A picture containing company name

Description automatically generated

MedTrac

Project Engineering

Year 4

Stephen Harney

Bachelor of Engineering (Honours) in Software and Electronic Engineering

Atlantic Technological University

2023/2024

**Declaration**

This project is presented in partial fulfilment of the requirements for the degree of Bachelor of Engineering (Honours) in Software and Electronic Engineering at Atlantic Technological University (ATU) Galway. This project is my own work, except where otherwise accredited. Where the work of others has been used or incorporated during this project, this is acknowledged and referenced.

Stephen Harney

**Acknowledgements**

I wish to acknowledge my supervisor Michelle Lynch, YouTube video JavaScript Mastery.

**Table of Contents**

[1 Summary 6](#_Toc164867813)

[2 Poster 7](#_Toc164867814)

[3 Introduction 8](#_Toc164867815)

[4 IDEAS 10](#_Toc164867816)

[5 Project Architecture 11](#_Toc164867817)

[6 Project Plan 12](#_Toc164867818)

[7 Heading 13](#_Toc164867819)

[7.1 Referencing 13](#_Toc164867820)

[7.2 Notes on Content 14](#_Toc164867821)

[8 Ethics 15](#_Toc164867822)

[9 Conclusion 16](#_Toc164867823)

[10 Appendix 17](#_Toc164867824)

[11 References 18](#_Toc164867825)

# Summary

For my final year project, I wanted to develop an application that would help make people’s lives easier or benefit them and improve their overall health. Keeping track of your medicine is hard and with how busy people are nowadays it is easy to just forget to take your tablet in the morning or if you think you have taken one but forgot that you did and took it again even though you took one already. Failure to keep track of your medicine could actually harm you if you forget that you have already taken one tablet and not sure you have taken it, studies show that this can cause side effects to your health if you take more than what the doctor recommend it can have side effects**.**

For my web application users would be able to use there existing accounts such as google accounts this makes it easier for the user for the login and sign up progress also the user information will be securely store in MongoDB database with thanks to NextAuth to handle the authentication of the user. Also users would be able to edit, delete, create there alarms within the web application.

When I first got the idea to make a medicine tracker app I noticed that people didn’t really care especially those around me that just like brushing your teeth it can be easily forgettable even though I know they understand the importance of taking there medicine.

I am using Next.js14 for building the application and using MongoDB to store the users information securely with NextAuth and GoogleCloud to mongoDB.

Creating , editing , deleting alarms and users can use their own existing google accounts.

# Poster

# Introduction

For my final year project, I am building a web app that will help you track your medicine, using alarms notifications.

We have so much going on with our lives and the last thing we need to keep worrying whether you have taken any medicine or not. Some people might have more medicine to take than others and it is hard to keep track of your medicine when you don’t fully understand the difference of each one.

Not everyone is a doctor, and it is hard to differentiate different types of medicine like aspirin. Taking your medicine is very important if it’s not taken properly or keep track off, it can have side effects to your health, a medicine tracker app would help solve this issue. Most people may have to take more than one medicine in there day and to try and keep track of all them given how much is going on with our daily lives it’s easier to just forget about the fact you have to take tablets in morning.

To help solve this problem I am developing a web app.

I am using Next.js14, it is a framework built on top of React and Node.js I picked this technology for my final year project as it is new technology and with its API routes the user can update, edit, create and delete their alarms. This will make it easier for the user to navigate through my webapp.

Next.js14 uses server-side rendering in which once the user sends a request to the server the website will load the entire page once.

The React hooks are used to implement Next.js14 with “use client” which I can then use the use State and use Effect hooks and components it is client-side rendering. Client-side rendering sends a request to the server and API routes are used to handle the requests from the client side.

I have incorporated using MongoDB database to save the user information so the web app can save the alarm, and the users accounts this way the user doesn’t have to sign in, into my web app every time it uses it but after a certain amount of time without any activity it can log you out. This way even when logged out the user information is still saved to the database and the user doesn’t have to create a new account again.

MedTrac uses NextAUTH and Google cloud OAuth for user login details but for security reasons as NextAuth saves the users information to my MongoDB database with a unique id. Users can use their existing Google accounts which makes logging into my web app easier and more securely, this saves time for the user and the user doesn’t have to worry about making a new account.

# Project Architecture

# Heading

This is an example heading for a section in a project. You choose your sections to suit your project.

## Referencing

This is a subheading, use subheadings to break up a large topic into smaller sections.

IEEE referencing style is recommended the default style to choose for citations and referencing, however if you are familiar with a different referencing style then you can use that.

When you need to reference add a citation in the relevant sentence, usually at the end, before the full stop. Then have this numbered citation referenced in the list of references at the end of the document.

Here I might write something about something, e.g. image processing, and I need to cite my sources, like this [1]. Here I have used MS Word’s ‘Insert Citation’ feature, with IEEE style selected, to create that number inside brackets. Here’s another citation [2]. Word increments the number automatically. I can fill in the details about my reference now or later. I can then go the end of the document and create a page of references automatically. See the demonstration in class on this (also recorded via Teams). Here I am adding another citation [3]. And another [4].

You then need to insert a References section at the end of the document. In Word, choose References->Bibliography->References. This will pull all your citations into a reference page, as shown at the end of this document. The References section in this document also includes examples of further references that have not yet been cited in the text – to demonstrate IEEE style for different types of resources, i.e. books/websites/lectures/source code/etc.

You could also manually add all your citations & references, without using MS Word’s citation & referencing wizards.

## Notes on Content

Photographs are not technical diagrams and are not a good substitute for professional technical diagrams. Use photographs to enhance a report, but not as a replacement for diagrams.

In describing software, you need diagrams and/or summaries of software design & layout. It is not sufficient to just paste some code. You should describe what your code is designed to do, in English. If you decided to put your code in functions or libraries or objects, describe this architecture. One good layout is to include a snippet(s) of code alongside an explanation. You do not have to explain every part of your code, pick the important parts.

Write out any mathematical equations or calculations that are important in your project and explain them.

Include details of any major problems or challenges you encountered in an area, and how you solved them.

# Ethics

Include a short section on ethical considerations in your project or in the field of study of your project.

# Conclusion

Write a short conclusion. What is the outcome of the project? Perhaps you have a product prototype, or some results, or a demonstratable system.

Do not use your conclusion to tell the reader what you might have done if you had more time, but keep it focussed on what you actually have done. You can mention future opportunities for further development of the work, but keep this part short.

# Appendix

# References

|  |  |
| --- | --- |
| [1] | H. Kinsley, "Reinforcement Learning," PythonProgramming, [Online]. Available: https://pythonprogramming.net/q-learning-reinforcement-learning-python-tutorial/. [Accessed 02 02 2021]. |
| [2] | [Online]. |
| [3] | MakeSigns, "Scientic Posters Tutorial," [Online]. Available: https://www.makesigns.com/tutorials/scientific-poster-parts.aspx. [Accessed 09 02 2021]. |
| [4] | Arduino. [Online]. Available: https://www.arduino.cc/. [Accessed 09 02 2021]. |
|  |  |
|  |  |

[x] J. C. Russ and F. Brent Neal. *The Image Processing Handbook*. 7th ed. Boca Raton FL: CRC Press, 2017.

[x] S. Lippman, J. Lajoie and B.E. Moo. “Classes” in *C++ Primer*. 5th ed. Massachusetts: Addison Wesley, 2013.

[x] IEEE Signal Processing Society. “Signal Processing for 5G”, *YouTube*, 2019. [Online]. Available: <https://www.youtube.com/watch?v=uca6X4Ykcmg&list=PLcZOnmyqlalacL9YqkhyufLQGIW_C78Os&index=6>. Accessed: Feb 2, 2021.

[x] Digilent. “Basys 3 Reference Manual”, *Digilent Reference*. [Online]. Available: <https://reference.digilentinc.com/basys3/refmanual>. Accessed: Feb 2, 2021.

[x] P. J. Ashenden. *Digital Design (Verilog): An Embedded Systems Approach Using Verilog*. Burlington: Morgan Kaufmann, 2007.

[x] M. Lynch. “Discrete Fourier Transform (DFT)”, Lecture, Digital Signal Processing, Galway-Mayo Institute of Technology, Galway, 2020.

[x] MRC Centre for Global infectious Disease Analysis. (2021). *Covid-Sim*. [Source Code]. Available: <https://github.com/mrc-ide/covid-sim>. Accessed: Feb 2, 2021.

[x] OpenCV. “Face Detection Using Haar Cascades”, *OpenCV-Python Tutorials*. [Online]. Available: <https://opencv-python-tutroals.readthedocs.io/en/latest/py_tutorials/py_objdetect/py_face_detection/py_face_detection.html#face-detection>. Accessed: Feb 2, 2021.