
Online Banking Application Using A MERN Stack

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Final Year Project - Banking Application using MERN stack

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About this project

Analysis of this project: This project was designed by me for the module Applied Project & Dissertation with the purpose being to complete an online banking system using a MERN(Mongo, Express, React & Node) stack. The project should allow user to login, view statements, takeout loans, perform transactions and will show the user there monthly and yearly expenditures using graphs. The project will also be secure and utilize user accounts using a mongo Database to ensure that the users account is secure.

The main purpose of this project is to utilize the MERN stack to provide a full and rich user experience and to provide a secure, intuitive and polished online banking system. The project will also utilize Python scripts to perform statistical analysis on user expenditure and income and will provide an estimate of how much money the user should have for the month based upon previous monthly expenditure.

This project was designed to be a stand alone application where a user can perform all their banking needs without any other software. The user should be find the UI intuitive and the features helpful.

This project will link many disparate technologies together for the purpose of providing the user with the features they need. I plan to use this project to show the skills I have attained during my course and to learn a new framework(React). I also plan to improve and cultivate my skills using new technologies such as various Python libraries and React. This project is stored on a GitHub repository the link to which is found in the [Preamble & Intro](#)

Authors: My name is **Ultan Kearns**, I am a fourth year student at GMIT. I have never used React or \LaTeX before but I plan to learn a lot about these technologies during the course of this project.

Chapter 1

Introduction

1.1 Why A MERN stack?



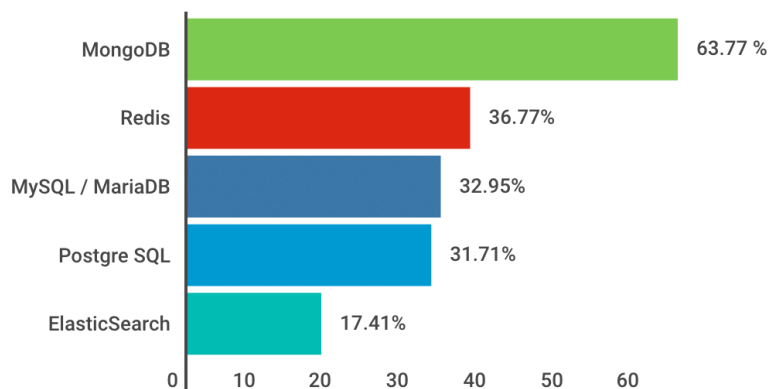
There are many reasons why I have chosen to use a MERN stack for this application the main one is because it provides a framework for a full stack application. MERN stands for **Mongo - For the database backend(Hosted on Mlab, all user info is stored here)**, **Express - A web application framework host a server in a relatively short time compared to other methods** , **ReactJS for asynchronous JS & Node - for package management.** [?] I also chose this project because I have zero experience in ReactJS and since it's such an up and coming framework I decided on it for this project. It also offers many features and libraries which are desirable

when programming a user interface to ensure the user finds the application intuitive and easy to use. ReactJS also utilizes modular programming for components which makes designing web applications far easier than just using HTML, CSS & Javascript. React is also very fast at rendering pages so that the user will not experience a major delay in accessing information.

As you have read above the MERN stack is very powerful in creating a full-stack application when used correctly. The reason I chose the database Mongo is because it offers an open source alternative to MySQL and other proprietary databases [?] and many companies seem to be migrating to it because it is open source and in some cases may offer better performance than other databases.

What databases are you using?

1126 respondents - multiple choice answers



Node.js Survey: survey.risingstack.com

[?] Mongo is easy to learn as it stores its data in JSON format and is schema-less, that is the user defines their own schemas. I have also used it for 2 other projects in Angular and find it an easy database to use in relation to projects.

I chose to use Express because it is a very useful API when creating a server. It is very helpful when pulling data from the server and displaying it to the client it is also very scalable and offers good security when used properly. It is also very easy to setup and can be connected to the MLab

database in minutes upon starting the project. I have also used this server before and have a bit of experience with it and found it very helpful in the projects I used it for which were a messaging forum and an E-commerce application both using MEAN(Mongo,Express,Angular & Node) stacks.

1.2 Project Objectives

The objective of this project is to provide safe & secure online banking as well as an intuitive and professional user interface to ensure the user's satisfaction.

Chapter 2

Context

- Provide a context for your project.
- Set out the objectives of the project
- Briefly list each chapter / section and provide a 1-2 line description of what each section contains.
- List the resource URL (GitHub address) for the project and provide a brief list of the main elements at the URL.

2.1 Filler

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Chapter 3

Methodology

About one to two pages. Describe the way you went about your project:

- Agile / incremental and iterative approach to development. Planning, meetings.
- What about validation and testing? Junit or some other framework.
- If team based, did you use GitHub during the development process.
- Selection criteria for algorithms, languages, platforms and technologies.

Check out the nice graphs in Figure

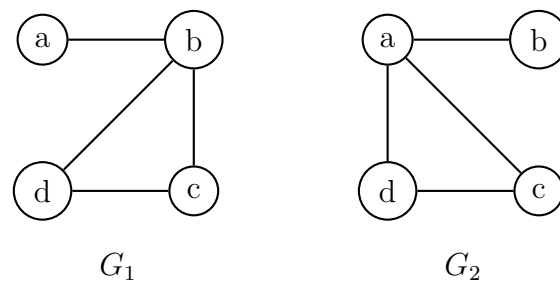


Figure 3.1: Nice pictures

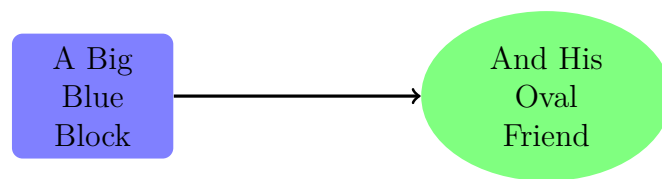


Figure 3.2: Nice pictures

Chapter 4

Technology Review

About seven to ten pages.

- Describe each of the technologies you used at a conceptual level. Standards, Database Model (e.g. MongoDB, CouchDB), XML, WSDL, JSON, JAXP.
- Use references (IEEE format, e.g. [1]), Books, Papers, URLs (timestamp) – sources should be authoritative.

4.1 XML

Here's some nicely formatted XML:

```
<this>
  <looks lookswat="good">
    Good
  </looks>
</this>
```

Chapter 5

System Design

As many pages as needed.

- Architecture, UML etc. An overview of the different components of the system. Diagrams etc... Screen shots etc.

Column 1	Column 2
Rows 2.1	Row 2.2

Table 5.1: A table.

Chapter 6

System Evaluation

As many pages as needed.

- Prove that your software is robust. How? Testing etc.
- Use performance benchmarks (space and time) if algorithmic.
- Measure the outcomes / outputs of your system / software against the objectives from the Introduction.
- Highlight any limitations or opportunities in your approach or technologies used.

Chapter 7

Conclusion

About three pages.

Appendices

Appendix A

Preamble & Intro

- [Link to my github](#)

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