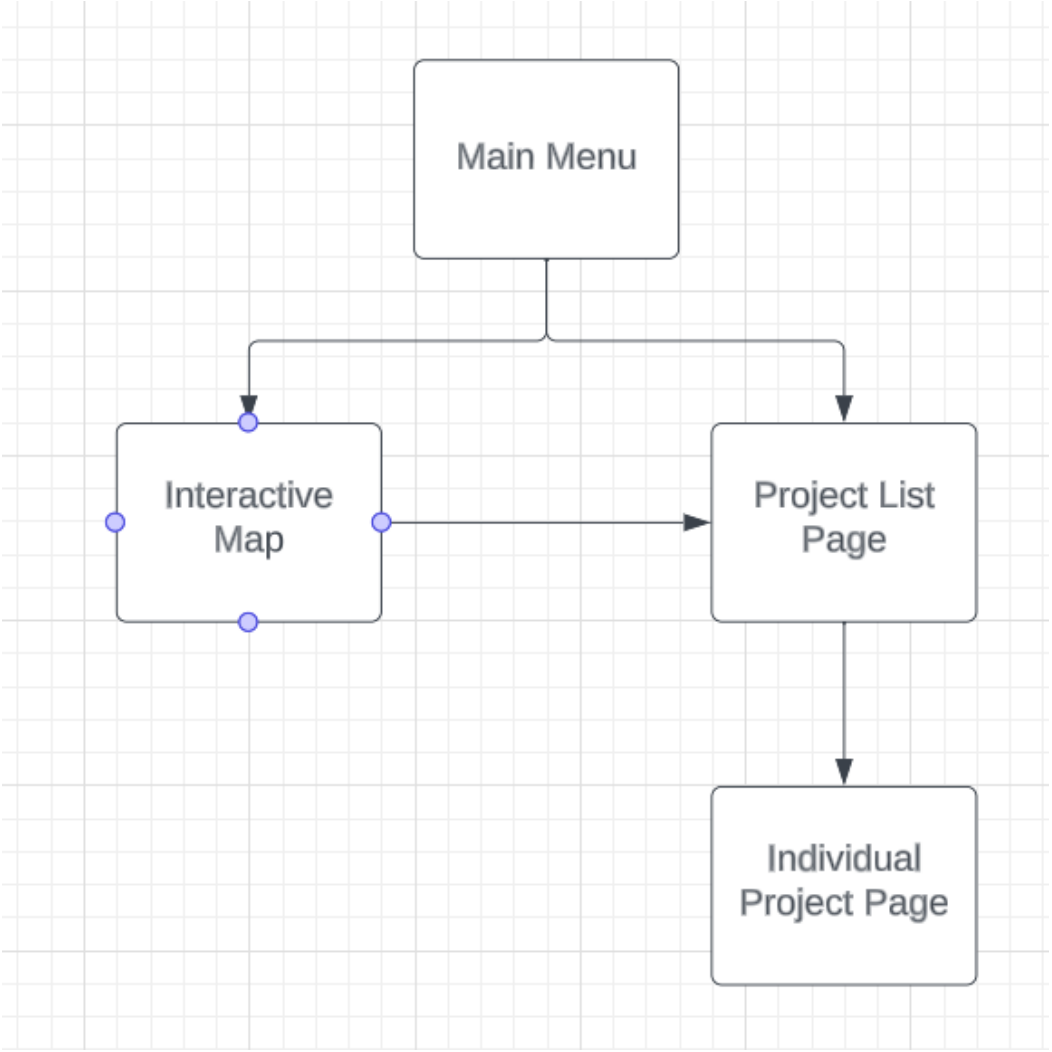
4. System Architecture



This is the system architecture of the mobile application of the DCU Project Expo. The project information will be stored in a database. This will contain details about each project such as its group members, description, technical details etc. It will then be hosted on a server so the mobile application can have access to it. This is so the projects can display and appear on the mobile app which the user can then access. Since a user community feature will be implemented, users leaving comments or feedback will be updated to the database through the server. The administrator will be able to change the project entries in the database through their admin interface.

5. High-Level Design

5.1 High-Level Design Diagram



5.2 High-Level Design Description

5.2.1 Main Menu

Main menu where you can choose to look at the map or look through the project list.

5.1.2A Interactive Map

Interactive map showcasing all the projects.

5.1.2B Project List

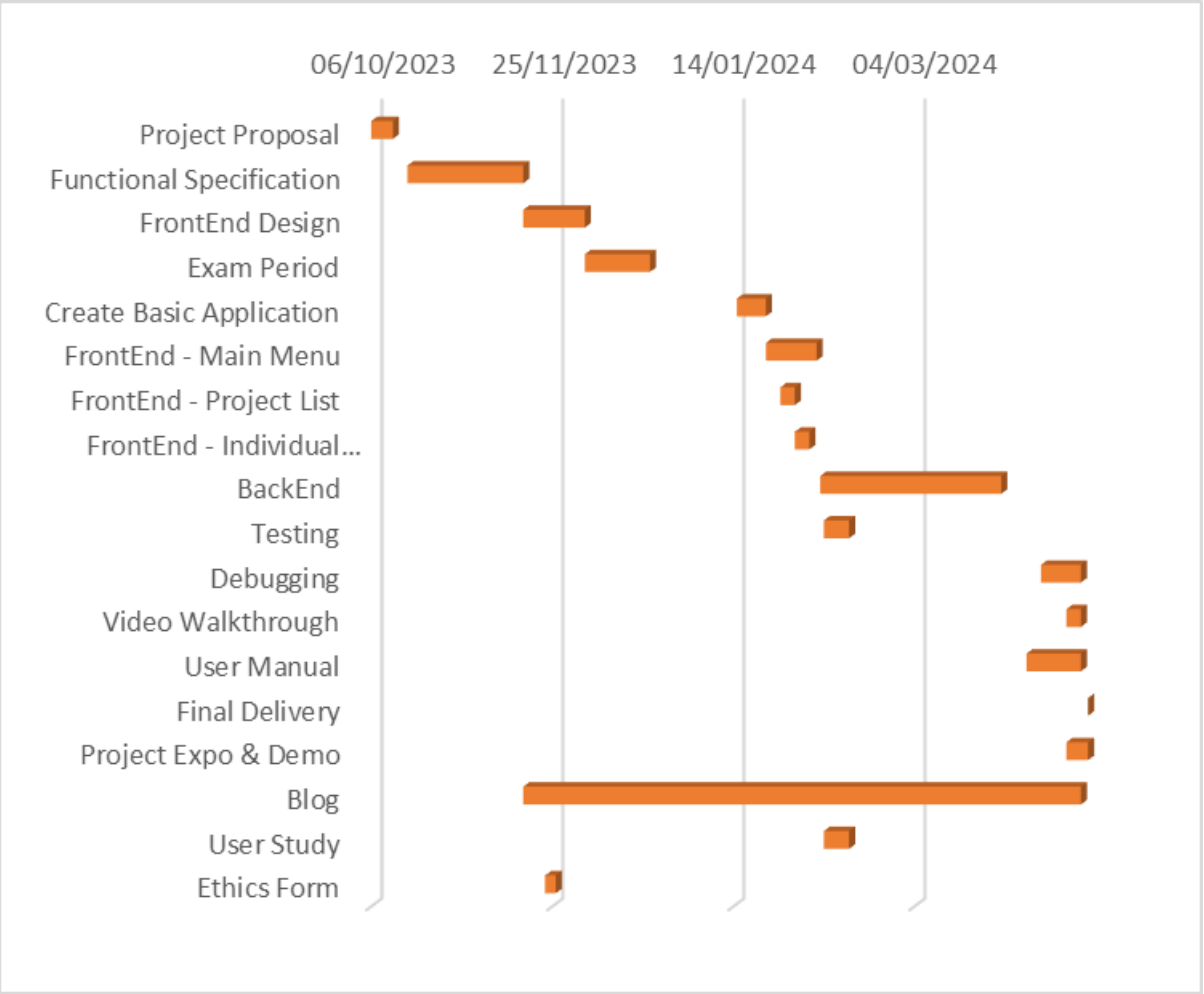
A list of all the projects in the Expo.

5.1.2B.1 Individual Project Page

A page that contains information about a specified project.

6. Preliminary Schedule

The preliminary schedule for this project is visualised through the use of the GANTT chart below:



7. Appendices

The DCU Project expo booklet we are basing this mobile application on - http://flipper.ie/publications/DCU-Expo-2023-Final-Year-Projects/