



IN APP QUIZ AS A TEACHING TOOL FOR COELIAC DISEASE

Design Manual

Student: James Nolan – C00226267

Supervisor: Joseph Kehoe

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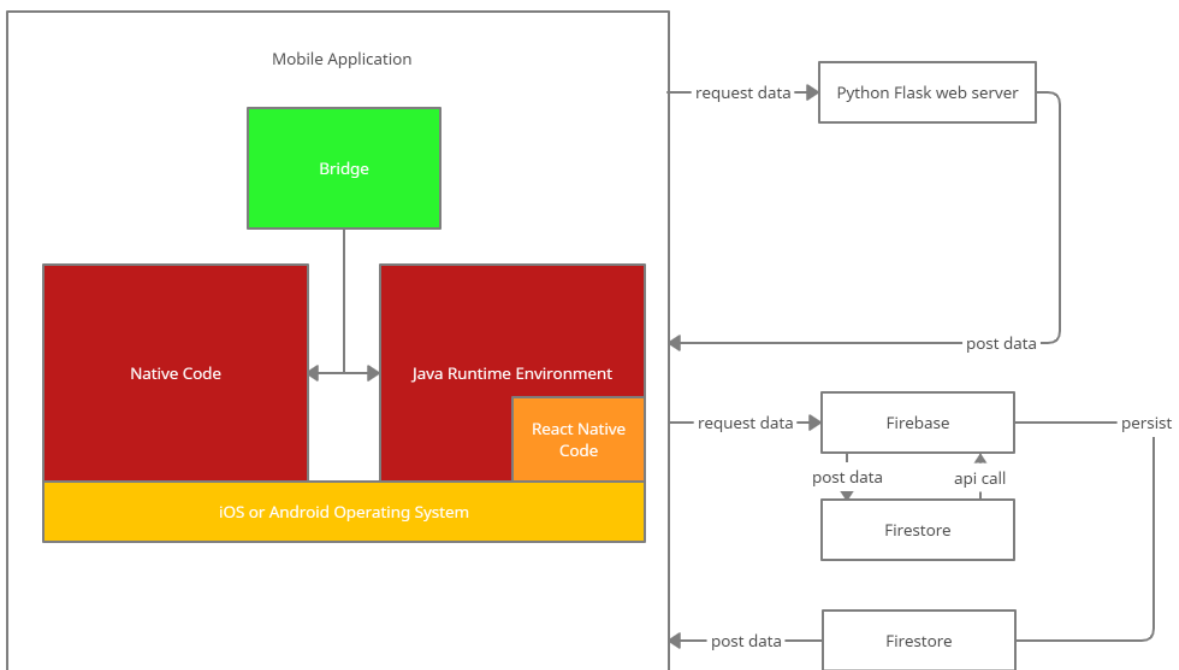
Purpose

After completion of this document, the reader will have a thorough understanding of the work required to create the application in full. With this document, any developer should be able to create or work on this applications system as it will contain all the architecture and design plans needed to develop the application and user interface layout. The learning outcomes of this document will be covered in three sections: front-end, database and server. The front-end section will cover the user interface layout and screen navigation of the application. The database section will cover an overview of the entire database and the subsection of it that is being used by this project. The server section of the document will contain the code for the functions that the application needs to carry out against the database. This information will enable the reader to develop this application in its entirety. Previous documentation for this project has defined the main functionality and use cases of this application.

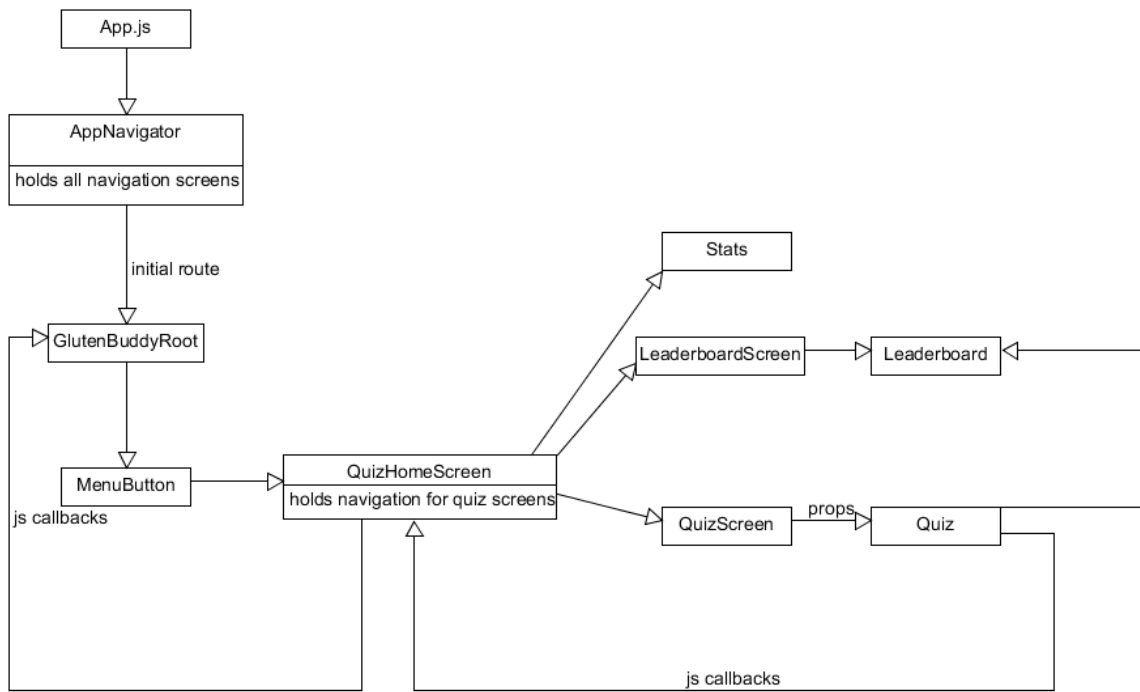
This application will allow users to take an in-application quiz for people suffering from Coeliac Disease. This quiz is aimed at educating Coeliac sufferers as to what is safe to eat to improve their quality of life and will use gamification elements to incentivise the user to return to the application.

System Diagram

The system is comprised of a Firebase database, a Python/Flask application programming interface, along with Node.js and React Native to create the front end of the application. These technologies were chosen by the Erasmus+ project heads, except for Firebase. An API is a set of operations that can be used by the application to carry out its primary functions. The API contains functions that add, delete, update and read from the database and return that information for use by the API. The user interface uses the API by making calls and requests and receiving responses.

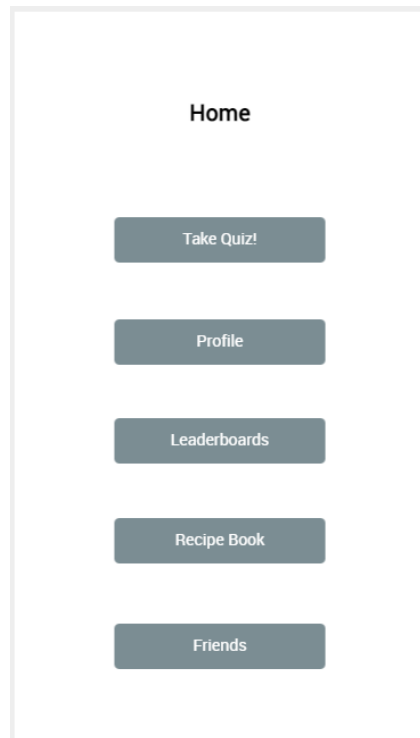


Class Diagram

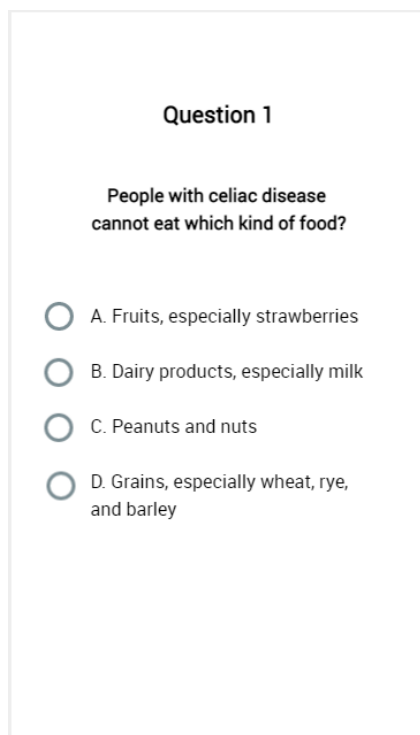


GUI Mock Screens

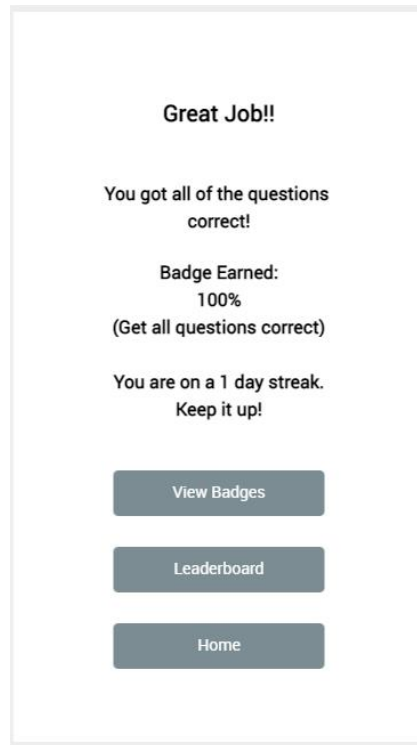
Home



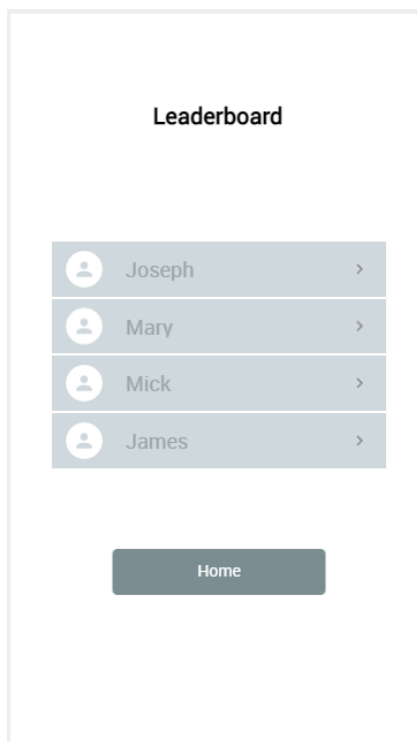
Quiz Question



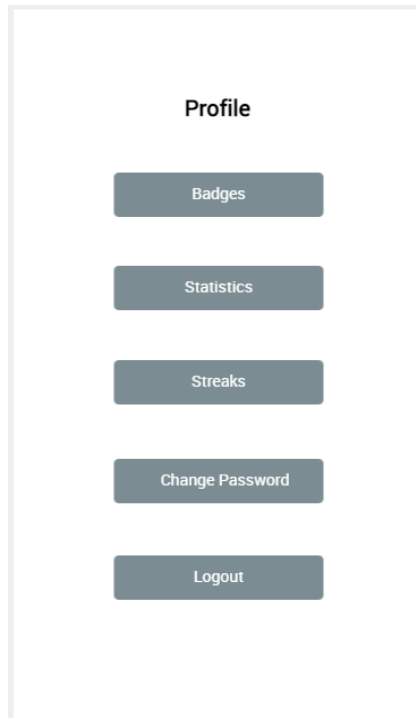
Completed Quiz



Leaderboard

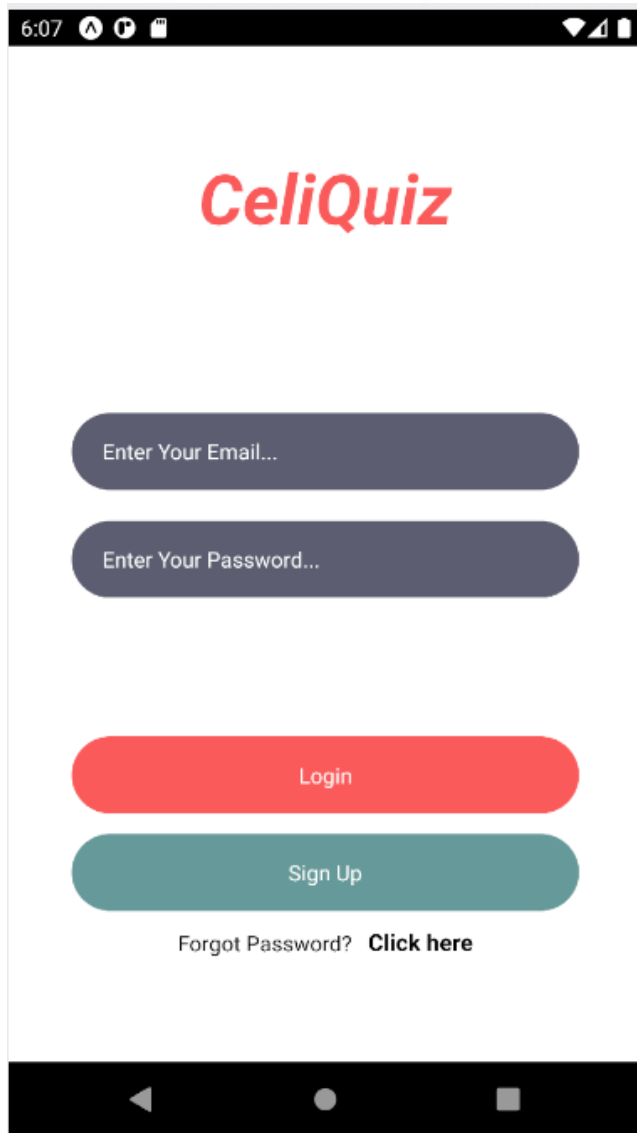


Profile

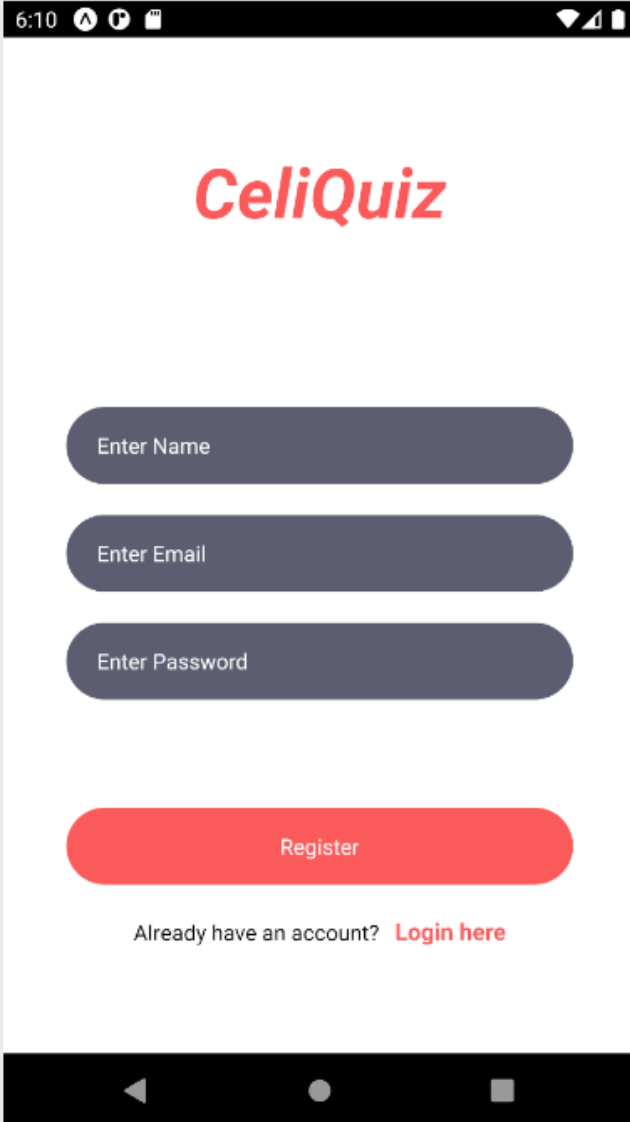


Final GUI Design

Login Screen

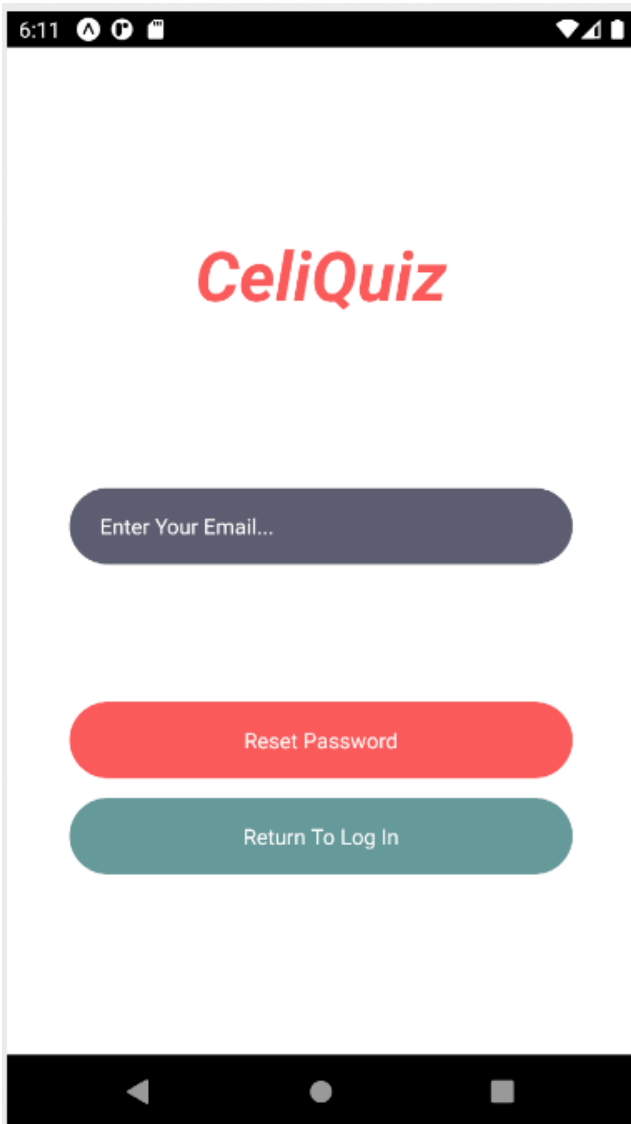


Register Screen

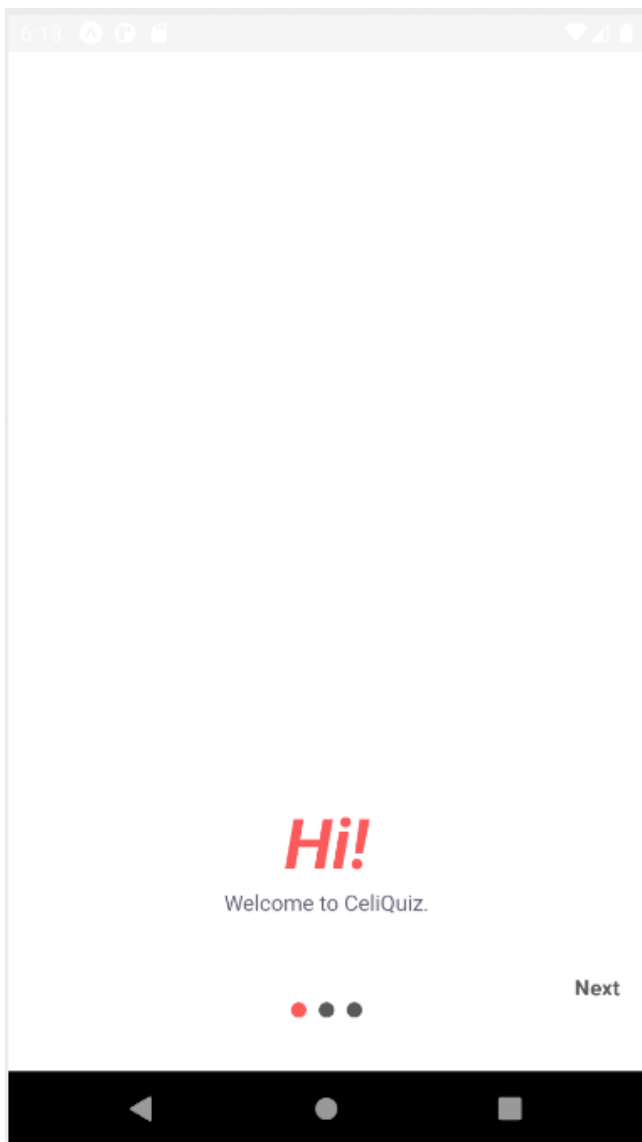


The image shows a mobile application register screen. At the top, the status bar displays the time 6:10 and various system icons. The app title "CeliQuiz" is centered in a red, italicized font. Below the title are three dark grey rounded rectangular input fields, each containing a placeholder text: "Enter Name", "Enter Email", and "Enter Password". Below these fields is a prominent red rounded rectangular button with the text "Register" in white. At the bottom of the form area, there is a text prompt "Already have an account?" followed by a red link "Login here". The bottom of the screen shows the standard Android navigation bar with back, home, and recent apps icons.

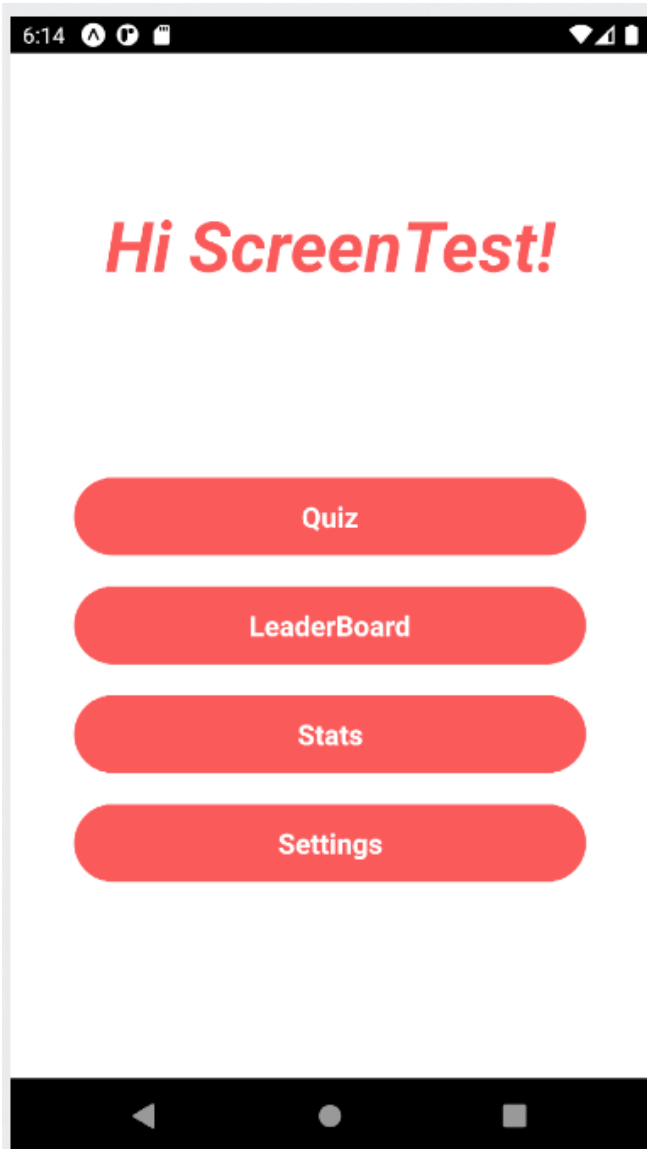
Forgot Password Screen



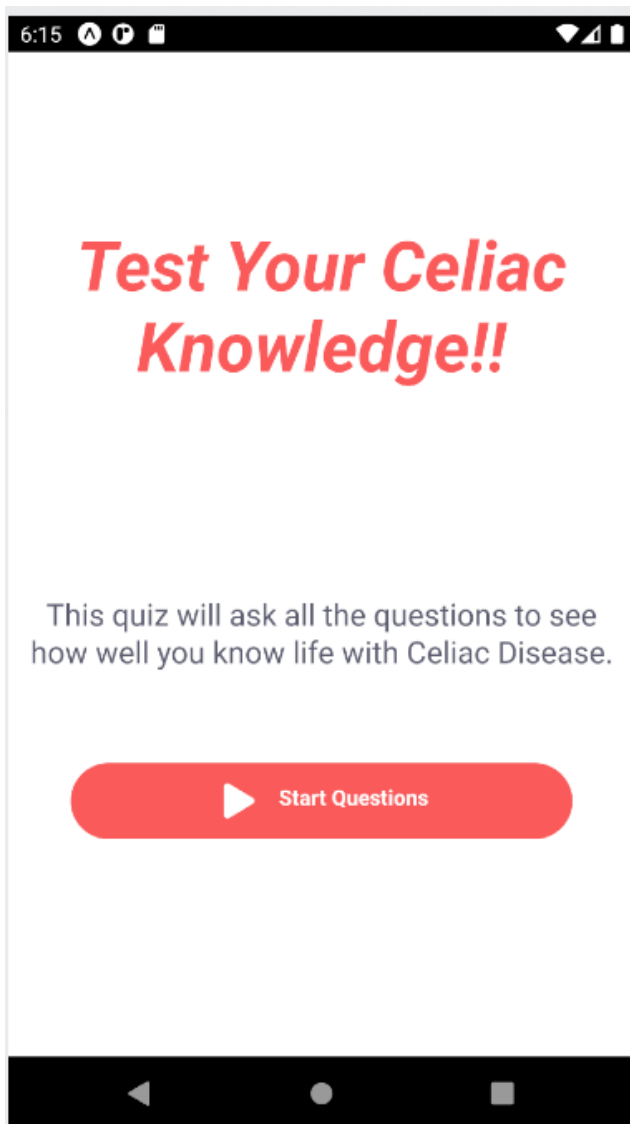
Welcome Screen



Main Menu Screen



Quiz Start Screen



Question Screen

6:16

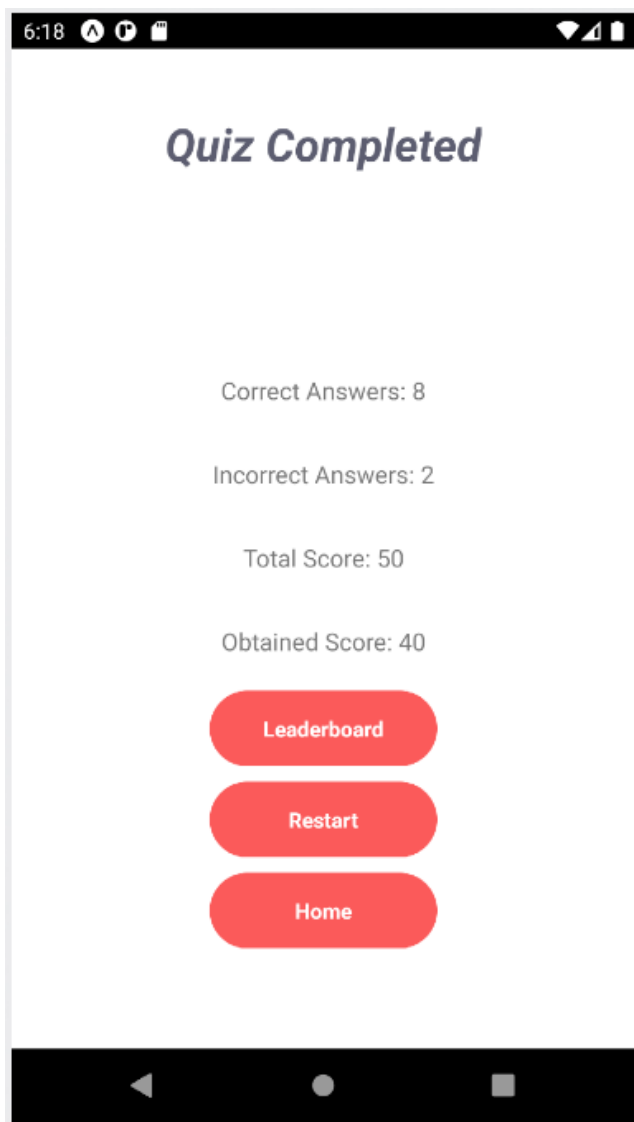
People with Coeliac disease cannot eat which kind of food?

- Grains
- Nuts
- Dairy
- Fruits

Submit

The image shows a mobile application interface for a quiz. At the top, the status bar displays the time 6:16 and various system icons. The main content area features a question in bold, italicized text: "People with Coeliac disease cannot eat which kind of food?". Below the question are four radio button options: "Grains", "Nuts", "Dairy", and "Fruits". A red, rounded rectangular button labeled "Submit" is positioned below the options. At the bottom of the screen, the Android navigation bar is visible with its standard icons.

Quiz Complete Screen



Leaderboard Screen

6:20

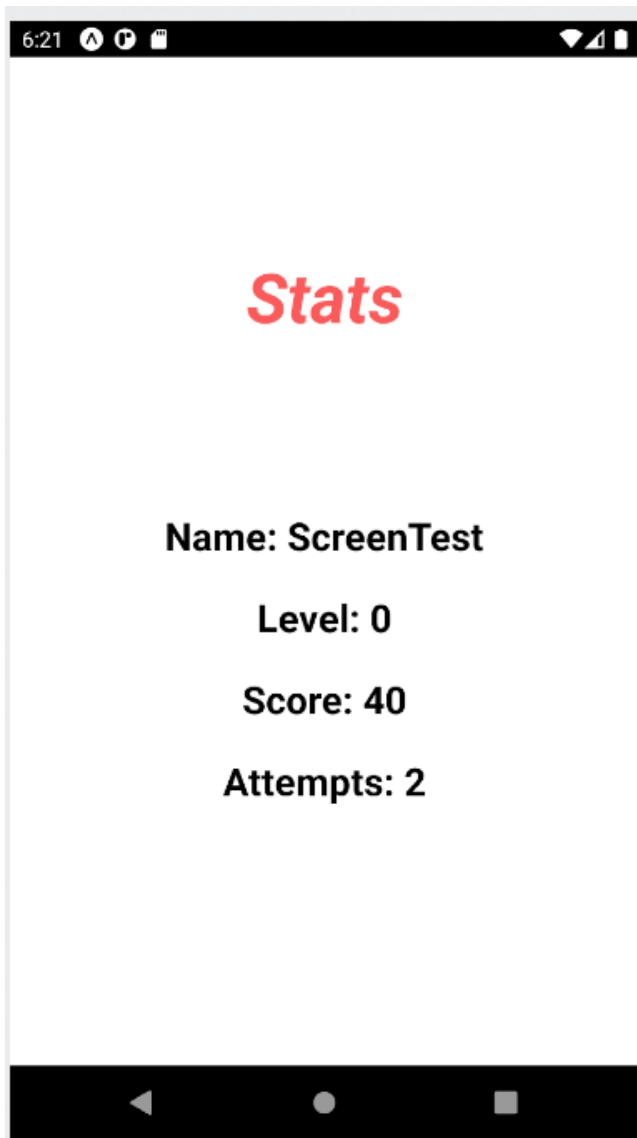
Leaderboard

ScreenTest

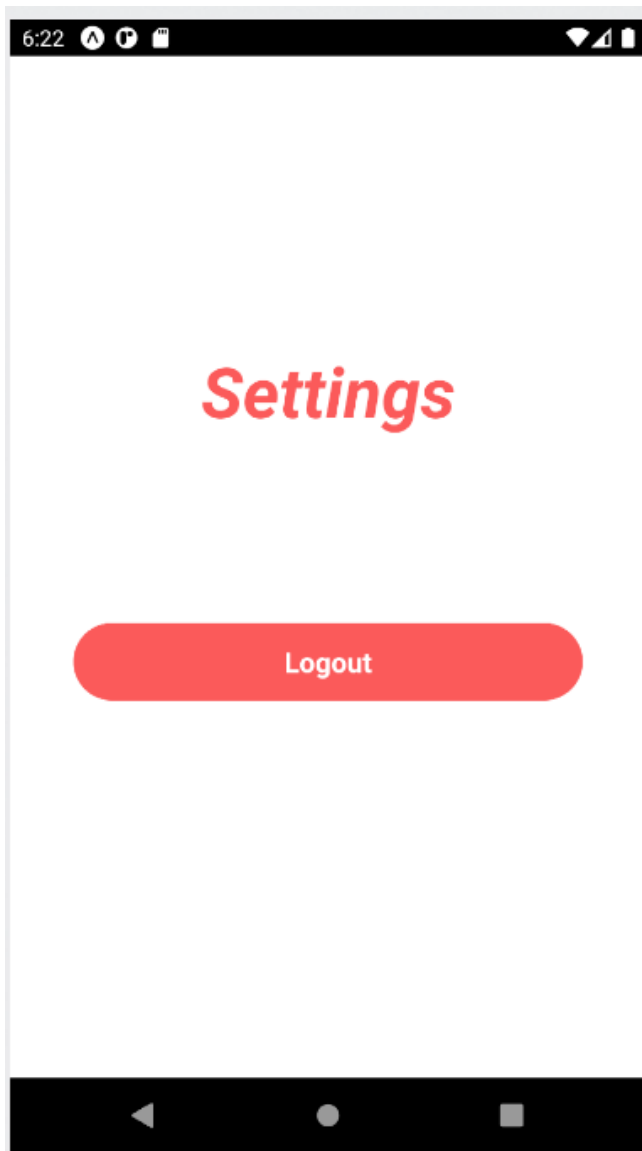
6th 40 points

1	James Nolan	50
2	James N	45
3	Intest	45
4	jamesn	45
5	ArrTest	45
6	ScreenTest	40
7	james5	20
8	hi4	5
9	jamessc	0

Statistics Screen

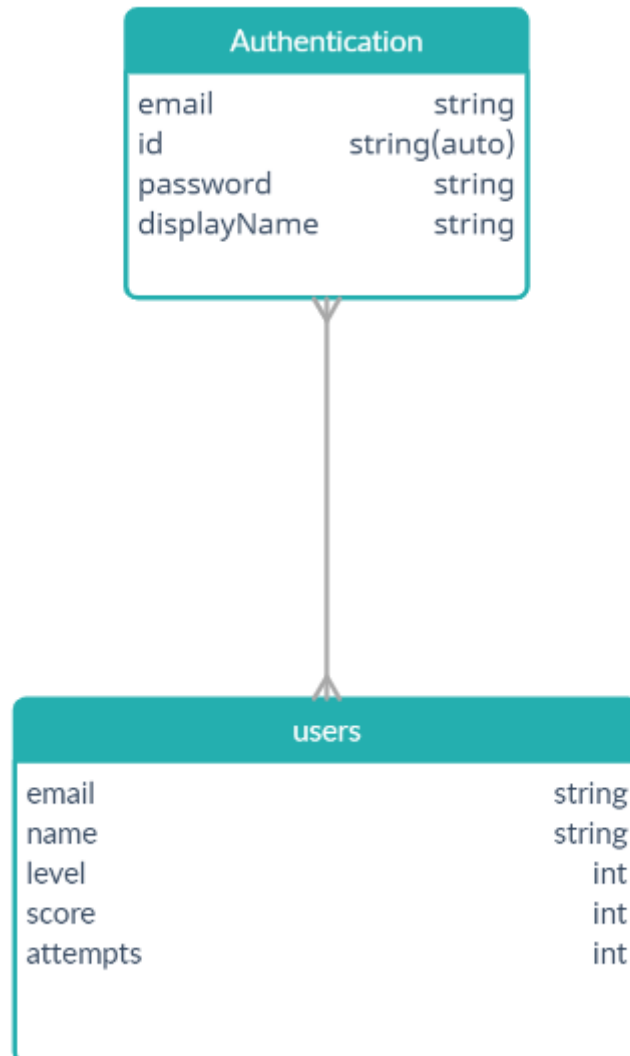


Settings Screen



Database Schemas


When a user registers for the first time, their email and name persists from Firebase Authentication to a Firestore collection, and extra attributes are automatically created called 'score', 'level', and 'attempts' which are initially set to zero.



Here is how a user looks in Authentication:

james.nolansd@gmail.com  Apr 29, 2021 Apr 29, 2021 hdzMVAJ3zTTiVtQeRmPsbl2F24o2

Meanwhile here is how that same user looks in the User collection:

 hdzMVAJ3zTTiVtQeRmPsbl2F24o2

[+ Start collection](#)

[+ Add field](#)

```
attempts: 1
email: "james.nolansd@gmail.com"
level: 0
name: "James Nolan"
score: 50
```

When a user takes the quiz, a request is called to a simple Flask app that has the questions and answers stored in it:

Questions	
type	string
question	string
correct_answer	string
incorrect_answers	array

PLAGIARISM DECLARATION

*I declare that all material in this submission e.g. thesis/essay/project/assignment is entirely my/our own work except where duly acknowledged.

*I have cited the sources of all quotations, paraphrases, summaries of information, tables, diagrams or other material; including software and other electronic media in which intellectual property rights may reside.

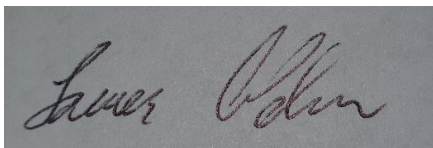
*I have provided a complete bibliography of all works and sources used in the preparation of this submission.

*I understand that failure to comply with the Institute's regulations governing plagiarism constitutes a serious offence.

Student Name: (Printed) James Nolan

Student Number(s): C00226267

Signature(s):



Date: 27/04/2021