UniLodge

An AirBnB Alternative for Students

Final Year Project
B.Sc.(Hons) in Software Development

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About this Project

Abstract Housing, and the lack of affordable accommodation has become a hot topic in recent times, especially in relation to students having to endure undesirable living conditions for even more so undesirable rates. Daily, students are commuting great distances to avoid having to endure the financial burden of living at a local level. Students being unable to bear this burden leads to lower admission and attendance rates, an undesirable outcome for both the educational institutions and those looking to attend.

The proposed solution to help bridge this issue will be a web application, providing an easily accessible platform for students, and for those living locally or living at a reasonable distance, who may not have the outlet to advertise their spare room or inhabited apartment.

Authors This was developed as a 15 credit project by Faris Nassif and Aaron Burns, final year students of Galway-Mayo Institute of Technology.

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Chapter 1

Introduction

1.1 Context

Brief, contextualize project

1.1.1 Web Applications

To do :(

1.1.2 Something

To do :(

1.2 Project Objectives

Several objectives were outlined during the design phase of the project, the main objectives being:

- Evaluate and investigate the frameworks and tools available for creating a platform independent web application.
- Create and develop an application that will allow users to arrange or offer lodging services for students.
- Identify and compare applications of a similar nature, critically analyze those alternatives and apply any beneficial findings to our project.
- The application will, at a minimum, allow users to register an account, login, post listings and communicate with other users via a commenting system.

1.3 Summary

This section will contain a brief overview of each chapter outlined in this dissertation.

1.3.1 Methodology

In this chapter, the processes undertaken during the life cycle of the project in regards to planning and development will be outlined. The decisions, thought processes and influential factors leading up to those processes and design implementations will also be described.

1.3.2 Technology Review

A technological review will attempt to encapsulate the technical aspect of the project. This includes the different technologies incorporated, their implementation, why they were implemented and why they were chosen. The benefits of our chosen implementations will be critically analysed and compared with alternatives.

1.3.3 System Design

A detailed explanation of the overall architecture of the project will be provided. Code-snippets and diagrams will be provided to help illustrate the inner workings of the application at a high level. Improvements to the system will be identified and potential competitive alternatives will be discussed.

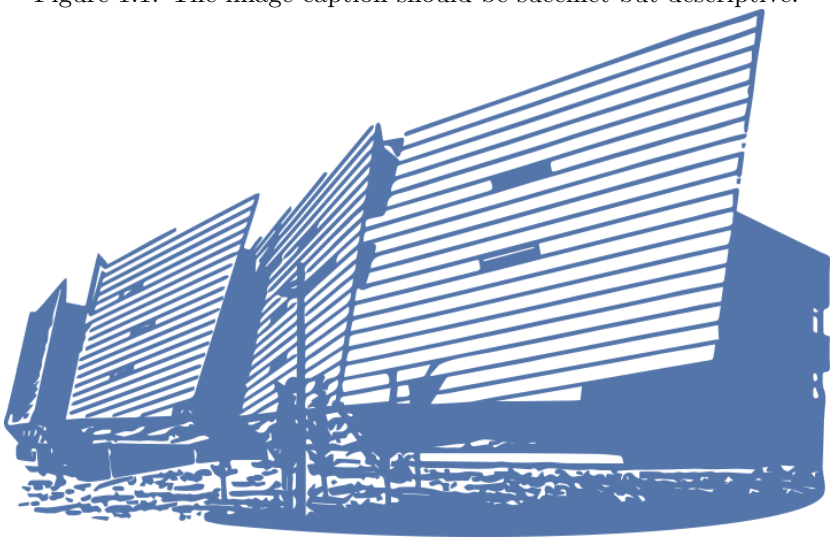
1.3.4 System Evaluation

An evaluation of the software developed in the project will be carried out with the initial project objectives in mind. The final results of the project will be reviewed, including an analysis of areas for improvement and potential changes applicable to the overall system.

1.3.5 Conclusion

To conclude, a brief review will encapsulate the overall system. Key insights will be identified and reflected upon. A final analysis will describe our experience and what can be taken from the overall development life-cycle.

Figure 1.1: The image caption should be succinct but descriptive.



Chapter 2

Methodology

Talk about introduction stuff, brainstorming project ideas, airbnb stats and stuff yaknow

2.1 Project Management

Blah..... was cited by [1] in ... You should refer to images and tables by their label and let latex figure out the numbering for you. E.g. we can refer to the figure on this page as Fig.1.1 instead of writing "Fig.1"...

2.2 Version Control

2.2.1 Considerations

2.2.2 Github

2.3 Testing

2.3.1 Types of Testing we'll do

2.4 System Architecture

2.4.1 Components of Project

2.4.2 Brief discussion about moving pieces

Chapter 3

Technology Review

Over the course of the project life cycle a plethora of frameworks, tools and development applications were available for integration or use with our application. This section aims to discuss the tools and technologies that were ultimately used, why they were chosen and what alternatives were available.

3.1 Initial Considerations

During the discussion and planning phase goals were outlined and proposed however, how to reach the end point was still very ambiguous. For this reason a lot of time was spent considering different approaches and uncovering the benefits and drawbacks of venturing down a chosen route. This brief section will outline those initially considered approaches.

3.1.1 MEAN Stack

The MEAN Stack combines the best of Javascript based technologies. The Stack is essentially a collection of open source components that provide a streamlined environment for building dynamic web applications.

The MEAN Stack consists of:

- MongoDB
- ExpressJS
- Angular
- Node.js

Perhaps the greatest attribute of the MEAN Stack for developers is that it's essentially a single language development stack, which can also be one of it's most undesirable attributes depending on the developers Javascript competency [1]. Other attributes that the development team considered attractive were the vast array of libraries and modules exposed via Node, it's speed, usability and flexible structure.

Another technology stack that piqued the attention of the developers was the MERN Stack, which is essentially the MEAN Stack excluding Angular and including React. Research was conducted on comparing the two [2] and the following was found:

Angular	**React**
+ Testing tools like Jasmine and Karma are well documented Angular frameworks that allow for seamless human-readable Unit Tests or browser/platform based test cases. + Application logic is a lot clearer and less convoluted than React due to it's declarative nature. + Enforces MVC-like design, giving developers an underlying structure to adhere to. React applications can be harder to maintain considering the overall design can be ambiguous and more unstructured. + Unidirectional data flow in applications allow data to flow to more seamlessly check for a change of state. − Weak ability to debug code. Debugging can be ambiguous without manual inclusion of libraries.	+ Mastering React is a lot less punishing than delving into Angular, Angular being a complete framework that incorporates associated knowledge of concepts like MVC or familiarity with Typescript. + Unidirectional data flow in applications allow data to flow to more seamlessly check for a change of state. + Very lightweight and less cumbersome than Angular for setup and collaboration. Version control is managed automatically. − Relies heavily on third-party libraries for actions and tasks that Angular could perform by on the fly due to it's built in service wrappers like for example it's wrappers for HTTP calls to the backend.

Table 3.1: Advantages and Disadvantages of React & Angular

For the development team one of the biggest appeals of this stack was

3.2 MEAN Stack

3.2.1 Angular

3.2.2 The Flask Micro-framework

3.2.3 MongoDB

3.2.4 ExpressJS / Node

3.3 Deployment

3.3.1 Heroku

3.3.2 Honcho

3.3.3 Ngrok

Chapter 4

System Design

4.1 Overview

4.2 Data Tier

4.2.1 MongoDB

4.2.2 Schema

4.2.3 Hashing

4.2.4 Another thing i'm forgetting

4.3 Logic Tier

4.3.1 Login/Authentication

4.3.2 Web Token

4.3.3 Flask API

4.4 Application Tier

4.4.1 Angular Stuffs

4.4.2 Routing?

4.4.3 Something else ..

Chapter 5

System Evaluation

5.1 Testing

Approaches to testing something something

5.1.1 Types of Testing

5.1.2 Deployment Testing

5.1.3 Unit Testing?

5.1.4 System Testing

5.1.5 Some more things here I'm neglecting

5.2 Overall Evaluation

Chapter 6

Conclusion

6.1 Overview

6.2 Learning Outcomes

6.3 Final Thoughts

Bibliography

[1] Dantala O. Oyerinde Bakwa D. Dunka, Edim A. Emmanuel. Simplifying web application development using - mean stack technologies. *International Journal of Latest Research in Engineering and Technology*, 04:70–74, 2018.

[2] Pragati Bhardwaj. Analysis of stack technology: a case study of mean vs. mern stack. *International Journal of Innovative Research in Computer and Communication Engineering*, 06:3610–3614, 2018.