WhereToEat

Flutter Project

Pedro Monteiro 97484
Eduardo Fernandes 98512

Introdução à Computação Móvel

May 5, 2022

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1 Introduction

According to Introduction to Mobile Computing' curricular plan, this report is the result of the execution of the first project, which has as main objective build an application that allows finding restaurants in the city of Aveiro and their typical types of food, allowing to learn how to work with a flutter framework and the Dart language. The name we chose for our application was **WhereToEat**.

2 Motivation

The main motivation that led us to choose this theme centers on the fact that we have all been undecided about where and what to eat. With this application we hope to be able to help people make that decision, listing the available restaurants, as well as the distance from the user's location to the restaurant. It is also possible to see the main specialties of each restaurant.

3 Solution

We started by thinking about our solution, drawing a sketch of the application and realizing what main widgets we would have to use. After sharing ideas we decided that the application will consist of:

- login page: where the user, if he already has an account in the application, can login and enter the application;

- registration page: so that a new user can create an account and use the application;

- main page: contains the map of the city of Aveiro with the location of all the restaurants and where it is possible to see the way to go to them;

- restaurants page: where user can get more information about the restaurants, such as the type of food served and also a brief description;

- QR code page: used to see the restaurants menus.

3.1 Features

The main features implemented in our application are:

- GPS: allows us to calculate the distance between the user's current location and the restaurant, representing it through a line on the map;

- Map: allows to view the location of all available restaurants in the city of Aveiro;

- Camera: used to scan QR codes

- Firebase store: save login and register data, and restaurants information to cloud

4 Architecture

Regarding technical options, we chose to use the API suggested in the class by the teacher, MapBox API, which, in addition to being free, has many online examples that made this step simpler.

We also chose to use Firebase to store user and restaurant data. The basic operation of the application consists of making GET and POST requests to Firebase.
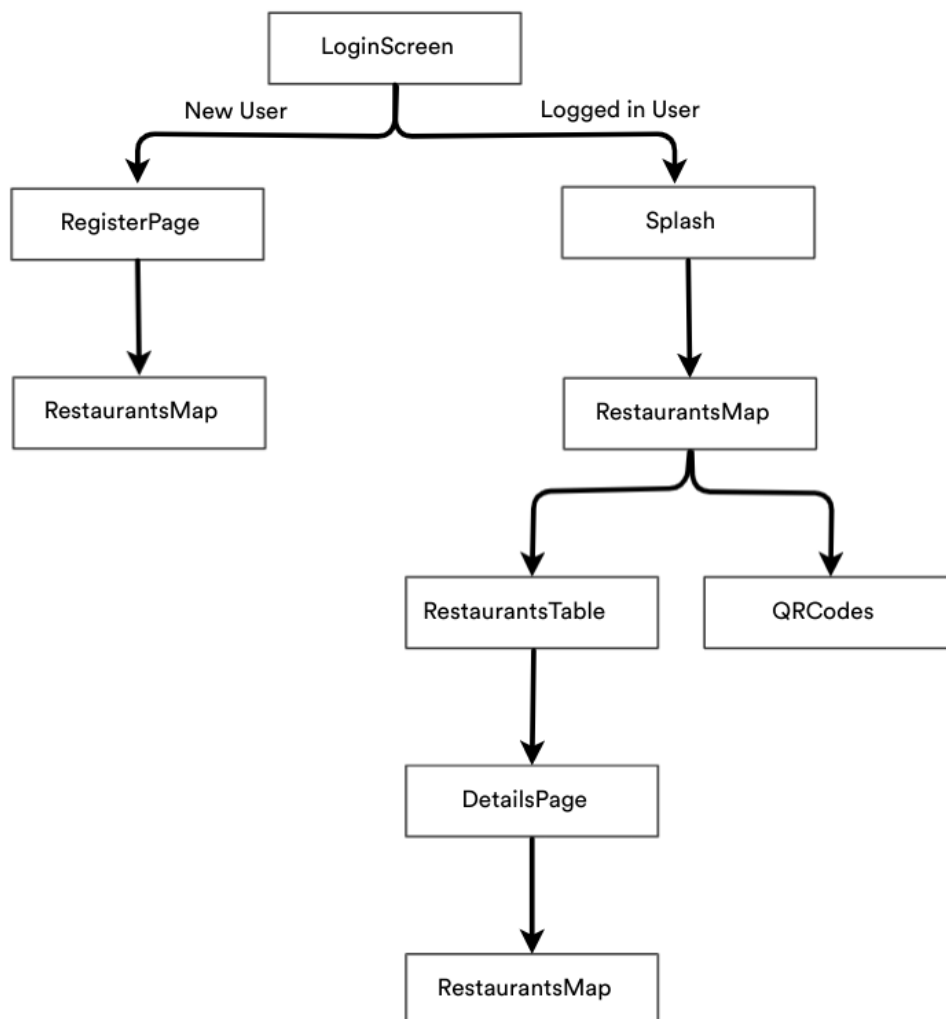
4.1 Widget Tree

Figure 1: Widget Tree

5 Overal Assessment

After completing the application, we thought we did a good job and learned to work with the Flutter framework, although, due to lack of time, it was not possible to delve into how much we wanted some features.

We would like to have added at least one more feature, such as file sharing via wifi.

5.1 Achieved objectives

As main objective we wanted to develop a functional and ready-to-use application. We think we have achieved this goal.

We were also able to implement the features we set out to develop, having an application with a graphical interface, designed in Dart, which exchanges (GET and POST) data with a cloud database, Firebase.

5.2 Issues Found

The main problem we ran into was finding an API that we could use to get the distance and path to each restaurant.

We started by using the Google Directions API and we easily realized that it was a paid API and that it would not serve us.

Later, following the teacher's suggestion, we chose to use the MapBox API, which made our development a lot easier due to the existence of many examples.

Also, we encountered some problems connecting the application to firebase, taking some time in this step.

6 Tutorial

Starting the application, the login page will appear, asking for the user name and password, or in the case of a new user, it is possible to proceed to the registration page:
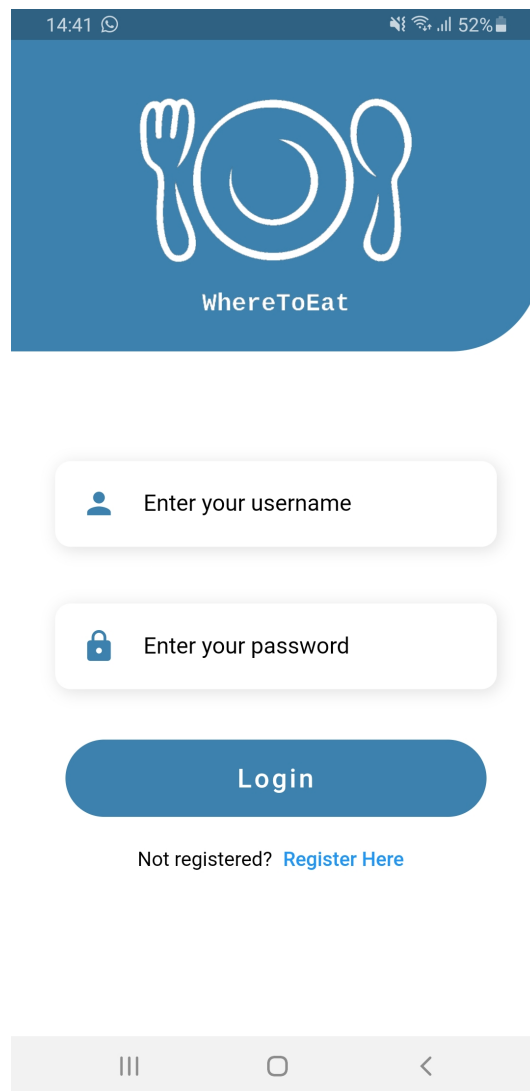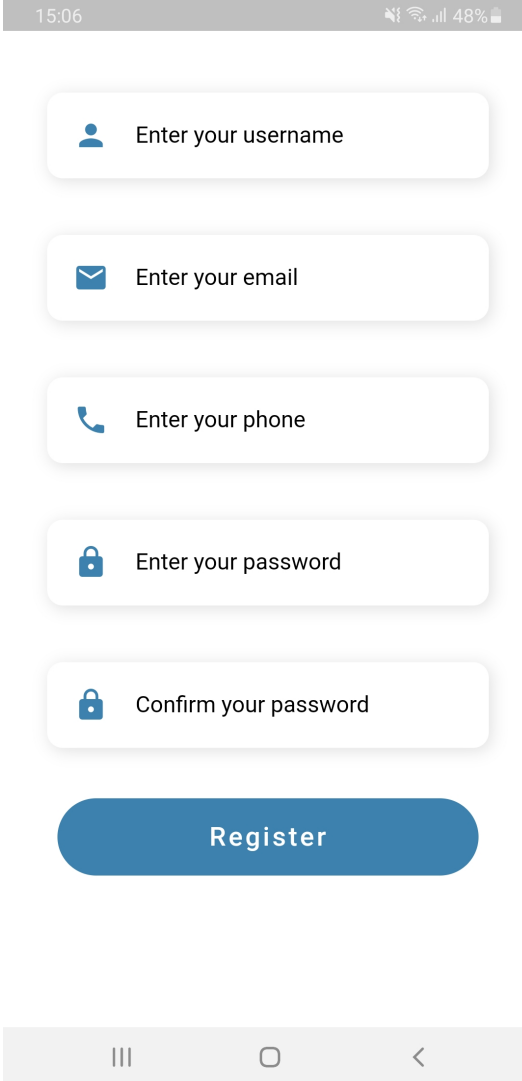

Figure 2: Login Page

To log in, the application makes a GET request to Firebase, checking if the entered credentials exist, and if they don't exist, it returns an error.

As already mentioned, if the user is new to the application, he/she can create an account by entering his/her data. This process is done through a POST request to Firebase, where the data will be stored. After the POST is done, the user can login and use the application.

Figure 3: Registration Page

When entering the application it is possible to see the main page, containing the map where all the restaurants are represented. It is possible to perceive how far the user is from them and which way to go.

This feature was implemented using the MapBox API.

At the top of the page there is a horizontal list that contains all the restaurants in the application, where you can drag to the side and move to the next, updating the direction on the map.

Figure 3, for example, shows the way to go to the restaurant "Ramona", and it is possible to see the name of the restaurant, the distance and an estimate of the time until reaching the restaurant at the top of the page.

Figure 4: Main Page

By clicking on the restaurants tab, a list of all appears, and it is possible through the search bar search for the name of a specific restaurant.

To obtain the specific information of each restaurant, just click on the restaurant you want and you will be able to see information like the name, the location, a brief description, and clicking the "See Route" button ....
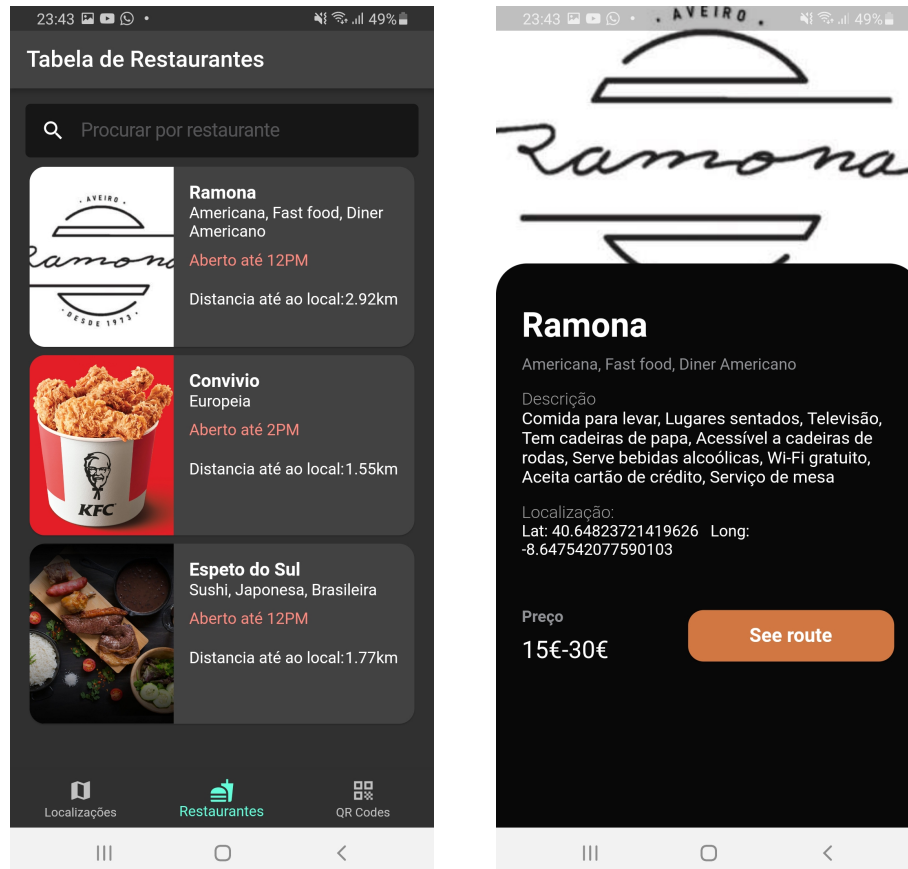

Figure 5: Restaurants and Details Pages

There is also a tab where user can scan QR codes provided by restaurants.
After reading the code, and clicking in the "Go to URL" button, it is possible to redirect to the restaurants menu.
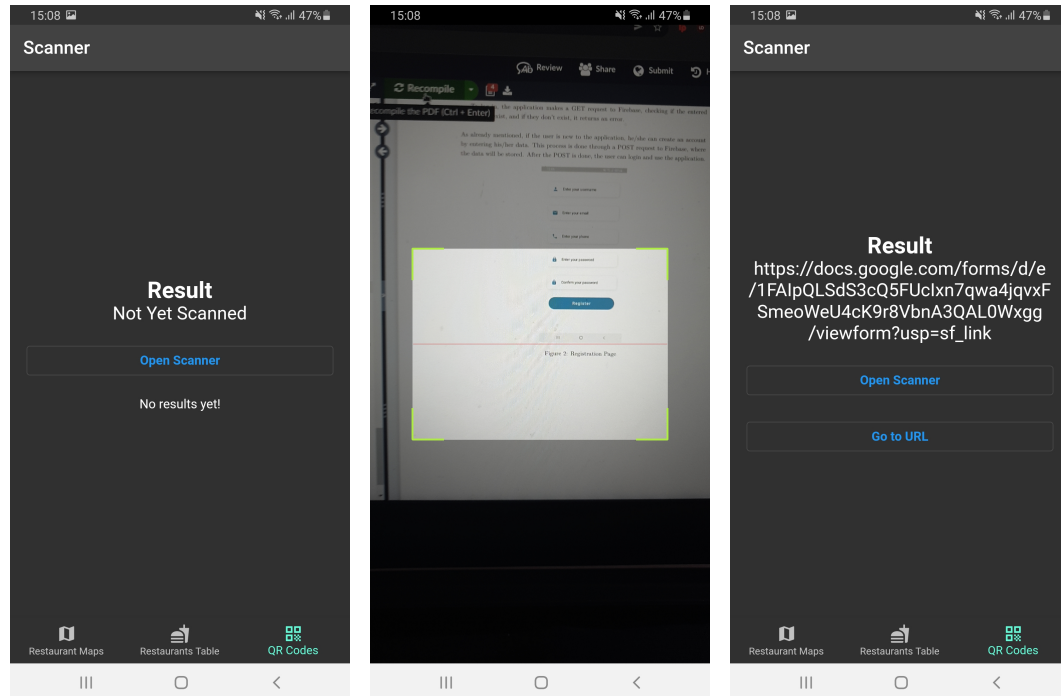

Figure 6: QR Code Pages

7 References

[1] "Flutter MapBox API" https://pub.dev/packages/mapbox_gl

[2] "Flutter Firebase Firestore" https://medium.flutterdevs.com/using-firebase-firestore-in-flutter-b0ea2c62bc7