# Timetable Mobile Application

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**Final Year Project**

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# Contents

# About this project

**Abstract** This project is a Timetable Application developed for Mobile Devices. It differs from some of the other timetable applications currently available on the App Store and Google Play Store, because it has a common and a reliable security feature. This feature is the Google Two Factor Authentication. The user can disable or enable this feature at their own discretion. This Timetable Application also has a customisation feature which is the dark mode. This dark mode allows the user to switch between dark and light modes in the app. It changes the application theme colours from dark to light and vice versa. This feature will provide ease of use at any time of the day. Most importantly this mobile application will have easy to use Front-End interface. With a menu at the bottom of the screen with options to be picked from. In the application the user will have many screens to choose from. The Timetable screen, which displays the weekly schedule. The settings screen which offers settings in relation to the securities and the choice of theme within the application as well as account options. There is also the main menu screen which displays the information about the application and the author of the application. I have used React Native to develop this application and Firebase for the Back-End of this Timetable Application, which will store all of the user information, settings, and timetable data. The database merges whenever an internet connection is established with the device. The database that I have used is also real-time, which allows for instant display of data when it has been modified.

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# Chapter 1

# Introduction

This is the introduction of the dissertation. Which outlines the layout of the dissertation, the objectives of the project and the scope.

## 1.1 Layout of the Dissertation

The following chapters will cover different aspects of the dissertation:

- **Chapter 1 - Introduction -** Chapter 1 which is the current chapter, will describe the project objectives, the aim of the project, briefly describe the project itself, the background and the scope.
- **Chapter 2 - Context -** Chapter 2 acts as an extension to the first chapter.
- **Chapter 3 - Methodology -** This chapter will discuss the approach on the project, the tools used while developing the project, source control, the types of testing and research done.
- **Chapter 4 - Technology Review -** Chapter 3 will provide a review on all the technologies and the languages that have been used.
- **Chapter 5 - System Design -** Will describe the project as a whole, the design and applications developed.
- **Chapter 6 - System Evaluation -** Will discuss the types of testing that have been carried out while developing the application.
- **Chapter 7 - Conclusion -** The final chapter will go over the evaluation, objectives, downfalls and the improvements that could have been done on the project.

# Chapter 2

# Context

## 2.1 Filler

### 2.1.1 More filler

## 2.2 Filler

# Chapter 3

# Methodology

## 3.1 Overview

This methodology chapter will describe the various methodologies that have been used in developing this project. It goes over the Approach, Meetings the Source Control and the Tools that have also been used. Additionally it will go over some Research methods that were taken into account before making decisions.

## 3.2 Approach

## 3.3 Meetings

The project meetings were scheduled weekly. They were attended by both the supervisor and myself. They were all carried on-line as it was more comfortable. The meetings were under fifteen minutes long.

### 3.3.1 The Beginning

The early meetings were based on the planning and possible ideas for the project. The project timeline and the project design brief has been done during those meetings. These early stage meetings took a couple of weeks.

### 3.3.2 Regular Meetings

Regular meetings consisted of:

- Current progress of the project.
- The problems encountered.
- Feedback from the supervisor.
- Plans for the following week.
- Changes in the project brief or weekly project timeline.

## 3.4 Source Control

The source control used during the development of this project was **Git** with the hosting provider **GitHub**. This was the preferred source control as it is the most preferred and used source control in the industry. As well as all the student's project are based on GitHub which serve as the student's portfolio for the future.

## 3.5 Tools

# Chapter 4

# Technology Review

## 4.1 Overview

In this chapter, the different types of technologies that have been used while developing this project will be discussed with reasoning why they have been picked over the alternatives.

## 4.2 Technologies Used

### 4.2.1 Node

### 4.2.2 React Native

### 4.2.3 Firebase

### 4.2.4 Android Studio - Emulator

## 4.3 XML

# Chapter 5

# System Design

## 5.1 Overview

This chapter goes over the system design for the project. Since React Native allows for developing many applications with one code, this chapter will also go over the two types of applications this project was developed for.

## 5.2 Web Application

## 5.3 Android Application

# Chapter 6

# System Evaluation

## 6.1 Overview

This chapter will discuss the types of testings that were involved while developing the application. This way it will analyse various aspects of the project.

## 6.2 Graphical User Interface Testing

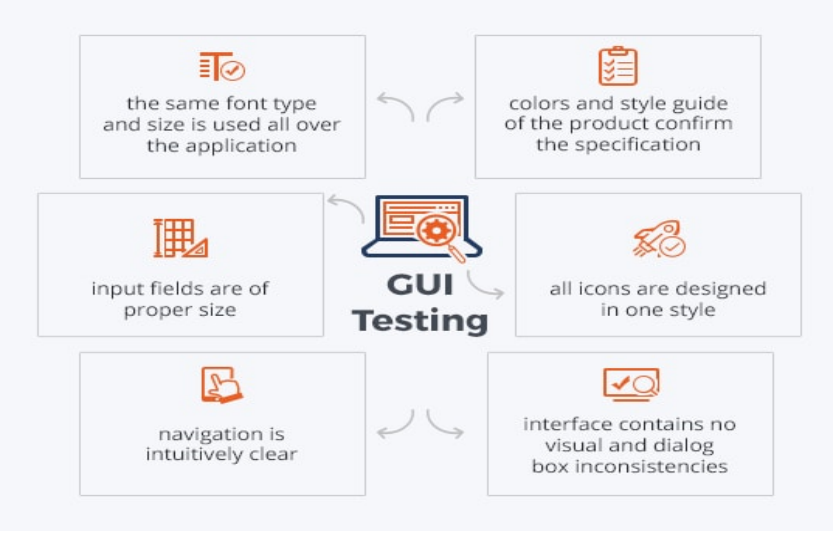


Figure 6.1: Example of GUI Testing. Adapted from [1].

Graphical User Interface Testing tests a piece of software with a Graphical User Interface (GUI). The piece of software that is being tested can have buttons, areas of text input, menus, text etc [2]. These tests can be performed using certain software tools or by developers and designers opinion. It depends what is being developed.

In this project I have used Graphical User Interface Testing to test all of the components at the Front-End of my project. I have tested to see if the buttons are of the right size and at the correct position. I had to make sure that all Front-End components match the style of my application and do not overlap each other. I have completed this type of testing by going using my opinion on the elements of the Front-End.

## 6.3 End to End Testing


Figure 6.2: Example of End to End Testing. Adapted from [3].

End to End Testing is a very important part of testing. It is used in order to test the functionality and performance of a piece of software . The idea of this test is to pretend what a real user experience would look like while using the application [4].

In my project I have put myself into the mindset of a user and tested the application as I would like it to work as a user of the application. During

testing, I have checked if I was given the right feedback to my actions. I have tested if I could retrieve the right information as well as send the right information to the other systems of the projects which for example were the Authentication and the Real-time Database.

## 6.4 Functional Testing


Figure 6.3: Example of Functional Testing. Adapted from [5].

Functional Testing is a type of black-box testing. It tests the functions of a software project, by giving the software inputs and testing the outputs. The tests are strictly focused on the functionality and not the software used to develop the piece of software, hence it is a type of black-box testing [6].

I have used Functional Testing in this project by testing each function one by one. This was a lengthy process, but thanks to that I was able to see what I have done wrong or not yet implemented so that a specific function could work as expected.

# Chapter 7

# Conclusion

## 7.1 Overview

This is the last chapter of this dissertation it will conclude all the other chapters. Discuss the objectives and analysis of the project and also mention any downfalls or problems encountered as well as the improvements that could be made in the future.

## 7.2 Context and Objectives

## 7.3 Evaluation

### 7.3.1 Improvements

### 7.3.2 Downfalls

### 7.3.3 Overall

# Bibliography

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