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FACULTY OF ENGINEERING INFORMATION TECHNOLOGY
DEPARTMENT OF COMPUTER ENGINEERING

Asali

Done by

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Disclaimer

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Abstract

People usually would like to know more about the business that will buy from it or take a service from it so Asali comes to help people and let them know more about the business and the quality of the services before an Asali user buy or take service from a business all of that by Asali mobile application.

In the along side Asali provide a web application to let business owners to register on Asali that allow user to review the services using Asali mobile application.

Chapter 1

Introduction

People are always seeking to pay for a good services and good products so by this review media platform -Asali- people will pay for what they need by see the reviews about the products and services in the businesses.

1.1 Problem Statement

When you move to a new country you don't know what is the business available in that country what is the service of the businesses and what is the rate of the business and how to contact the business so the idea is to provide a service to this who need to know about the services before take it and pay for it.

1.2 Objectives

Help the users to find the business they need and easily contact them and see the location and what the business offers.

1.3 Scope of the work

1. **Create accounts:** Asali users can make their own accounts and search about businesses in the application also review them
2. **Create business account:** Businesses can register on Asali and provide its' services to be reviewed by Asali users.
3. **Sentiment analysis:** Any review enter the application will be analysed using machine learning techniques to classify it as positive or negative review.
4. **Search Feature:** Users can search on businesses that registered in the application, also search on reviews on the app.
5. **Search filters:** Application provide many filters to filter reviews and businesses.
6. **Maps:** Businesses that can register on the application can provide it's location on map.

7. **A fully functional website and mobile application that allows Asali to operate as it is desired.**

1.4 Significance

People seeking to know more about a business they may will buy from it or order a service from it. So Asali comes to let people know more about the business by presenting previous reviews of Asali users for different businesses in Asali.

Chapter 2

Constraints and Earlier Coursework

2.1 Constraints Limitations

Building a comprehensive application with all of the requested features takes a lot of time that we didn't have, since it takes time to learn the relevant technologies, pick concepts and design the user interface. All of the necessary elements and features have been established to finish this project and it will be enhanced in the future. We also lacked some educational materials that we needed to solve the challenges we were facing.

2.2 Earlier Coursework

- Database Design Management course:
This platform's database is entirely made on SQL (Structured Query Language). Database design principles and crucial concepts like dependencies, keys, and indexes were also covered in this course.
- Distributed operating system course:
This course helps student to understand the idea of APIs and micro-services. So the whole back-end built as an API, and the front-end call this APIs.
- Critical Thinking & Scientific Research course:
In order to finish this course, students were taught how to read scientific publications and how to produce research papers using current technologies such as latex.
- Web Development course:
This course focused on the programming languages required to accomplish the project, such as HTML, CSS, and Javascript.
- Software Engineering course:
All of the principles and approaches covered in this course, such as software requirements, architecture, and user acceptability, have been shown to be effective and helpful, and they were implemented in this project.

Chapter 3

Literature Review

As previously stated, Asali aims to provide people by community which will give a strong knowledge about the businesses registered in the application by honest reviews applied in the application by users. However, it was not the first; there are numerous websites that perform the same function, such as:

3.1 Yelp

Yelp Inc. is an American company that develops the Yelp.com website and the Yelp mobile app, which publish crowd-sourced reviews about businesses. It also operates Yelp Reservations, a table reservation service. It is headquartered in San Francisco, California[1].

Advantages

1. Allows users to review businesses which registered in the application.
2. It's free. While there are costs to customizing and optimizing your Yelp profile, simply setting up and managing it is free. It's pretty hard to turn down free advertising, especially if you're a smaller business.

Disadvantages

1. Bad reviews. The most obvious reason not to have a profile on Yelp is that not all reviews are good. You don't have control over whether someone leaves you an unfair review or not. While you can answer them, you may have a hard time undoing the damage of a very negative review.
2. Reviews aren't always trustworthy. A recent study found that as many as 16% of the reviews on Yelp are false. Most of the fake reviews came from restaurants who wanted to undo the damage from negative write-ups.
3. Not provided in the MENA region - not provided for Arab.

3.2 Angi

Angi is a local business directory website that allows its users to submit more comprehensive reviews of companies than Yelp. Users can grade a company in report-card style (on a scale of A to F, with A being the best and F being the worst) on five categories: price, quality, responsiveness, punctuality, and professionalism. [2].

Advantages

1. Customers can filter by project and choose from local professionals.
2. Customers can obtain quotes or bids within minutes.

Disadvantages

1. Name, phone number, and email are required to browse local services.
2. Persistent follow-up emails and calls preferences.
3. Not provided in the MENA region - not provided for Arab.

3.3 What enhancements did Asali bring?

Asali was designed to be as simple as possible for all users, regardless of their technological knowledge, and to include features not found on current platforms and sites, such as the ability to search and filtering the reviews and businesses in the application. Also it provides some arabic content like maps. In addition Asali use TomTom maps which is free API maps source.

Chapter 4

Methodology

4.1 Used Technologies

4.1.1 ReactJS

ReactJS is a free and open-source front-end JavaScript framework for creating UI components-based user interfaces.[3] Meta (previously Facebook) and a community of individual developers and corporations manage it. React may be used as a foundation for single-page, mobile, or server-rendered apps.

Why ReactJS?

1. React provides a clean and simple syntax called JSX syntax, which is comparable to HTML but allows the developer to insert JavaScript code into the front-end design, giving them more control over the component.
2. Reusability, one of React's most powerful features is reusable components. In another meaning, reusing an existing component rather than creating it again from scratch.
3. It supports a huge number of free libraries that give ready components that may make the development process easier for the developer.
4. Fast rendering.

4.1.2 Microsoft SQL Server

Microsoft SQL Server is a relational database management system developed by Microsoft. As a database server, it is a software product with the primary function of storing and retrieving data as requested by other software applications—which may run either on the same computer or on another computer across a network.

Why Microsoft SQL Server

1. Microsoft SQL is easy to use and can be installed via setup wizard. Unlike other database servers requiring extensive command-line configurations, SQL server offers a user-friendly installation interface. Besides the one-click installation process, it comes with a readable GUI along with lots of instructions. The prerequisite updates

are downloaded by the installation wizard automatically, which reduces manual workloads.

2. With built-in transparent data compression and encryption features, SQL server offers enhanced performance. To secure and encrypt the data, users need not modify programs. SQL Server provides efficient permission management tools with access controls designed to help users secure sensitive business information.
3. The SQL Server database is highly secure and uses sophisticated encryption algorithms making it virtually impossible to break the security layers. SQL Server is a commercial relational database with additional security features to reduce the risk of attacks.

4.1.3 ASP.NET

ASP.NET is an open-source, server-side web-application framework designed for web development to produce dynamic web pages. It was developed by Microsoft to allow programmers to build dynamic web sites, applications and services. The name stands for Active Server Pages Network Enabled Technologies.

Why ASP.NET

1. One of the foremost reasons ASP.NET has gained immense usability among web application developers is because of its Open-Source code. The framework code is now available on GitHub, where anyone can modify, review, or contribute. Additionally, the huge .NET Core community is there to support those results in fast and seamless application development.

All improvements and bug fixes are quicker and released on a regular interval so that you do not have to wait for ages to harness the latest developments.

Flexibility of Open-Source framework is another reason why ASP.NET Core is a preferred choice for developers.

2. One of the best things about NET development is its cross-platform implementation architecture. The framework is built to run on Windows only, but applications and tools developed using it can seamlessly function on other platforms such as macOS, Windows, and Linux. It features Visual Studio IDE that allows developers to build web applications on any Operating System of their choice and achieve project collaboration.
3. Superior performance is one of the most integral factors the developers consider for successful ASP.NET development. With ASP.NET Core, you can be assured of excellent performance, flexibility, and scalability that aids in writing easy-to-maintain, reusable, and efficient programming codes. This is possible with the opportunity to leverage tool optimization and core libraries.

4.1.4 Flask

Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction

layer, form validation, or any other components where pre-existing third-party libraries provide common functions

Why Flask?

1. There is a built-in development server and a fast debugger provided.
2. Shallow Learning Curve.
3. Easy to Use and Flexible.
4. Request dispatching using REST.

Why these technologies?

1. Because the database utilized in this project is NoSQL, MongoDB was adopted, which delivers excellent speed and minimal latency.
2. MongoDB Compass is a very easy-to-use GUI that allows users to track their data in an effective manner.
3. Models in Mongoose do the majority of the work, such as setting default values for document attributes and verifying data.
4. Queries employ function chaining rather than incorporated mnemonics, resulting in code that is more flexible and understandable, and hence more maintainable.

4.1.5 Other technologies & tools

There are multiple other technologies used, including:

1. **React Router** is a tool for handling routes in a web app by utilizing dynamic routing that occurs when the app is rendering on the machine to create a single page application. [4]
2. **React Navigation**, is a standalone library that enables you to implement navigation functionality in a React Native application. React Navigation is written in JavaScript and does not directly use the native navigation APIs on iOS and Android. Rather, it recreates some subset of those APIs.[5]
3. **Expo**, it is an open-source framework for developing JavaScript and React-based universal native apps for Android, iOS, and the web[6]. It was used with react-native for the mobile application development.
4. **Visual Studio Code** , also commonly referred to as VS Code, is a source-code editor made by Microsoft for Windows, Linux and macOS. Features include support for debugging, syntax highlighting, intelligent code completion, snippets, code refactoring, and embedded Git.[7]
5. **Microsoft Visual Studio** is an integrated development environment from Microsoft. It is used to develop computer programs, as well as websites, web apps, web services and mobile apps[8]
6. **Postman** is an API platform for building and using APIs. Postman simplifies each step of the API lifecycle and streamlines collaboration so you can create better APIs—faster.[8]

7. **Formik**, is a small group of React components and hooks for building forms in React and React Native. It helps with the three most annoying parts: Getting values in and out of form state. Validation and error messages. [9]
8. **Git**, Git is free and open source software for distributed version control: tracking changes in any set of files, usually used for coordinating work among programmers collaboratively developing source code during software development [10]
9. **GitHub**, is an Internet hosting service for software development and version control using Git. It provides the distributed version control of Git plus access control, bug tracking, software feature requests, task management, continuous integration, and wikis for every project [11]
10. **Entity Framework**, is an open source object–relational mapping framework for ADO.NET. It was originally shipped as an integral part of .NET Framework. Starting with Entity Framework version 6, it has been delivered separately from the .NET Framework.[11]
11. **AutoMapper**, in C is a library used to map data from one object to another. It acts as a mapper between two objects and transforms one object type into another. It converts the input object of one type to the output object of another type until the latter type follows or maintains the conventions of AutoMapper..[12]
12. **Fluent Validation**, is a validation library for . NET, used for building strongly typed validation rules for business objects. Fluent validation is one way of setting up dedicated validator objects, that you would use when you want to treat validation logic as separate from business logic.[13]
13. **JWT** (JSON Web Token) is an open standard for exchanging security information between a client and a server, and is commonly used for user login authentication. [14]

4.2 Asali as Web application

4.2.1 Authentication and Validation

Because Asali is regarded as a middleman between businesses and users, each party must register on the platform in order to identify himself and have access to all of its features.

Login

In order to login to the website, you have to enter your valid email address and a valid password. As seen in Figure 4.1

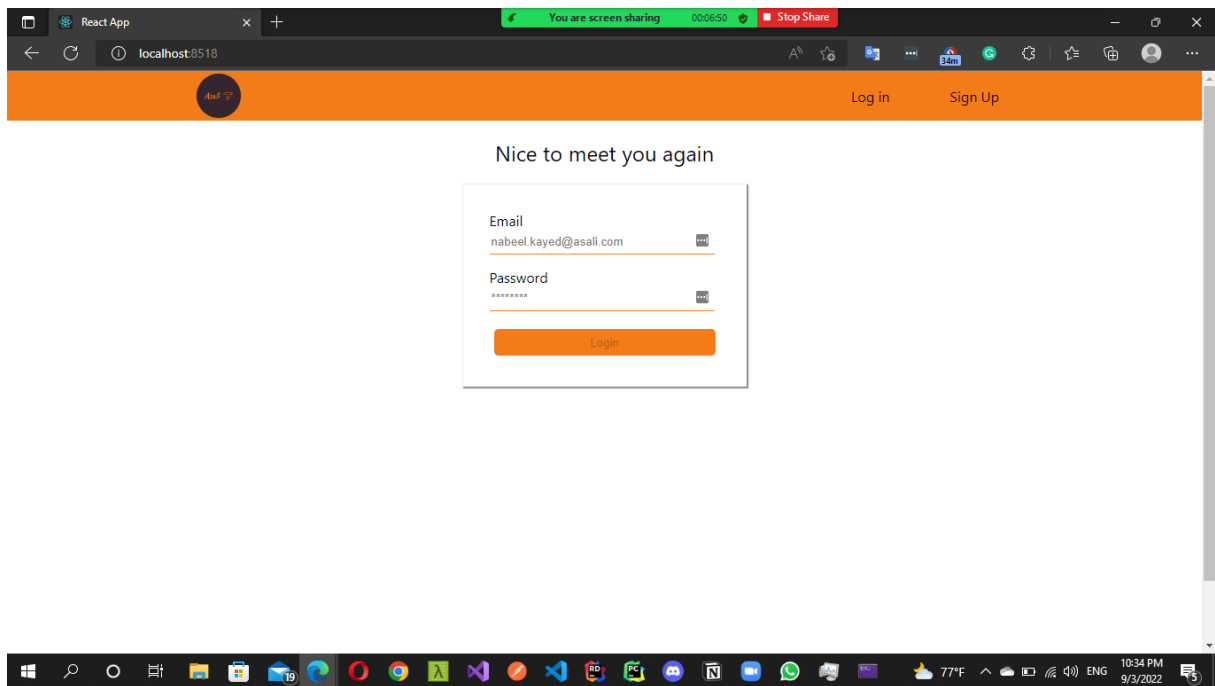


Figure 4.1: Login Form

Signup

To register on the website, you must provide certain information such as your first name, last name, username, email address, and password (see Figure 4.2 and ??)

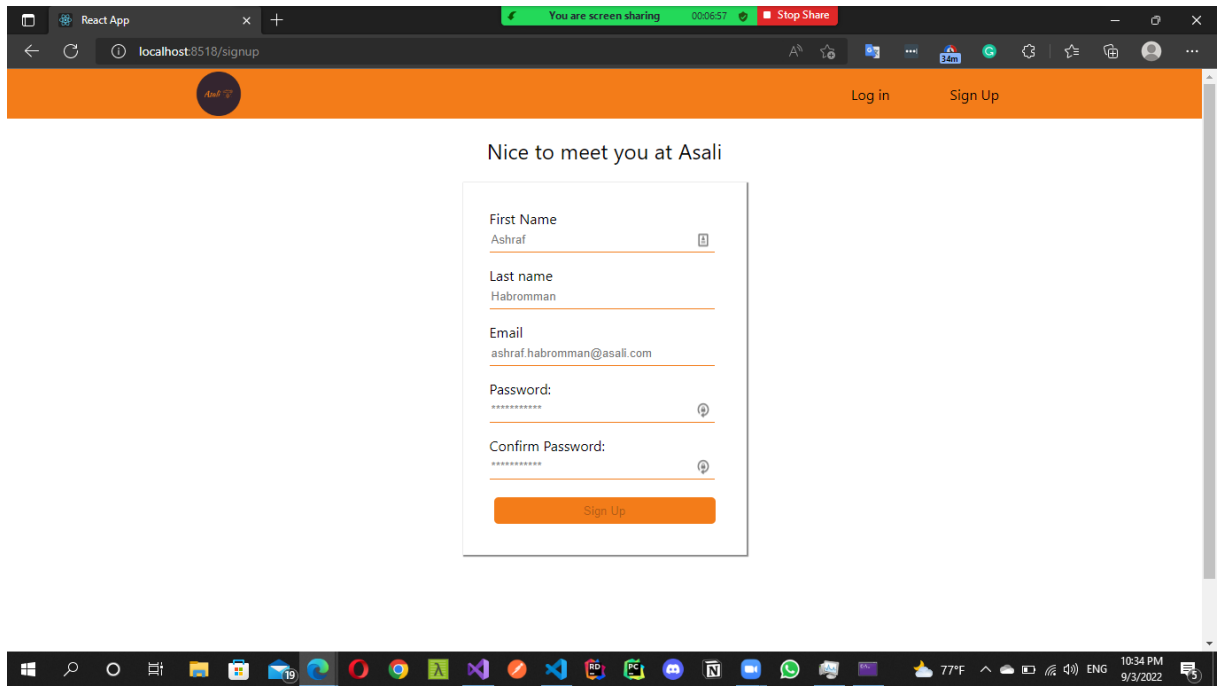


Figure 4.2: Business signup page

Validation

When a user attempts to login, the back-end validates the credentials; if they are invalid, the user is alerted, and if he attempts to register using an existing email address, he is also notified.

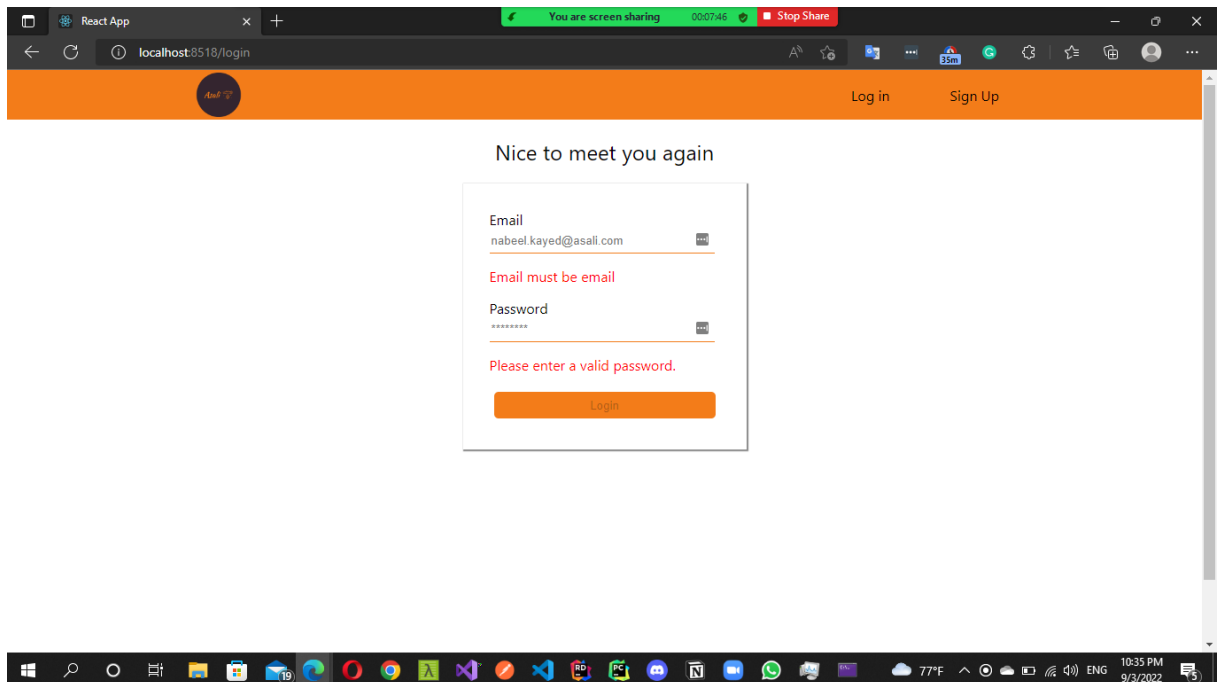


Figure 4.3: Login page with an error message

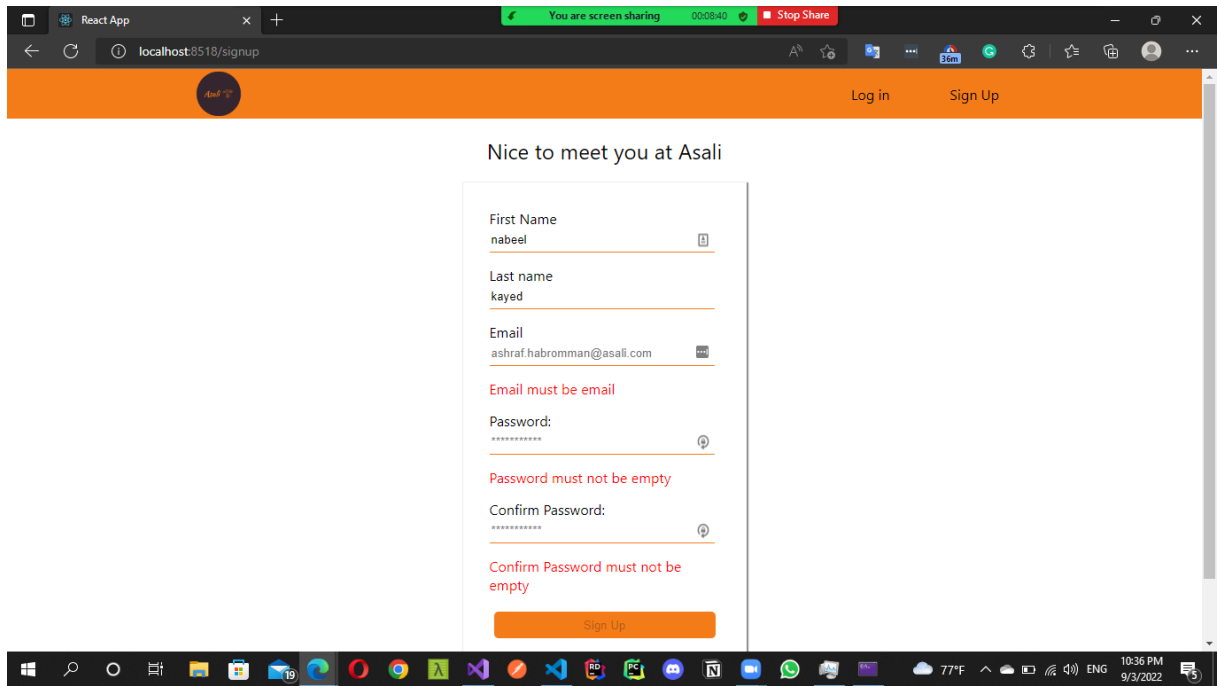


Figure 4.4: Signup page with an error message

4.2.2 Business profile set up

After a business owner have registered in the website he will be moved to log in page then to 'Business profile set up' to set up his business and provide the correct information about the business. The information could be the business name, phone number, business website, order website, the category of business, business cover image, location on map, the bio, services which the business provides and finally the open times in all days of week (see Figure 4.6)

The screenshot shows a web form titled "Business Profile Setup". At the top, there is an orange navigation bar with a logo on the left and "Log in" and "Sign Up" links on the right. The form itself is white with a thin border and contains the following elements:

- Business Name:** A text input field.
- Phone Number:** A text input field.
- Business website:** A text input field.
- Order website:** A text input field.
- Category:** A dropdown menu with the text "Select a Category" and a downward arrow.
- Cover Image:** A large rectangular area with a dashed border and a central button labeled "Upload image".

Figure 4.5: Business profile setup

This screenshot shows the lower portion of the "Business Profile Setup" form. It includes:

- Business Location in Map:** A map showing the location of Nablus, Rafidia, and Asl. A black location pin is placed on the map near Nablus. The map is credited to "© 1992 - 2022 TomTom".
- Bio:** A text input field.
- Services:** Two text input fields.
- Open times:** Two rows of time selection. The first row is for "Saturday" with "From: 07:00 AM" and "To: 06:00 PM". The second row is for "Sunday" with "From: 07:00 AM" and "To: 06:00 PM". Each time field has a dropdown arrow.

Figure 4.6: Business profile setup

4.2.3 Navigation bar and side bar

In Asali -Business version-, there are two styles one of them before login and the other is after login. The figure below shows the navigation bar of login and signup.

For unlogged business owner, the navigation bar has links to the login page and signup page.



Figure 4.7: Asali navigation bar for unlogged business owner

On the other hand, the website will show a side bar for logged-in business owner containing dashboard, business profile, followers, reviews, photos, settings and logout. (see the next figure).

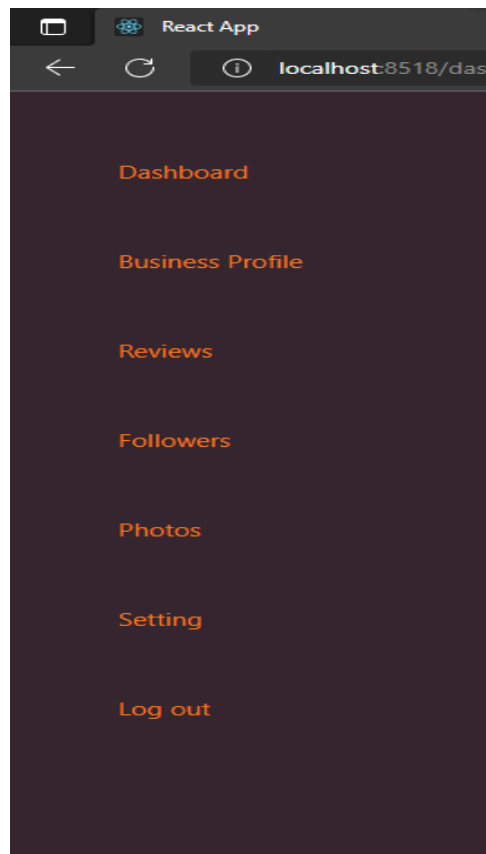


Figure 4.8: Search Results page

4.2.4 Dashboard Page

When a business owner enters the website, he sees the side bar and dashboard page, which includes some charts which visualize some statistics about the business. The first chart describes the number of reviews for each number of stars, the second one describes the number of reviews per positive/negative analysed text -the text has analysed by machine learning

technique -, the third one shows number of reviews per services in the business and the final one shows almost the third one shows but separated by negative/positive.(see Figure 4.9)

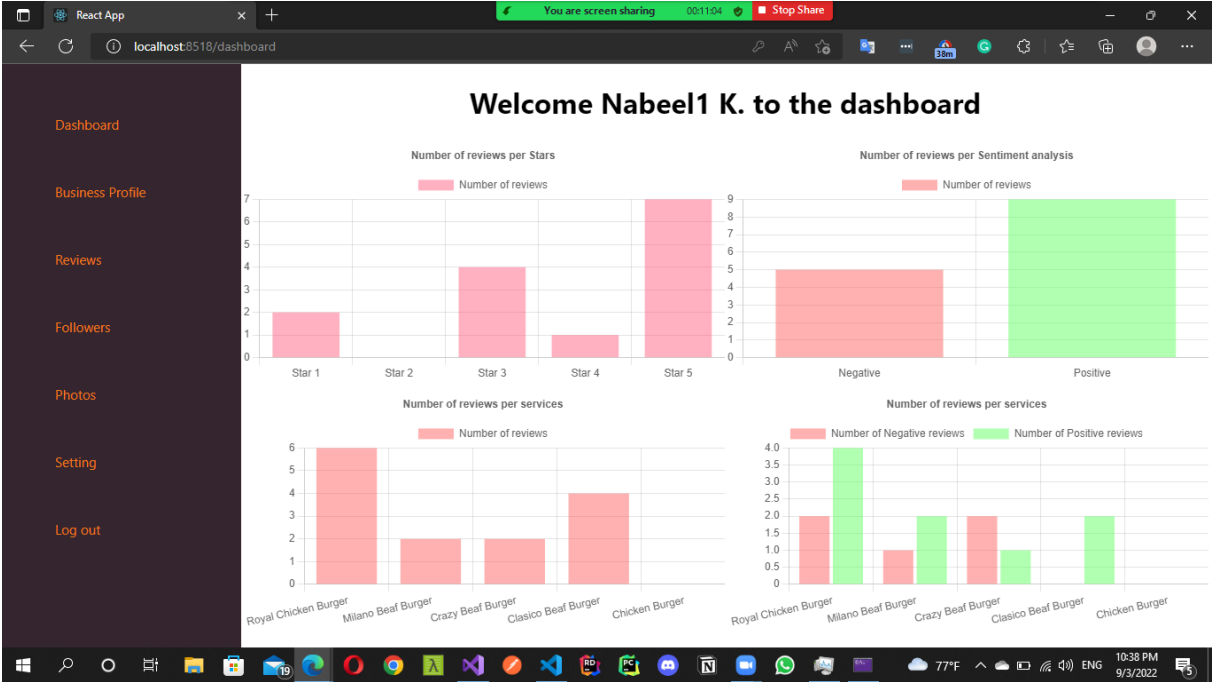


Figure 4.9: Asali dashboard

4.2.5 Business Profile page

This section will talk about the profile page and all the features in it.

By this page the business owner can edit his profile page so he can edit the cover page, the business name, phone number, business website, order website, location on map, bio, services and the open times. (see Figure ??)

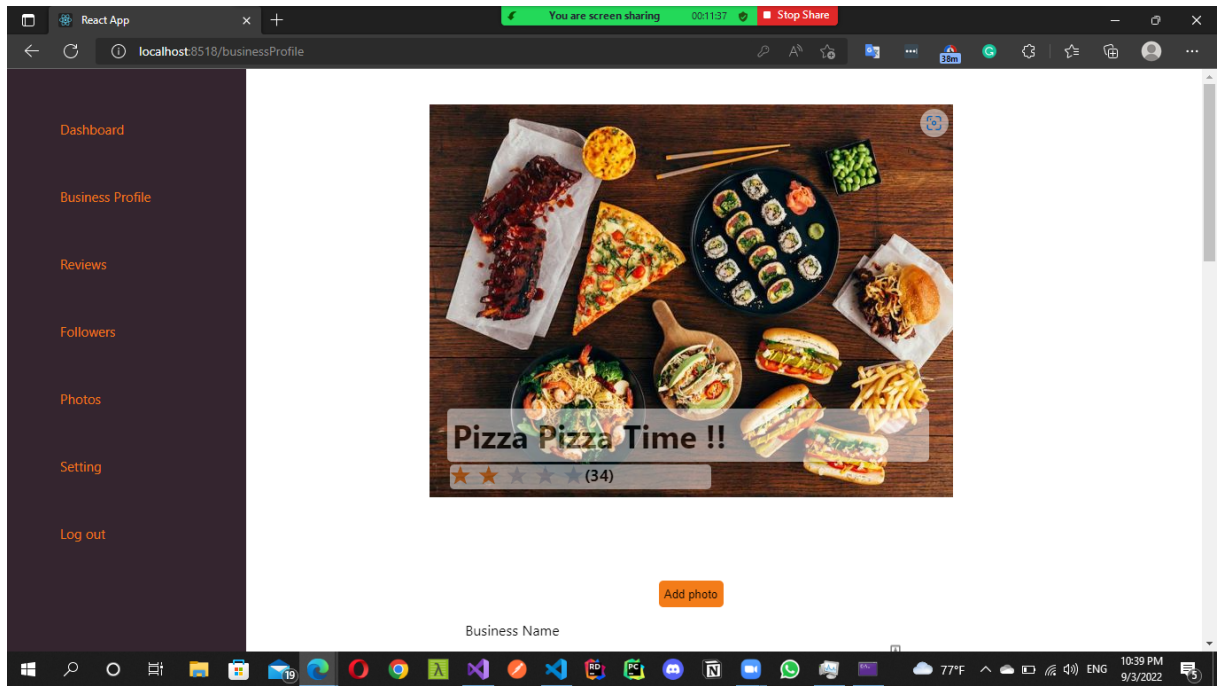


Figure 4.10: Business profile page - 1

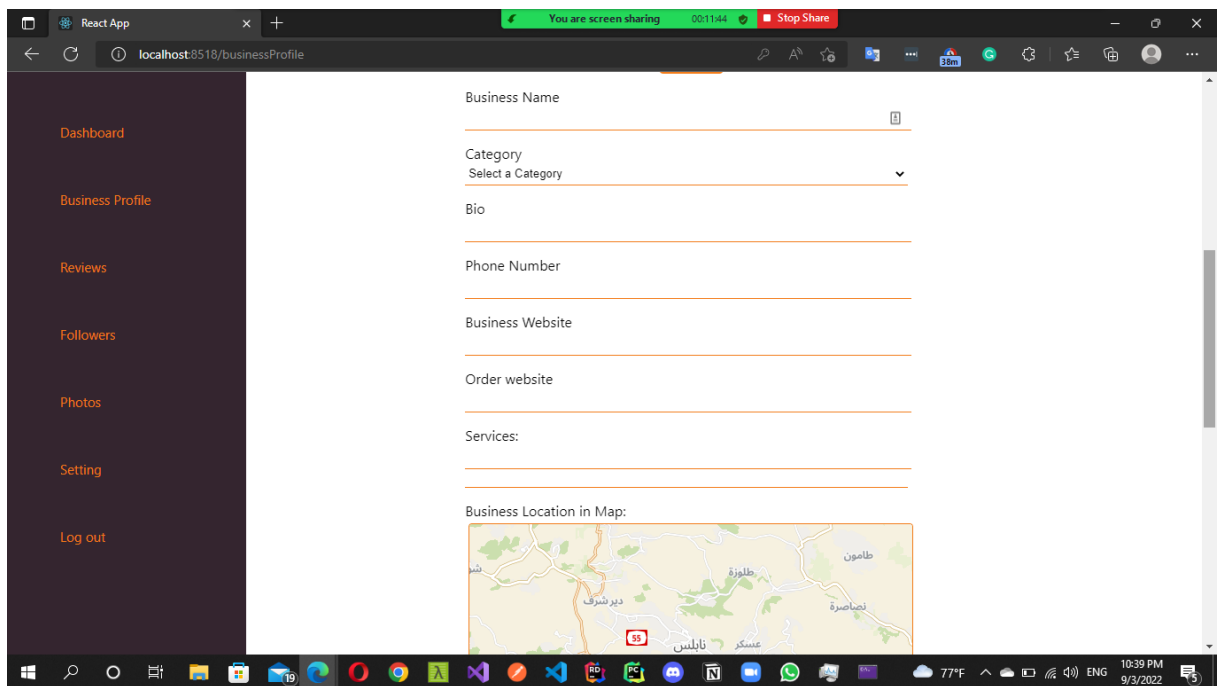


Figure 4.11: Business profile page - 2

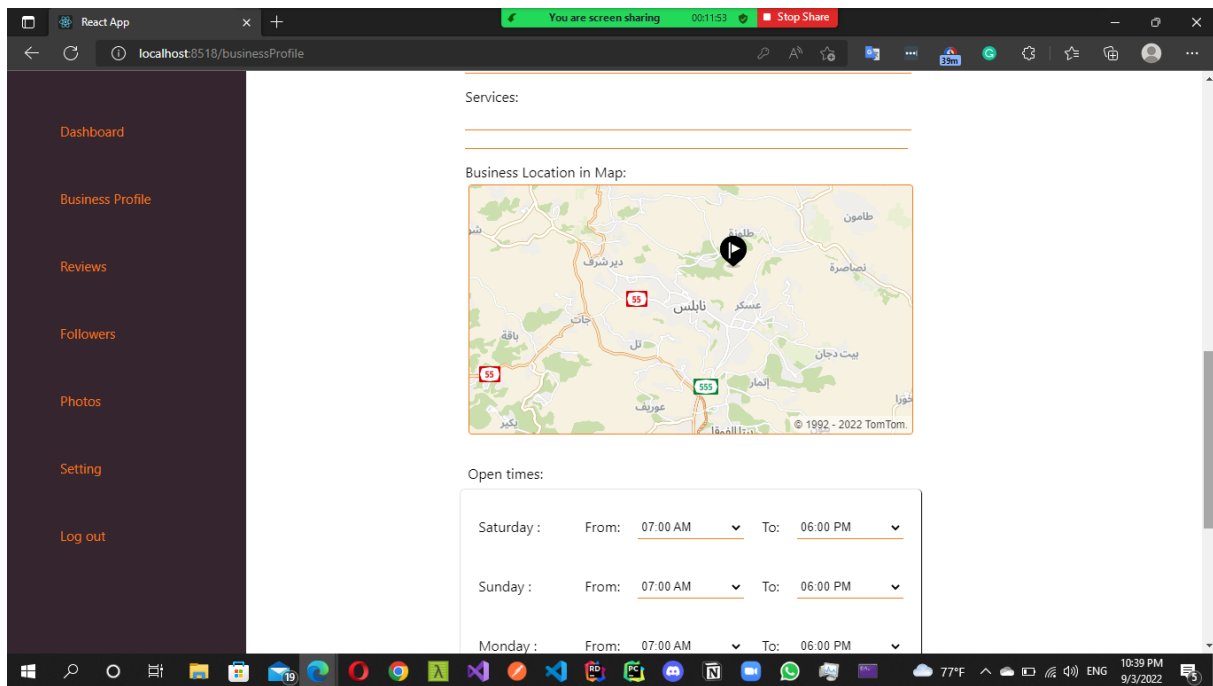


Figure 4.12: Business profile page - 3

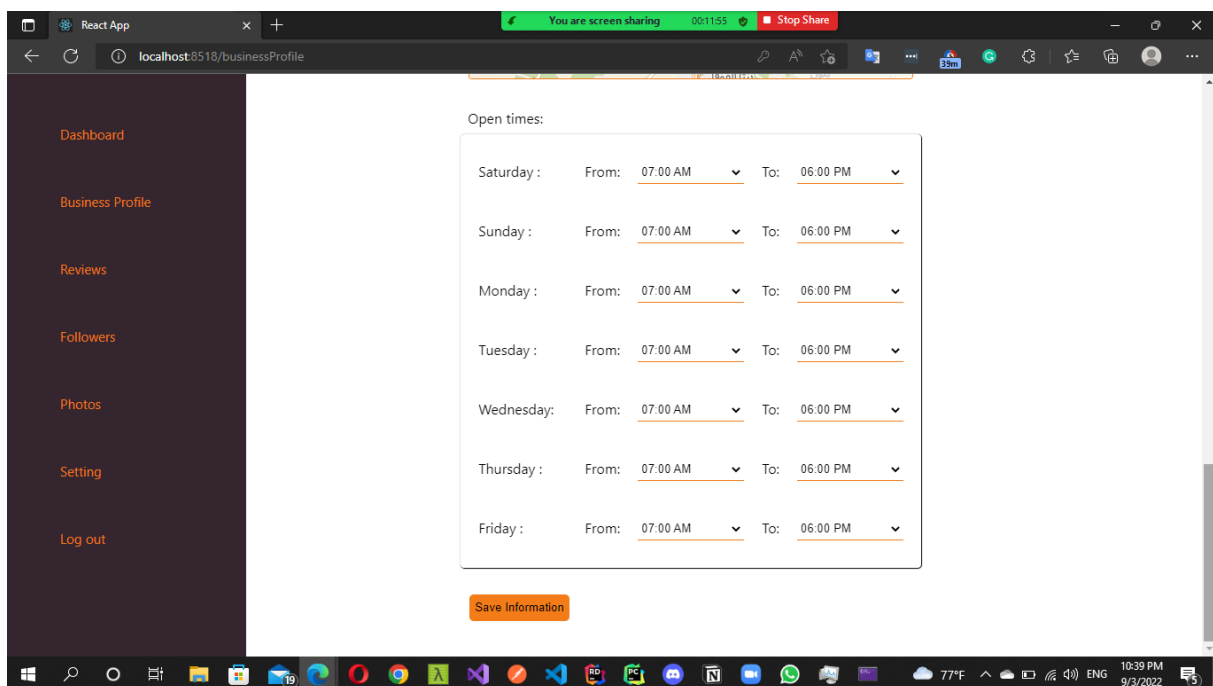


Figure 4.13: Business profile page - 4

4.2.6 Reviews page

This page shows all the reviews of the business which reviewed by users. The reviews appear as cards in the reviews page, each card contains the reviewer, date of reviewing , rate provided(number of stars), the review text, the photos uploaded by the reviewer if available, the number of reactions for each reaction button and finally the sentiment analysed text as positive or negative.(see Figure below 4.14)

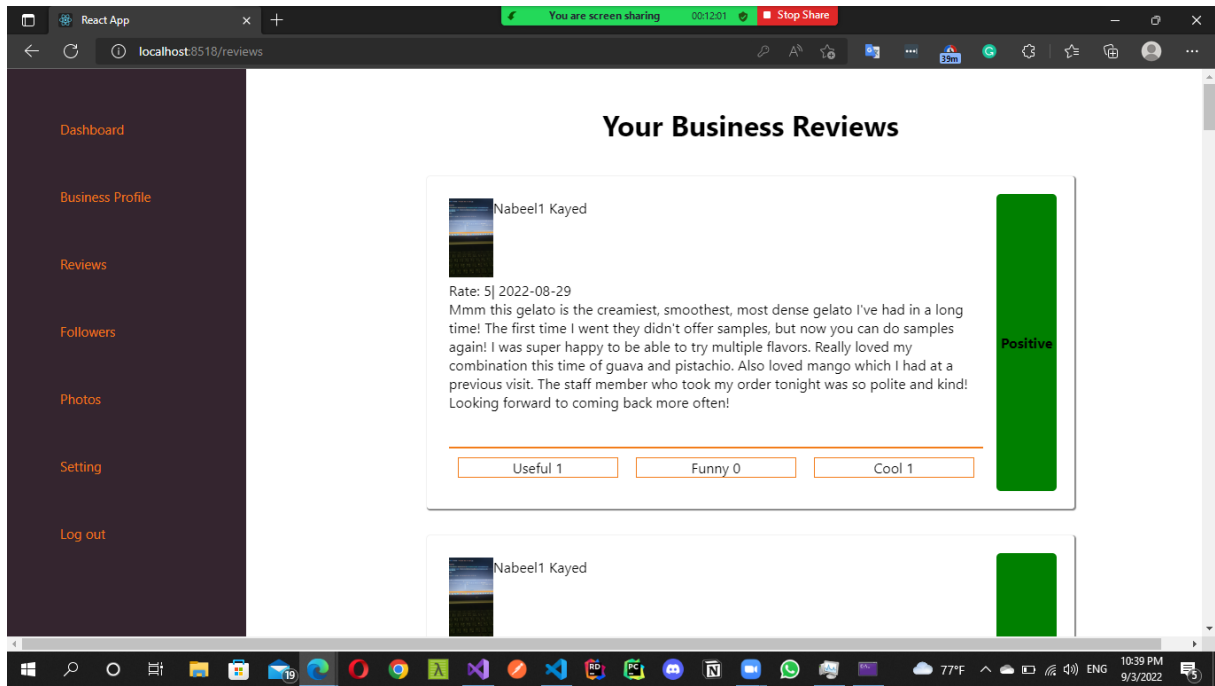


Figure 4.14: The reviews page

4.2.7 Followers page

This page shows all the followers of the business, each follower card contains name of reviewer, headline and the bio provided by reviewer. (4.15)

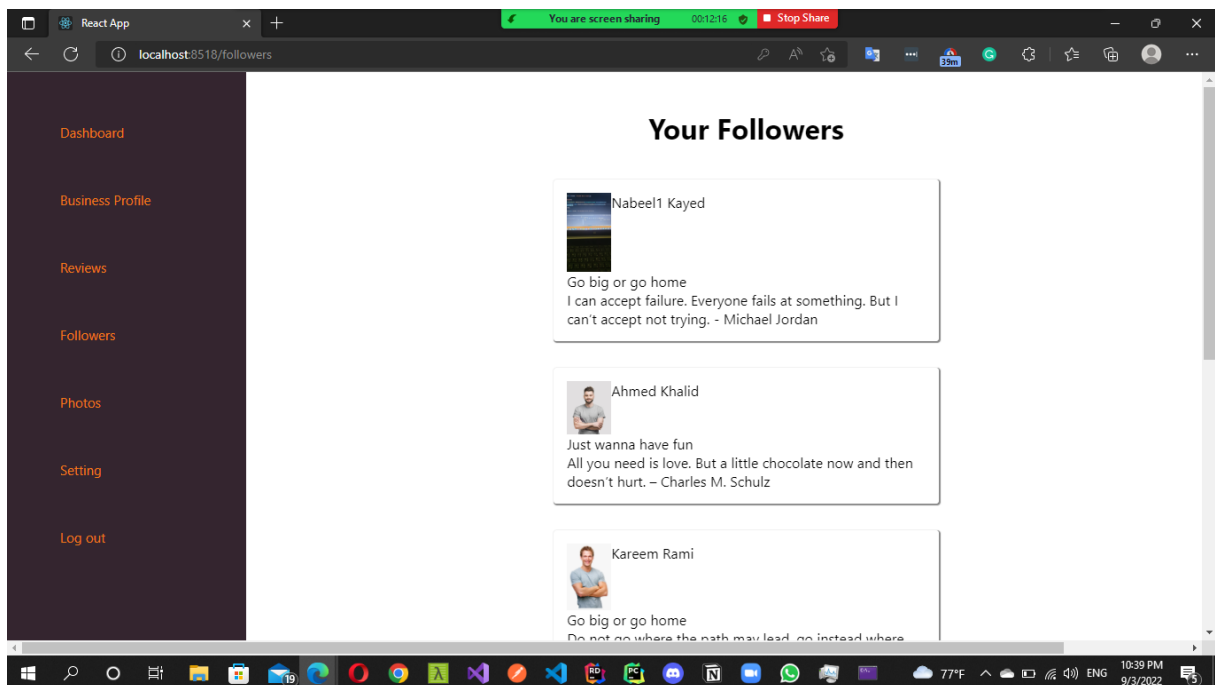


Figure 4.15: The followers page

4.2.8 Photos page

This page shows all the photos of the business, this photos collected from all the photos' reviews of the business that done by reviewers. 4.24)

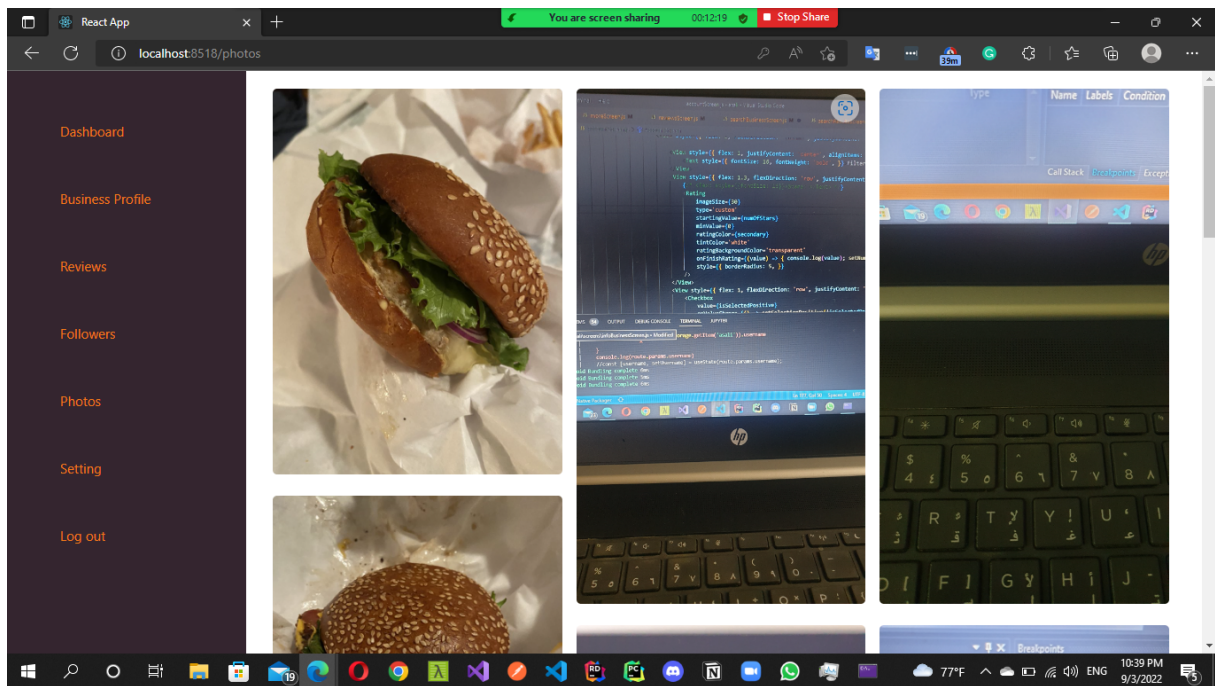


Figure 4.16: The photos page

4.2.9 Settings page

The business owner can edit his profile information via this page. 4.17)

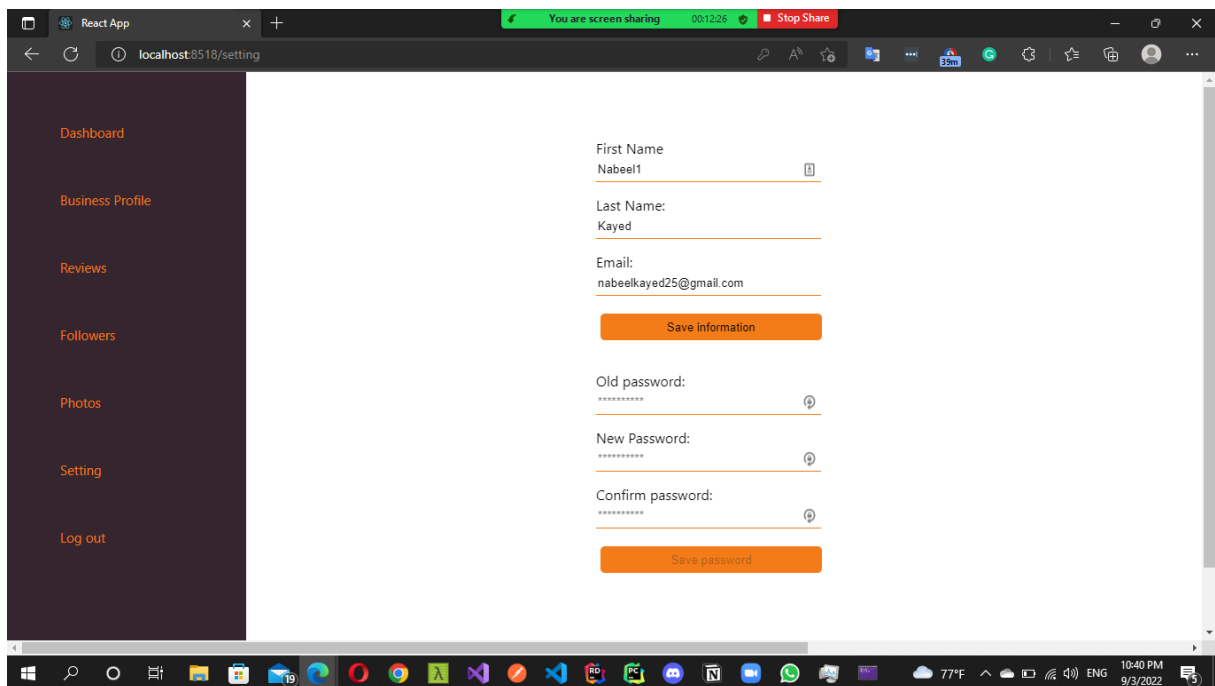


Figure 4.17: The settings page

4.3 Asali as mobile application

Asali as mobile application has developed for normal users so they can register on the app and log-in to see reviews of other users also they can provide reviews for businesses.

4.3.1 Registration and login page

Normal people can register in this application and here is the way to register and log-in to the app. Any user could like to register on app he/she has to provide his/her first name, last name, username, email and a password. (see Figure 4.18).

In the along side any user have account and would like to enter his/her account so he/she could provide the email and the password which register by. (see Figure 4.19)

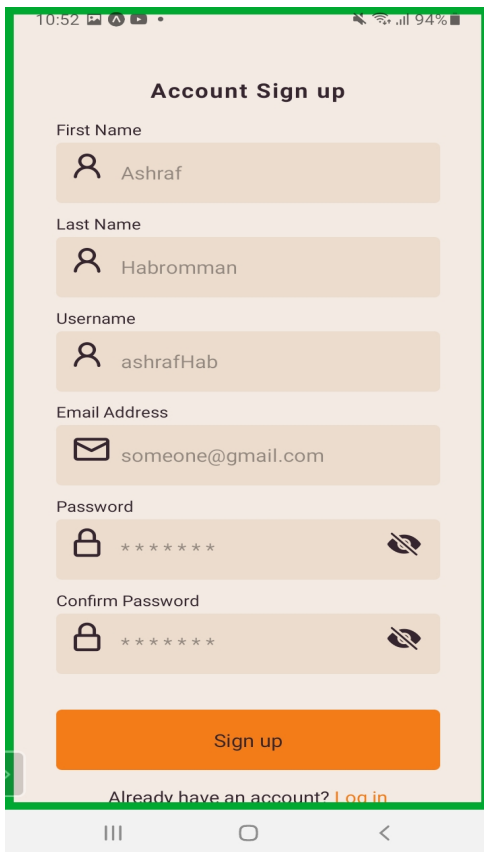


Figure 4.18: Sign up page for users

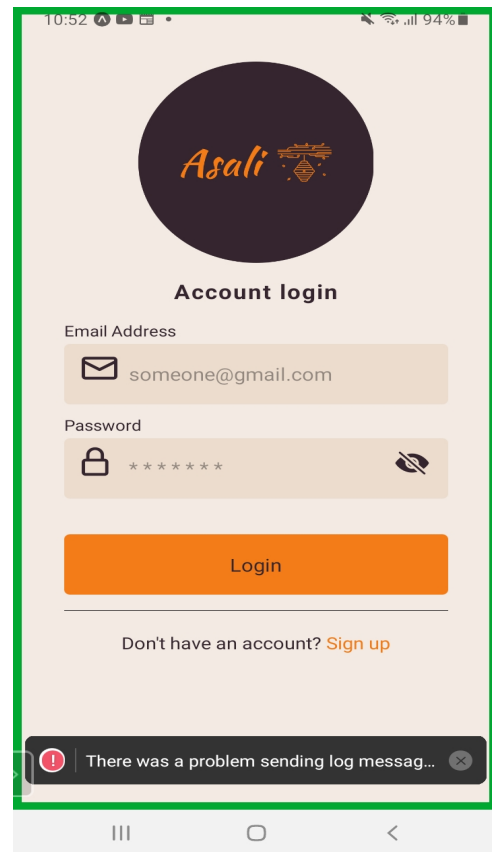


Figure 4.19: Log-in page for users

4.3.2 The bottom tab navigation

In Asali application, there is a bottom tab navigation which let users to navigate between screens (Howe screen, Search screen, Profile screen and More screen). (see Figure 4.20)

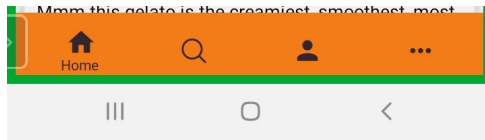


Figure 4.20: Bottom navigator tab bar

4.3.3 Home page

The home page, as shown in Figure 4.21, the page present some marketing photos the developer only can edit it, also a search input if user click on it, the app will move him/her to search screen to enter and filter what he/she searching about. Also it contains all the categories in the application and they listed as (Restaurants, Drinks, Markets, Delivery, Hotels, Contractors). The rest of the page shows a reviews which other users have reviewed, also users can filter the reviews in home page based-on his/her interests (see Figure 4.22)

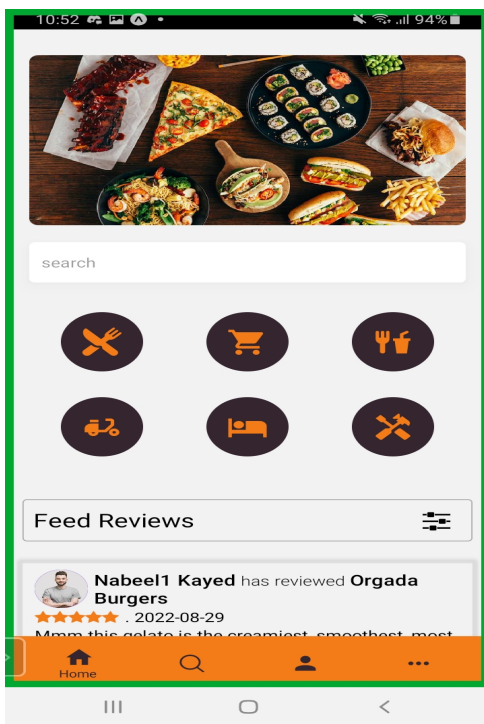


Figure 4.21: The home page

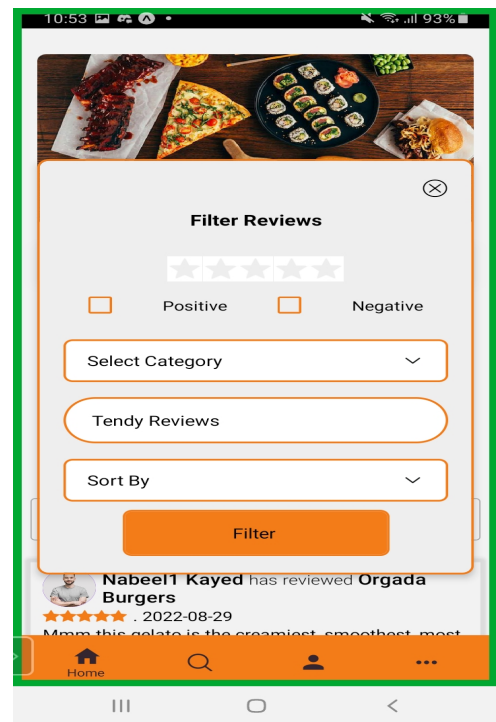


Figure 4.22: The home page filter to filter the reviews shows in the page.

4.3.4 Profile Page

This page can be reached-out via the bottom navigator bar to the personal profile of the logged-in user. Or can be reach via reviewer name in the review card so users can see the profile for each other. The profile page shows the information of the user like personal image , full name, last review date to show if the user really active in the app, following businesses which the user follow, all the photos the user have uploaded on the app which embedded with reviews and all reviews which the user has review on Asali application.(see Figure 4.23). In addition you can filter the reviews. (see Figure 4.25 and 4.24)

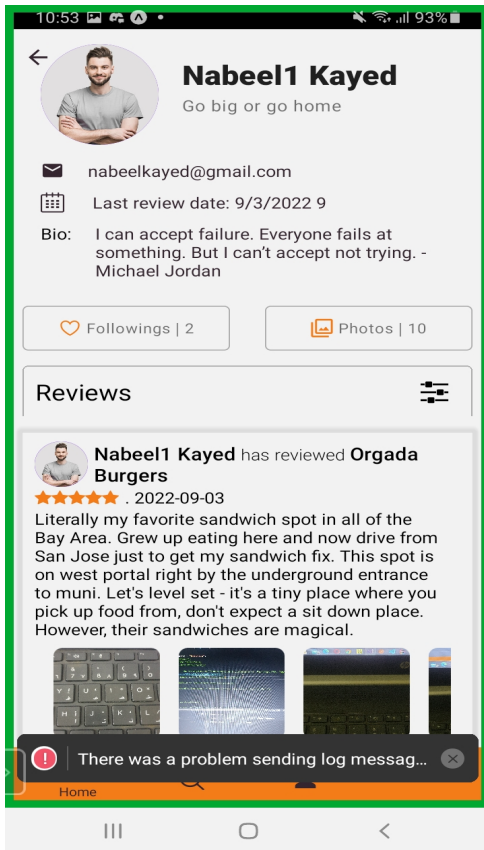


Figure 4.23: User profile page

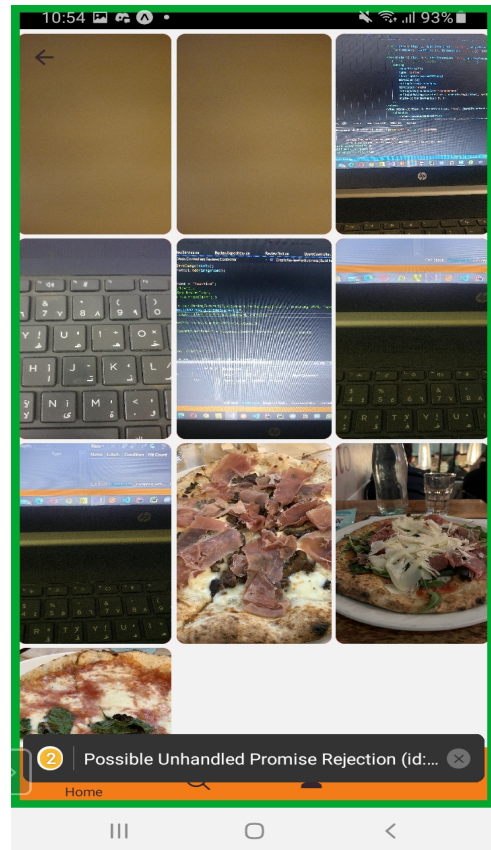


Figure 4.24: Photos Page

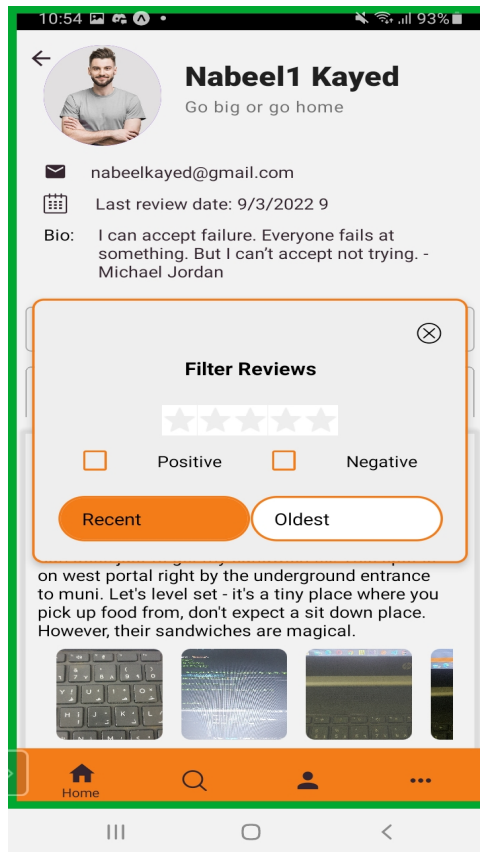


Figure 4.25: The reviews filter in the profile page

4.3.5 Search page

As illustrated in Figure 4.26, this page allows the user to search on the businesses in Asali also this page allow user to chose the category of business also provide filters to filter the businesses. The filters contains many options like "average number of stars that businesses got", "most reviewed" and "any where or near you" 4.27 below shows the profile editing screen, which allows the user to alter his basic information.

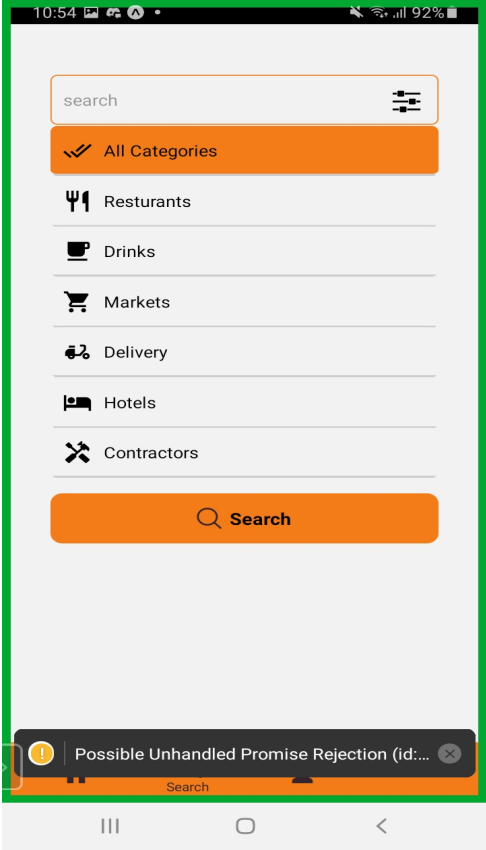


Figure 4.26: Search page

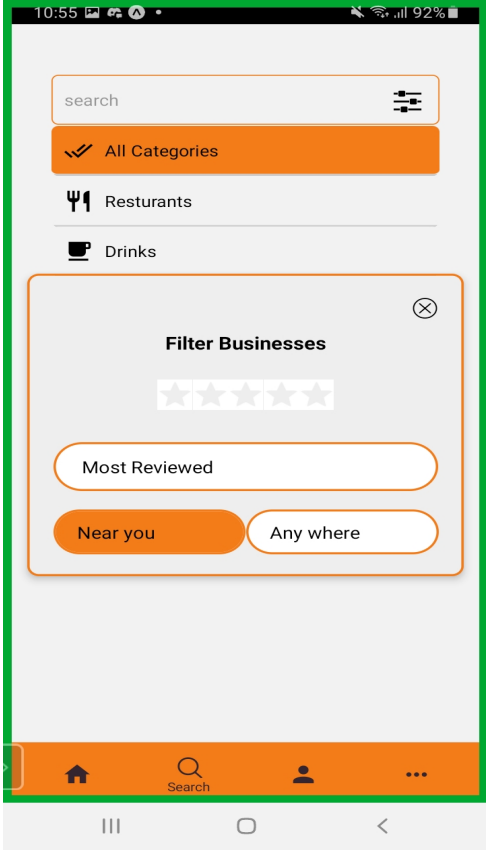


Figure 4.27: Search filter

When a user press no search button then all the inputs and filtration values will be taken and search in the database based-on this values and the value in the input field.

4.3.6 Search Results page

After a user press on the search button on the search page (see Figure 4.26) the user will be moved to this page to present the results of the searching as cards and map. The card shows some information of the businesses like business name, bio, average rate the the business got and number of reviews. Also the map will be moved to the business location on map which corresponding to the business card which showed on the screen. (see Figure4.28)

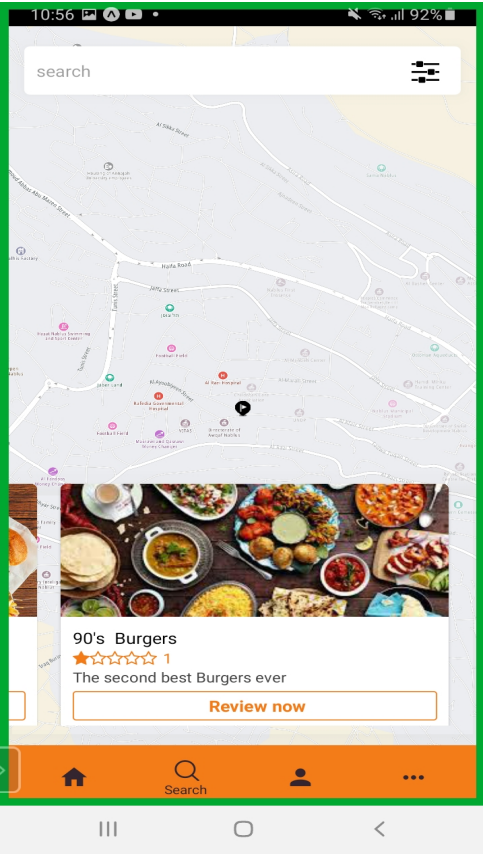


Figure 4.28: Search Results page

4.3.7 Businesses page

When a user press on one of the category icons on the home page (see Figure 4.21) then the user will be move to this page (see Figure 4.29) to sow all the businesses in the selected category.



Figure 4.29: Businesses page

4.3.8 Business page

This page have many features for registered business, first as a user can review and follow this business see Figures 4.32, 4.30, and it has call, photos, menu website and website icons each of them works as expected see (call 4.31), (photos ??), (menu website and website ??).

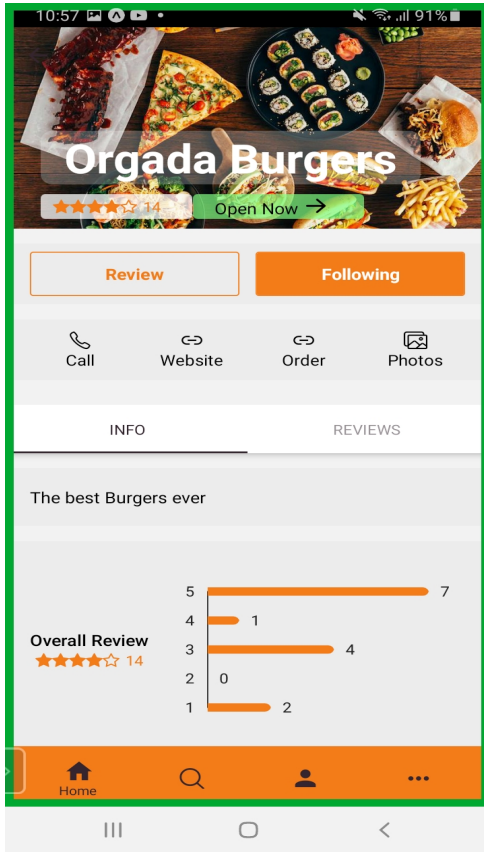


Figure 4.30: User follows a business

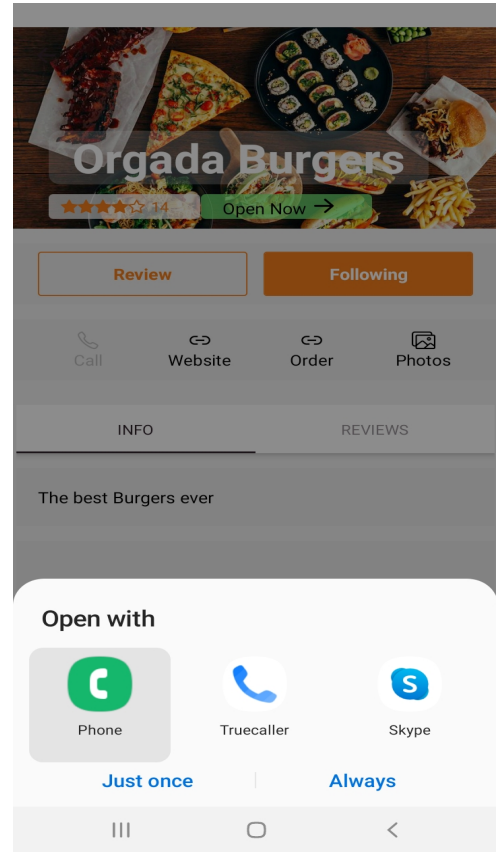


Figure 4.31: After press on call icon

This page in addition to that features have three main sections, write review page, info section and reviews section as shown:

Write Review Screen

By this page a user can review the business by providing number of stars, service which provided by the business owners, main review text and optionally user can provide images from mobile gallery or by opening the camera. see below Figure 4.32

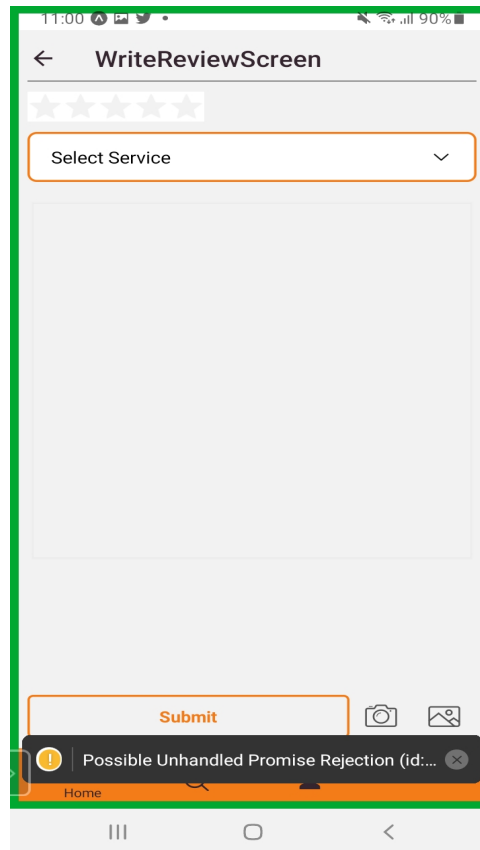


Figure 4.32: Write review screen

Info Section

This Section of business page contains some important information about the business so it contains a bio about the business provided by the business owners, overall review which illustrated by a horizontal bar chart to show number of reviews per stars, services in the business and its also provided by business owners and finally the location of business in map. (see Figure 4.33)

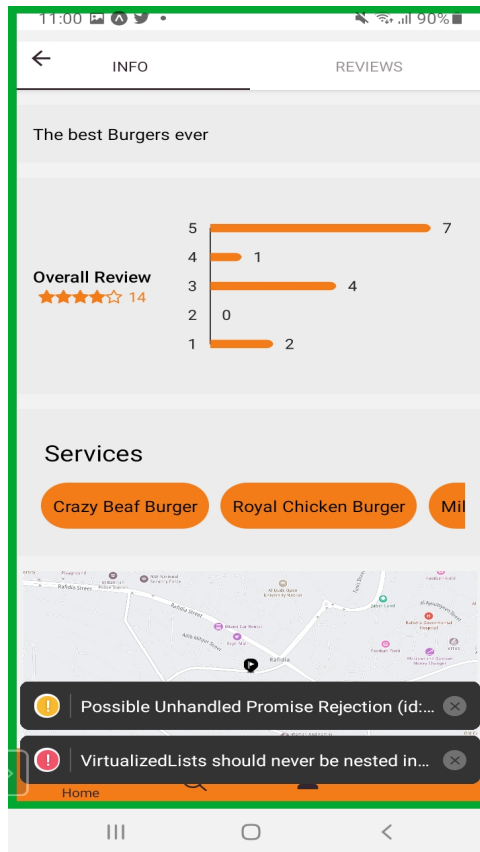


Figure 4.33: Info section

Reviews Section

This Section have all of the reviews provided by the users to business also this section provide a filter to allow users to filter the reviews as their interests, notice that users can filter reviews based-on the services in the business. (see Figure 4.34 and 4.35)

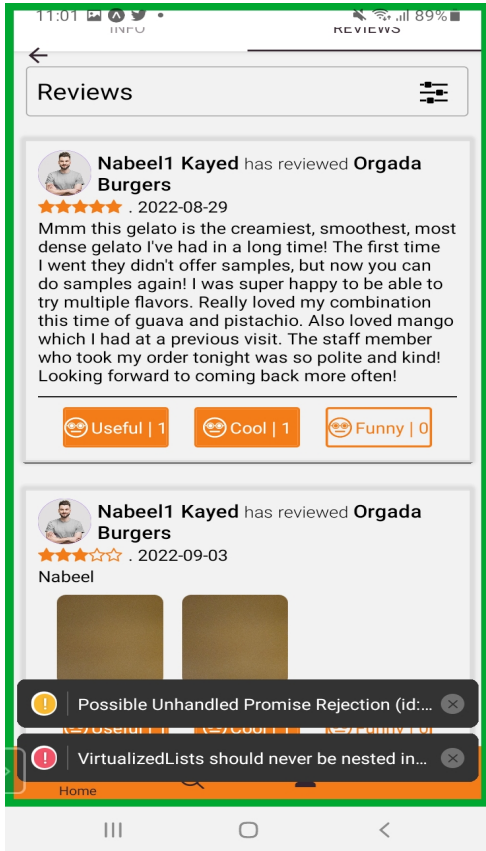


Figure 4.34: Reviews section

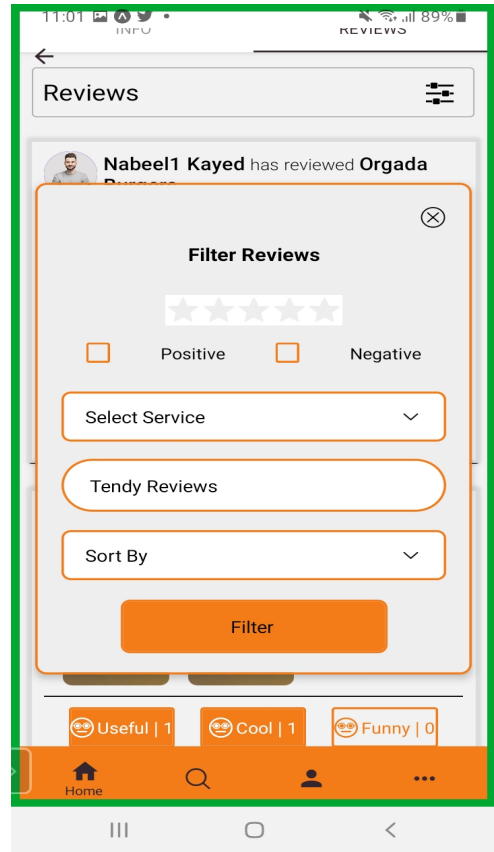


Figure 4.35: Filter Reviews in Business page

4.3.9 More page

User can reach-out this page via the bottom navigator tab as shown in Figure below 4.36.

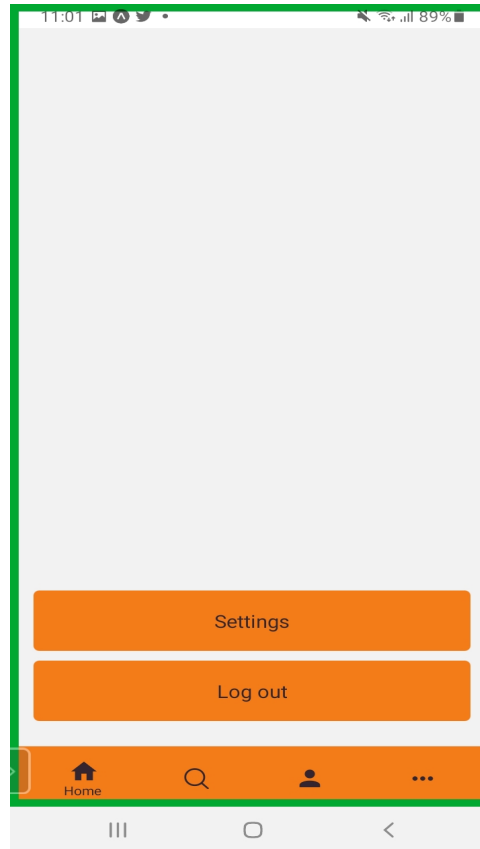


Figure 4.36: More screen

This page has two main components as shown below:

Settings Page

By this page user can edit his/her information like personal image, first name, last name, username, email, headline, bio and password.(see Figure 4.37)

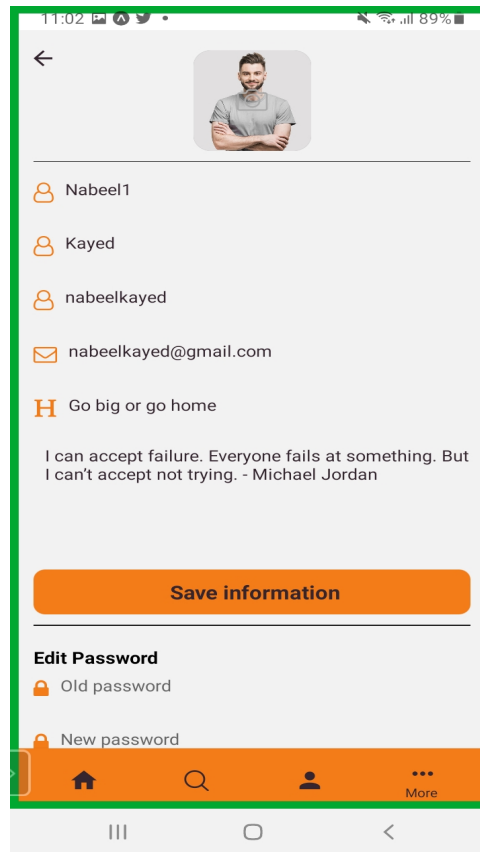


Figure 4.37: Settings screen

Logout button

By clicking on this button the user will be redirected to the login/signup page and his token and username will be deleted from local storage in mobile.

Chapter 5

Results & Discussion

5.1 Results

Asali is a platform with a website and a mobile app that allows users to perform the following:

1. Create business account via website by adding the main information about the business. This creation done by business owner.
2. Creating user account via mobile application for normal users.
3. Business owners can have brief about what the reviewers have done about their business.
4. Mobile users can follow and review businesses in Asali.
5. Mobile users can search on businesses in Asali and filtering the results.
6. Users can see profile pages for each other.

5.2 Discussion

Asali most likely supplied the following:

1. Providing an easy-to-use platform for business owners, regardless of their technical knowledge so they can register on the website easily.
2. Increasing the credibility between users and businesses owners.

Chapter 6

Conclusion & Future Work

6.1 Conclusion

Asali is review media platform that seeks to reach to the better option for users from the businesses in Asali by see reviews and filtering them. Also Asali allow business owners to provide their services to let users to review them when a user use one of the services in the business.

Optimistically, Asali has served the purpose for which it was designed. We had hoped to incorporate a modest set of minor features into the project, but it was omitted due to lack of time and focus on more important features; hopefully they will be added in the future

6.2 Future Work

There are various areas that Asali might improve, including:

1. Use Recommendation system -Machine learning technique- to present cleverly the reviews on mobile application.
2. Add a full path to let users order via Asali and let businesses to serve them.

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