

**A PROJECT ON DEVELOPING A MOBILE APP FOR EASILY
FINDING DAILY NECESSARY SERVICES**

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This Report Presented in Partial Fulfillment of the Requirements for the
Degree of Bachelor of Science in Computer Science and Engineering.

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DAFFODIL INTERNATIONAL UNIVERSITY

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APPROVAL

This Project/internship titled “**A Project On Developing A Mobile App For Easily Finding Daily Necessary Services**”, submitted by Md. Monwar Siddiq, ID No: 172-15-9986 and Md. Samiul Hasan, ID No: 172-15-9905 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfilment of the requirements for the degree of B.Sc. in Computer Science and Engineering and approved as to its style and contents. The presentation has been held on 8 October 2020.

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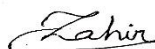
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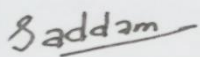
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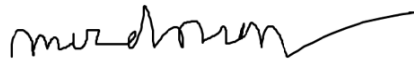
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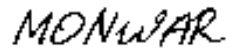
We therefore proclaim that this project has been finished by us under the oversight of **Mr. Md. Riazur Rahman, Senior Lecturer**, Department of CSE Daffodil International University. We likewise announce that neither this task nor any aspect of this project has been submitted somewhere else for the honor of any degree or diploma.

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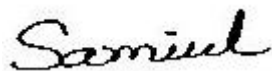


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ABSTRACT

A project on developing a mobile app for easily finding daily necessary services. We simply name the app “Basic Need”. It is an android Google Map based application. Where anyone can add their location by registering very easily. The main reason behind the project is the lack of user flexibility of Google Map. Now, most of the people use an android or smartphone for their daily needs. So, we created an android app for helping them find a location in detail. Desktop Google Map provides many details when a user wants to know about a specific location. We made this app focusing on the daily needs of humans like food, clothing, accommodation, medical etc. The users of the app just have to click any category of its and they will get a bunch of locations near them in detail. The user also can find their position in the map and their location will automatically be updated every three or five-second. This app uses a real-time database. So, a registered user can add their properties location and much more details of it. In our app, people can add their property details as he or she wants as like a small website with useful information. They can add special offers, highlighted messages and also the price of their services so that any user of the app has a clear understanding of their services and they can expand their business as well. Users can also chat with the service providers via Chat Room clicking on the map info window. Also, this app has a temperature meter and a weather report function. A user can easily check out the weather before he or she is prepared to go outside by using the app.

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CHAPTER 1

Introduction

1.1 Introduction

Now, most of the people use a smartphone for their daily needs. A smartphone is popular now for its powerful features and lite weight size. Most of the work we can perform now in a smartphone rather than opening a computer machine as before.

Android devices are very popular now, and anyone can buy this because of the reasonable price. Keeping all this in mind, we create our project “Basic Need” for android devices. Using this app, android users easily can find their daily needs and the owners of the services can easily get the potential customer to grow and expand their business as well. Business owners can promote their business by using this app and also give a special discount or offer new services. And the users of the app easily get those discounts or offers. This app saves valuable time and helps them in their daily life.

1.2 Motivation

Food, Clothing, Hotel/Accommodation, Education, Medical & Traveling all are the basic daily need of a human in their day to day life. When people come into a new place or travel to a new destination, it's become very hard to get all these services easily in hand. The main motivation of our project or android app comes from here. Also, a small business can not promote its services because they are unable to pay a huge amount of marketing cost. This app helps them to promote their services. Besides, a medium or large type of businesses also can promote their services and this app works for them as an extra way of marketing and helps to minimize their marketing expense.

Google Maps does not have any real-time information update feature, which is needed for any business to keep updating their services and gives discounts or offers. Another thing is that Google Maps android app does not provide much information in detail. So, all this in mind we create a platform that service providers can show their updated services and users/people easily can find those services.

1.3 Objective

The main objective of this project is helping people to find their daily services and also the owner of the service to expand their business. The purpose of this project is to connect the users/customers with the service providers. We can write our project objectives as follows.

- Finding daily necessary services.
- Getting an overview of that particle service.
- Know about new offers and discounts.
- Providing updated information.
- Minimize the marketing cost.
- Connecting people with the services.
- Get the user's own location on the map.
- Communicate with others.

1.4 Expected Outcome

With this app, people can find their daily needs like food, clothing, medical, travelling etc. People can know about those services in detail and decide by comparing the best services. Any user of the app also knows about his/her location on the map and can find the right way to reach their destination. Also, they can see the weather information which helps them provide today's Temperature, Weather report, Sun-rising/ Sunset etc.

A service provider can easily add their service by using this and also can update their information like discounts or offers in real-time. It will help them to reduce marketing costs and get the exact right customer for their business and all the users of this app will get the best services provided by them.

1.5 Report Layout

For a better understanding of our project report, we trim it part by part. We already explained our first part of our project report. Five other parts are below.

Chapter 2: We try to express our background study when started thinking of our project and also talk about what kind of challenges we faced while doing our project.

Chapter 3: We discuss the requirement specifications of our project in the approach of system analysis and designing.

Chapter 4: We discuss the User Interface and User Experience des of our project here.

Chapter 5: The entire process of implementing and testing of our app was discussed in part five of our project report.

Chapter 6: We write our conclusion and future scope of our developed app.

CHAPTER 2

Background Study

2.1 Introduction

Knowledge is power. Before doing or solving anything we have to find a way of solving the problem. Here studying related solved problems helps to gain knowledge about how we solve our problem in our approach. It becomes more helpful to select a pathway. We also follow that in our project.

2.2 Related Applications

Google Maps:

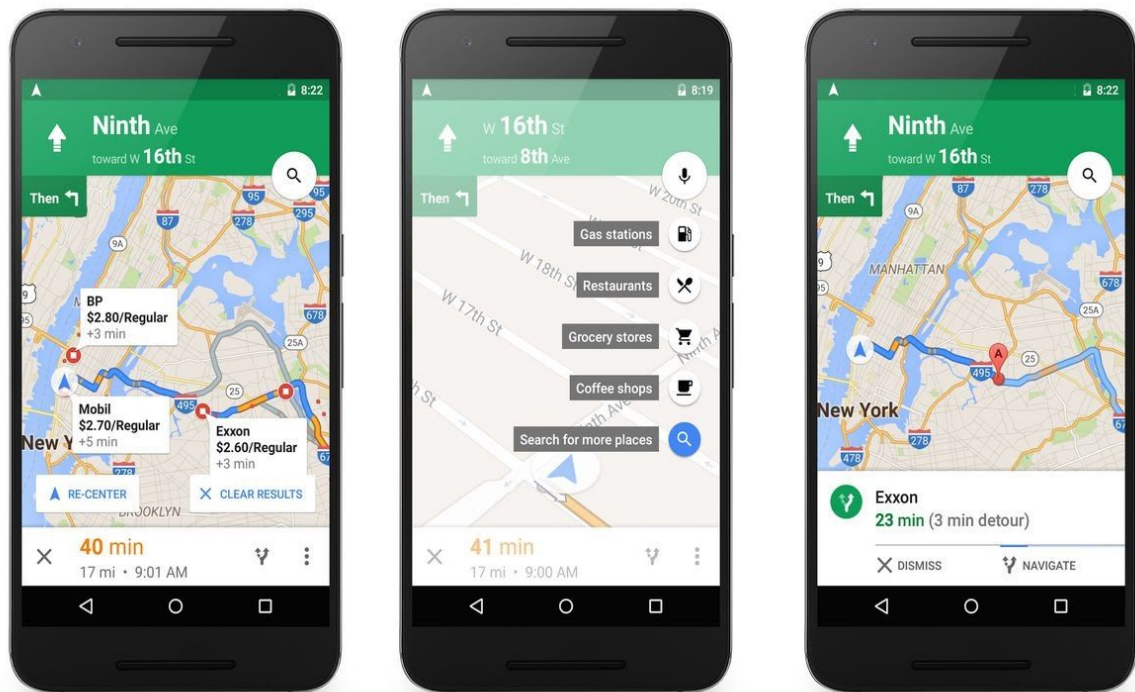


Figure 2.1: Some user interface of Google Map

Google Maps is a web mapping service developed by Google. It offers satellite imagery, aerial photography, street maps, 360° interactive panoramic views of streets, real-time traffic conditions, and route planning for travelling by foot, car, bicycle and air, or public transportation. [1]

Maps.me:

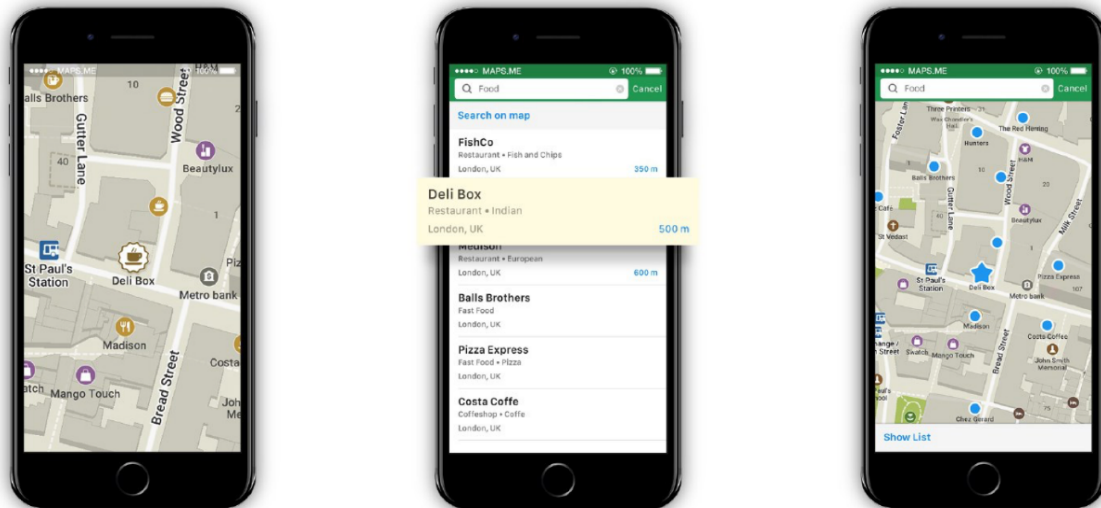


Figure 2.2: Some user interface of Map.me

Maps.me is a mobile app for Android, iOS and BlackBerry that provides offline maps using OpenStreetMap data. It was formerly known as MapsWithMe. In November 2014, it was acquired by Mail.Ru Group and became part of its My.com brand. In September 2015, the app was open-sourced. [2]

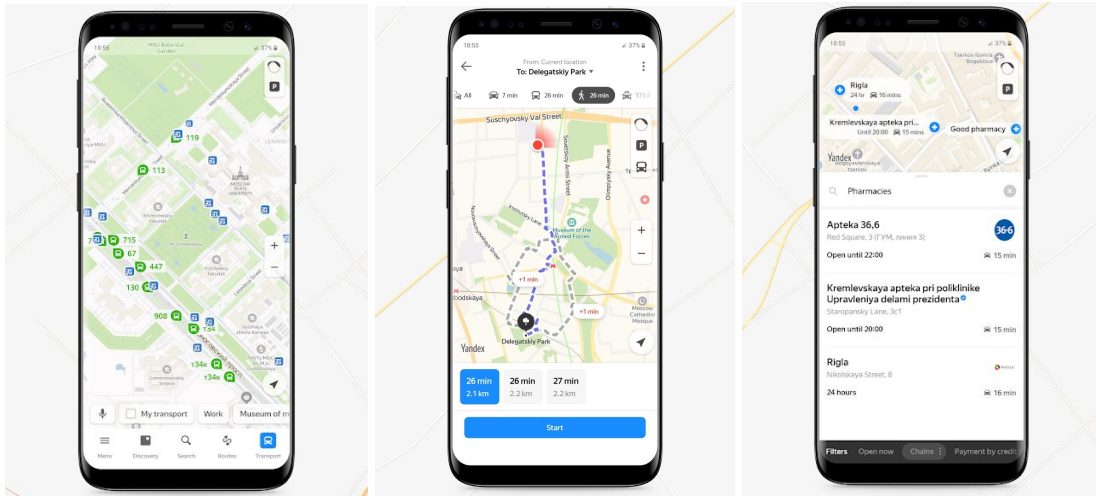


Figure 2.3: Some user interface of Yandex.Maps

Yandex.Maps:

Yandex.Maps is a Russian web mapping service developed by Yandex. The service provides detailed maps of the whole world. It includes a search, information about traffic jams, routing and street panoramas. The service was launched in 2004. Yandex.Maps is the most popular cartographic service in Russia. [3]

2.3 Comparative Studies

We download all the three apps in our device and test all features of those apps one by one. Among them, Google Maps Android is better and provides more useful features and more flexibility to the users. “Maps.me” is an app that is mostly used for street view or finding the route. “Yandex.Maps provide some basic services like finding petrol pumps or ordering food from restaurants. Google Maps Android app users to find all kinds of locations or services. But Google Maps app is much slower because it is a hybrid application and it is not suitable for low-end android devices. Which is not acceptable for all kinds of users who can’t afford a high-end device. Other two apps are faster than Google Maps.

2.4 Scope of the Problem

The main problem behind all those maps applications is that they can not let the user add the location or details of their services. All the details or location are predefined and updating any details is very hard and need so much time to do and also they can not provide much more detailed information because of the limitation of word input. There is no option to view the weather report.

Our app gives those solutions:

- Easily anyone can add the location of their services.
- Updates work in real-time anywhere, any place.
- Users can Chat with the service providers.
- Details description as per need.
- Realtime updated weather reports.
- Able to Chat in real-time.
- High fidelity user interface.

2.5 Security System

Thinking of security in mind we created this app with Backendless Mobile backend as a service (mBaaS) as our app database. Backendless mBaaS has a great feature for security measurement. We can turn registration off if needed. Registration data and user login info are very very safe with Backendless mBaaS. Also, we allowed the user, if they found any wrong or missing information on locations and its details they can directly chat with the authority.

2.6 Challenges

Converting an idea into a development project is always a big challenge. So, we also faced so many challenges while we started to develop our project. First of all, we are beginners in the android field and gathering knowledge in such a short time is so hard. We strongly believe in almighty Allah that only Allah can help us. And day by day we learn new things to solve our problems. We faced the biggest challenge when we tried to get user location from the device using GPS and store the location into the database in real-time. After that, it took many days to get those locations from the database into our app. Finally, Backendless documentation and support forum helps us to find the solution to complete our app development.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

Business process modelling is a tool that is used in quality management. It shows the current processes of an organization in a simple and formalized way. This is helpful because it shows ways that you can use it to improve. Business process modelling is also used in mapping different steps of the process. Usually, it focuses on two-time plans, the present moment without making any kind of changes and the future. In the future, all the changes or improvements have been made. [4]

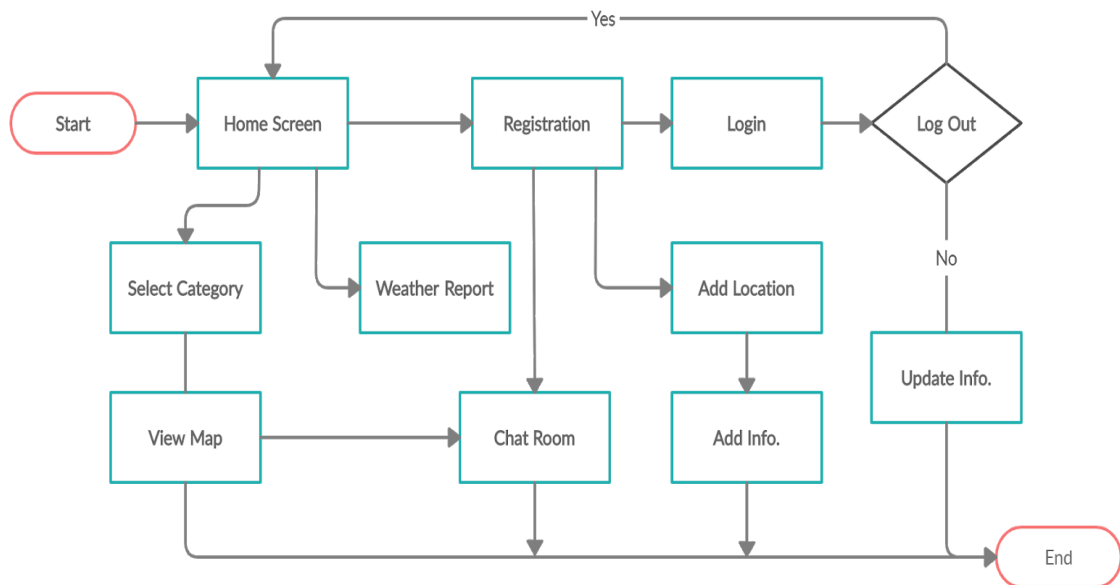


Figure 3.1: Business Process Model (BPM) for user and service provider

3.2 Requirement Gathering and Analysis

Gathering requirements for the project is the most important part of the SDLC for project managers and internal stakeholders of a project. During this phase, the customer states the expectations of the project including who will use the product, how the customer will use the product, and the specific information included with any special customer requirements related to the software. The customer meets with business managers and analysts to provide the requirements. The project team needs to understand the needs of the customer because this information is critical to developing the product the customer requests.

After the customer provides requirements for the product, the project manager and members of the project team begin to analyze the requirements. The business managers analyze each requirement to ensure the requirement can be included in the software without causing breaks or problems with system functionality. [5]

3.3 Use Case Model

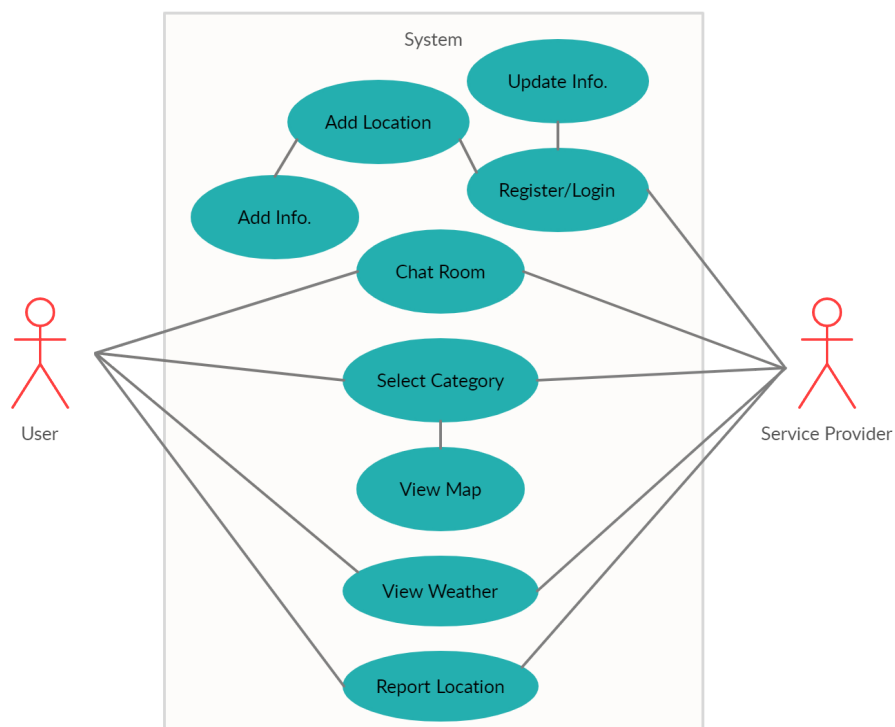


Figure 3.2: Use Case Diagram for user and service provider

3.4 Database Design

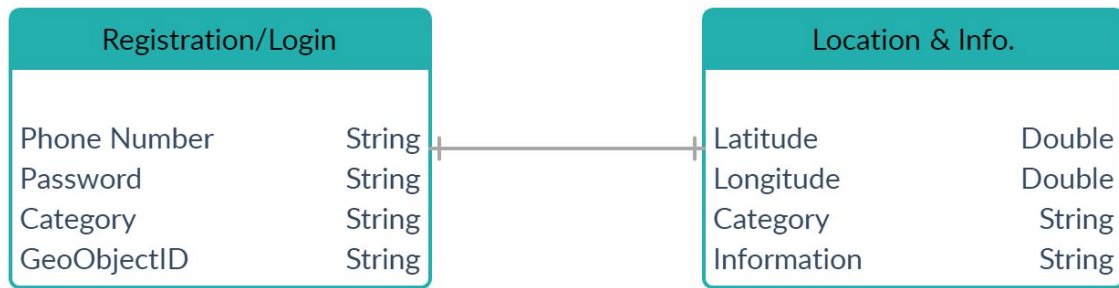


Figure 3.3: Logical Data Model for user, location & info

Backendless mBaaS automatically generates the necessary data field and type. So, we created those fields which we used in our app development.

3.5 Design Requirement

User Design Requirements:

- Able to select a category.
- Able to view maps.
- Can view the weather.
- Able to Chat.
- Exit App.

Service Provider Design Requirements:

- Able to register.
- Able to Login.
- Can add location & info.
- Can update info.
- Able to Chat.
- Exit App.

CHAPTER 4

Design Specification

4.1 Front-end Design

For designing our app interface (UI) we strictly followed Android Material Design [6] from Google for better user experience.

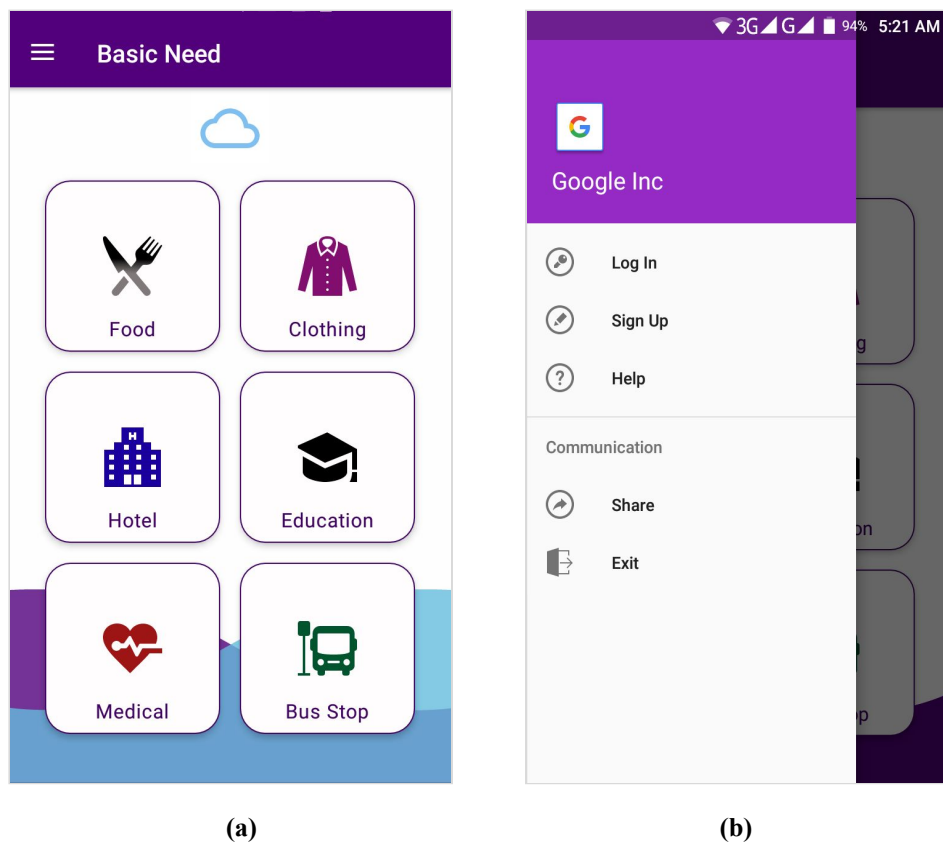


Figure 4.1: (a) Home Screen (b) Nav Drawer for Login

This is the main screen (a) of our app. This screen is shown when the app is launched for the first time. Here users can choose the option that he or she needs. On the upper left, there is a hand burger button that opens the navigation drawer (b).

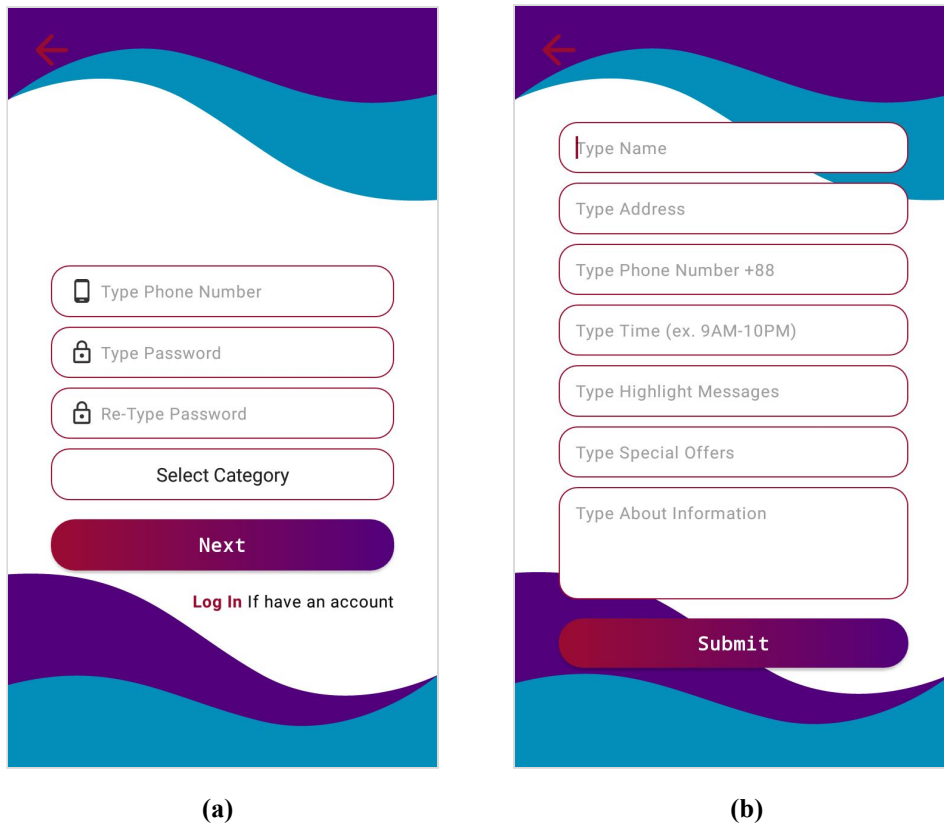


Figure 4.2: (a) Registration Screen (b) Add Location Screen

When a user clicks the sign-up button from the navigation drawer menu a signup screen will open (a). After completing the signup form and clicking on the Next button, the screen will appear (b). Here, users have to write proper details of their services or offers. In case any mistakes happen, users can press the back button and start their sign up process from the beginning.

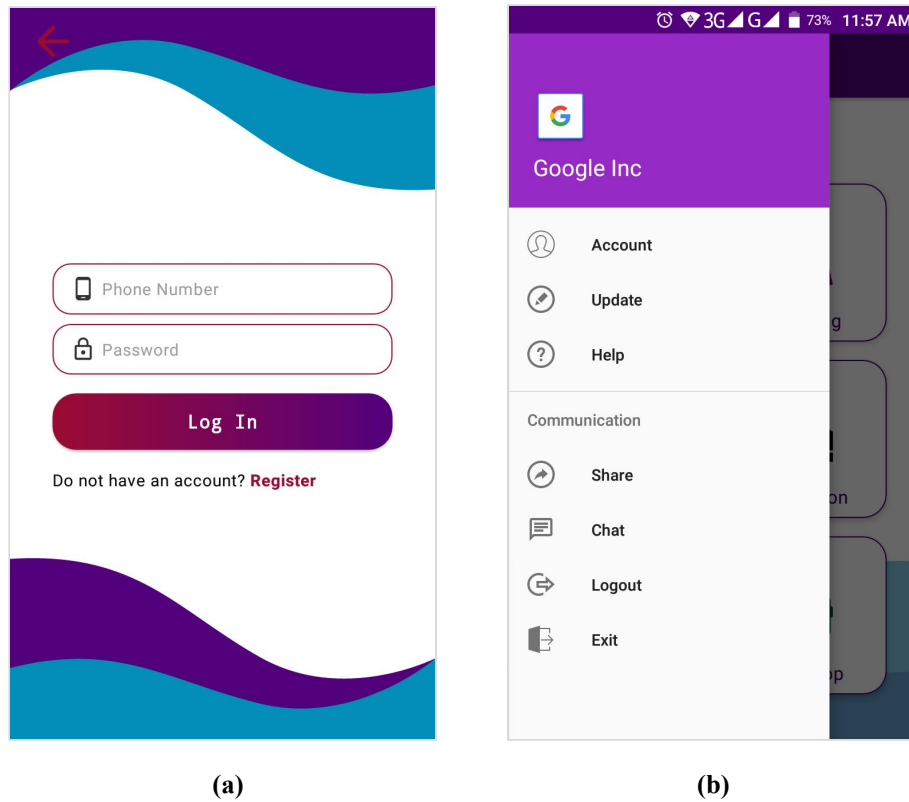
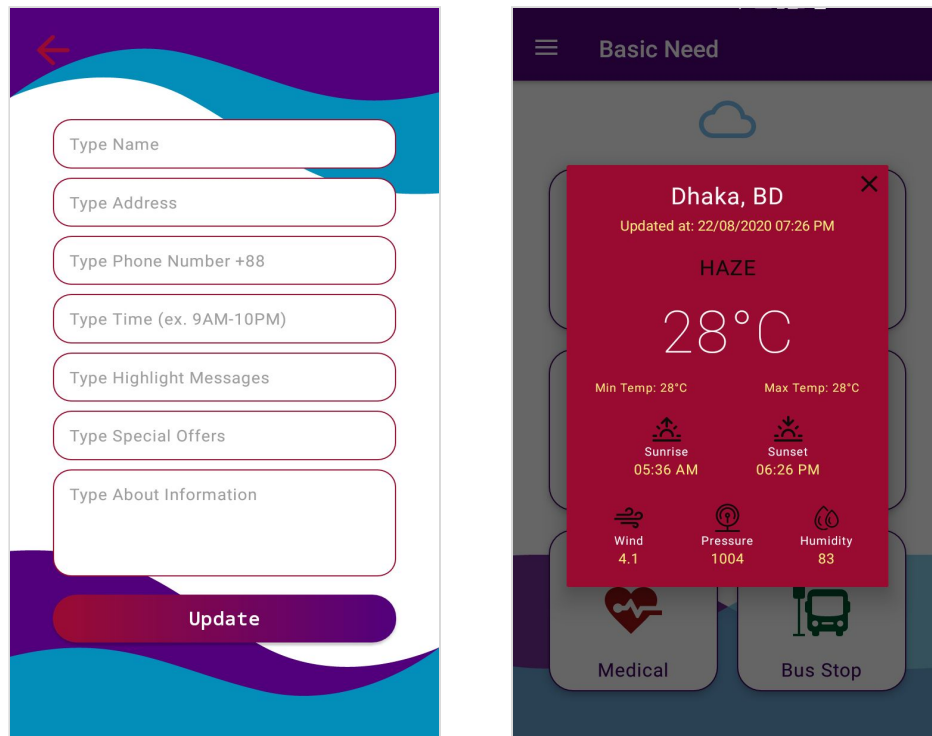


Figure 4.3: (a) Sign In Screen (b) Nav Drawer for Logged User

Users can easily log into their registered accounts by clicking the login button from the navigation drawer menu. When the screen appears (a), users have to put their phone number and password which they used for registering. After successfully logged in, the navigation drawer will be changed (b) with some new menus. And from here users also can update their information, chat and log out or exit the application.



(a)

(b)

Figure 4.4: (a) Update Screen (b) Weather Report

If a user wants to update their service information or add some new details, they can easily do this by clicking the update button on the navigation drawer menu. The same screen will appear with an update button (a), which they already used for registering the app. In the main screen, there is a sky blue coloured cloud button on the top of the all others option button. When it's clicked, it will show current weather reports (b) and much more in a popup window.



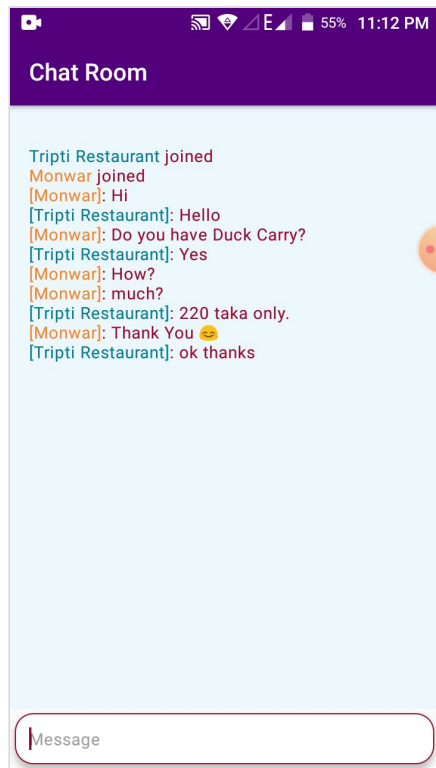
(a)



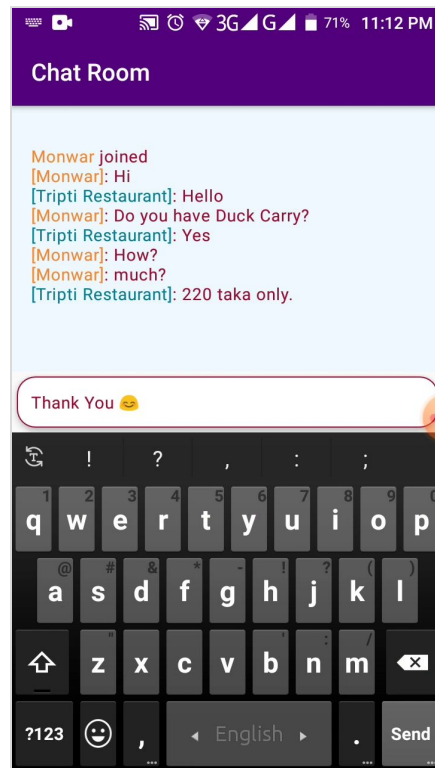
(b)

Figure 4.5: (a) Map Screen (b) Map Info Window

After selecting an option from the main screen the map screen (a) will be shown to the user with the marked location. In the bottom of the screen, users can change the map type Satellite or Terrain. Normal is selected by default. To know the desired location information, users have to click on a marker and an info window (b) will appear with details. Also, there is my location button top of the right screen to get users current location into the map.



(a)



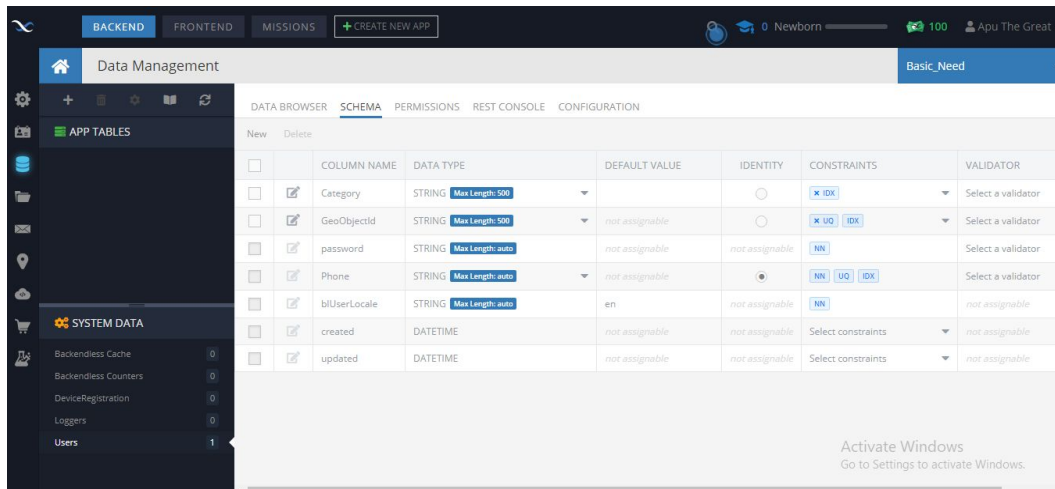
(b)

Figure 4.6: (a) Owner Chat Box (b) Customer Chat Box

Any user can communicate with the service owner via chat room. They can do this by clicking on the location info window. After clicking the location info window, a chat room screen will open. Users have to put their name and can start chatting on the next screen. Figure (a) shown the service provider Chat Box and figure (b) shown customer or users Chat Box.

4.2 Back-End Design

Mobile backend as a service (MBaaS) is sometimes used interchangeably with backend as a service (BaaS). Both MBaaS and BaaS tend to focus on mobile backends. BaaS may be more oriented toward web-based applications rather than mobile apps, although typically the service offerings are very similar. [7]



	COLUMN NAME	DATA TYPE	DEFAULT VALUE	IDENTITY	CONSTRAINTS	VALIDATOR
<input type="checkbox"/>	Category	STRING (Max Length: 500)		<input type="radio"/>	<input checked="" type="checkbox"/> IDX	Select a validator
<input type="checkbox"/>	GeoObjectId	STRING (Max Length: 500)	not assignable	<input type="radio"/>	<input checked="" type="checkbox"/> X <input checked="" type="checkbox"/> UQ <input checked="" type="checkbox"/> IDX	Select a validator
<input type="checkbox"/>	password	STRING (Max Length: auto)	not assignable	not assignable	NN	Select a validator
<input type="checkbox"/>	Phone	STRING (Max Length: auto)	not assignable	<input checked="" type="radio"/>	NN <input checked="" type="checkbox"/> UQ <input checked="" type="checkbox"/> IDX	Select a validator
<input type="checkbox"/>	biUserLocale	STRING (Max Length: auto)	en	not assignable	NN	not assignable
<input type="checkbox"/>	created	DATETIME	not assignable	not assignable	Select constraints	not assignable
<input type="checkbox"/>	updated	DATETIME	not assignable	not assignable	Select constraints	not assignable

Figure 4.7: User SCHEMA in Backendless mBaaS

We used Backendless mBaaS as our database rather than using Firebase. We found most of the documentation that is suitable for our project in Backendless that helps us to complete our project in time. Also, the Backendless database has more features and related API than Firebase as per our project needs. Backendless also supports REST API. Where we can easily create a JSON operation if needed.

When a user registered for the first time into the app, user credentials were stored into the user SCHEMA. User registration or login info stored and validated here and we also can manually update or delete any user if needed. We also can stop the user from registering in our app.

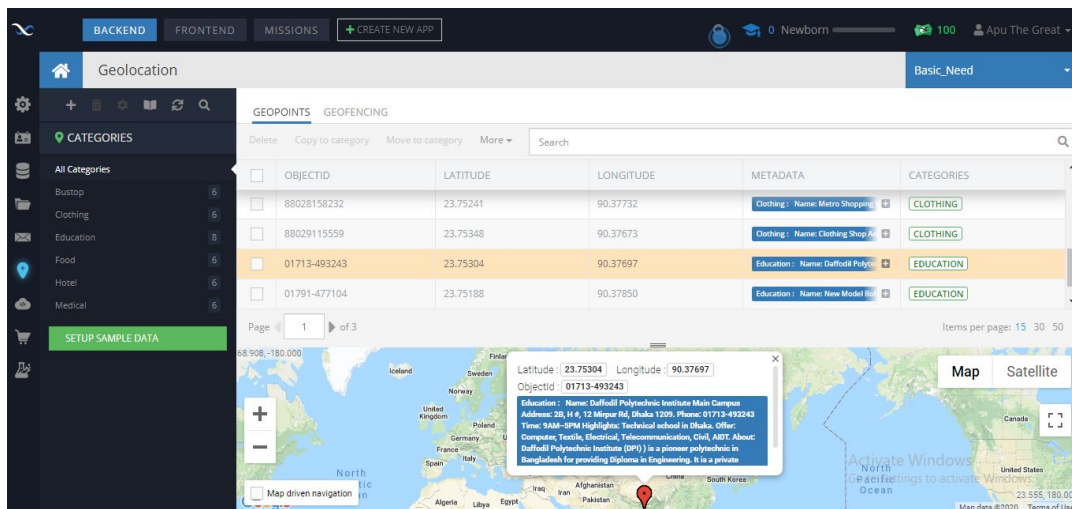


Figure 4.7: Location Data in Backendless Mobile backend as a service (mBaas)

Here all Geopoint Location and metadata information are stored. Users can also update this metadata information with the help of OBJECTID through our app. We also can update and delete all of that information if needed.

4.3 User Interface and Experience

User experience is how a user feels when using an application visual design, workflow and jump one option to another. User experience results help to understand if the application visual design workflow meets the user needs or not. So, that it can be improved and fulfils the user's needs. For this, we create a high fidelity user interface for getting a better user experience.

4.4 Implementation Requirements

UI and UX are the most common requirements of any design. Without this to any design can not satisfy a user. UI is the visual part that a user sees and UX is a positive experience by using that visual element. Here the backend is needed for smooth UX also. All those keeping in mind we implemented this app.

- Development IDE : Android Studio.
- Language : JAVA.
- Design : Android XML, HTML.
- Server : Backendless.com
- Database : Backendless MBAAS.
- Testing : BlueStacks Emulator, Android Device.

CHAPTER 5

Implementation And Testing

5.1 Implementation of Front-end Design

Front-end design is the must need part of any android project. So, we mainly focus on high fidelity design that a user can easily understand the interface. We follow the material design guideline to design our front-end. All the layout was created using android ConstraintLayout. So, our app will look the same in any kind of device.

5.2 Implementation of Database

Implementation of the database is the most critical part of our project. It took the maximum amount of time when we developed our project. We use Backendless Mobile backend as a service (mBaaS) in our project. There is so much documentation on the Backendless website that meets our needs. But, understanding the use of that documentation is quite tough.

5.3 Implementation of Interactions

We use solid colours and eye-catching vector images in our project to achieve great user interaction.

To add location details, the user must have to register with his mobile number and password. But, users do not need to register for using the app. Users can view the weather report in realtime and also can view their current location on the map. If any location information on the map is not correct or missing important information, users can report that location without registering the platform.

5.4 Testing Implementation

- Test : Application Installation.
- Version : Tested on various Android version.
Lollipop: Versions 5.0
Marshmallow: Versions 6.0
Marshmallow: Versions 6.1
Nougat: Versions 7.0
- Expected Outcome : Installed all the version successfully.
- Actual Outcome : Installed Successfully.
- Result : Passed.

5.5 Test Result and Report

No	Test case	Input	Expected outcome	Actual output	Result
1	Phone Number	Input Phone Number	Registration is successful	Successfully Registered	Passed
2	Password	Input Match Password	Registration is successful	Successfully Registered	Passed
3	Permissions	Allow Permissions	Registration is successful	Successfully Registered	Passed
4	Add info.	Input all info	Registration is successful	Registration is successful	Passed
5	Phone Number	Input Correct Phone Number	Login is successful	Login Registered	Passed
6	Password	Input Correct Password	Login is successful	Login Registered	Passed

Table 5.1: Test result and report

CHAPTER 6

Conclusion and Future Scope

6.1 Discussion and Conclusion

Food, clothing, accommodation, health, education are all the basic needs of any human to live. Today's technology is much more upgraded than 5 years ago. Everything is now in hand. With the help of modern technology, people can do their day to day work easier than before.

Now, most people use smartphones. Android is the most common operating system of those smartphones. So, we targeted the android smartphone for its huge amount of popularity. The users of those android phones now can fast and easily find their daily needs and get all the services by using our app. Another way the service providers are also benefited by putting their services in our app.

6.2 Scope for Further Developments

We can make our app more advanced and better than now. We strongly believe that we are able to add more features and improve the performance of our app. Now the apps have limited features and location information view is not so good. In future, we will make it more user friendly and also create more fields for location details. Our app is online-based now and the users can not use it without the internet. So, in future, we will try to make it offline. We also thought about a real-time chatting option in our app. Currently, our app does not have google direction. But it also finds a path with collaborating Google Maps. In the future, we will be able to do it in our app with the help of the Direction API. There are so many scopes to implement new features and improve app usability by proper planning and spending valuable time.

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APPENDICES

User Registration Code:

```
@Override Backendless.UserService.register(newUser, new
AsyncCallback<BackendlessUser>() {
    @Override
    public void handleResponse(BackendlessUser response) {

        if (ActivityCompat.checkSelfPermission(PropertiesActivity.this,
Manifest.permission.ACCESS_COARSE_LOCATION) !=
PackageManager.PERMISSION_GRANTED &&
        ActivityCompat.checkSelfPermission(PropertiesActivity.this,
Manifest.permission.ACCESS_FINE_LOCATION) !=
PackageManager.PERMISSION_GRANTED) {
            ActivityCompat.requestPermissions(PropertiesActivity.this,
new String[]{Manifest.permission.ACCESS_COARSE_LOCATION,
                Manifest.permission.ACCESS_FINE_LOCATION},
PERMISSION_REQUEST_CODE);
        } else {

            getLastLocation();
        }
        showProgress(false);
        Toast.makeText(PropertiesActivity.this, "Successfully Registered",
Toast.LENGTH_SHORT).show();
        PropertiesActivity.this.finish();
        startActivity(new Intent(PropertiesActivity.this,
LoginActivity.class));
    }
}
```

```

public void handleFault(BackendlessFault fault) {

    showProgress(false);
    Toast.makeText(PropertiesActivity.this, "Error" +
    fault.getMessage(), Toast.LENGTH_SHORT).show();
}
});

```

Add Location & Info:

```

AsyncCallback<GeoPoint>          addPointCallback          =          new
AsyncCallback<GeoPoint>() {
    @Override
    public void handleResponse(GeoPoint savedGeoPoint) {

        final String geoObjectId = savedGeoPoint.getObjectId();

        Backendless.UserService.login(phoneNumber, passWord, new
        AsyncCallback<BackendlessUser>() {
            @Override
            public void handleResponse(BackendlessUser updateUser) {

                updateUser.setProperty("GeoObjectId", geoObjectId);
                updateUser.setProperty("Category", category);

                Backendless.UserService.update(updateUser, new
                AsyncCallback<BackendlessUser>() {
                    @Override
                    public void handleResponse(BackendlessUser response) {

                        Toast.makeText(PropertiesActivity.this,

```

```

        "Your "+category+"Location is added to the Map",
Toast.LENGTH_SHORT).show();
    }
    @Override
    public void handleFault(BackendlessFault fault) {

    }
    });
}
@Override
public void handleFault(BackendlessFault fault) {
        Toast.makeText(PropertiesActivity.this, "Error: " +
fault.getMessage(), Toast.LENGTH_SHORT).show();
    }
    });
}
@Override
public void handleFault(BackendlessFault fault) {

    Log.e(TAG, "Adding location fault");
}
};
GeoPoint geoPoint = new GeoPoint(latitude, longitude);
geoPoint.addCategory(category);
geoPoint.addMetadata(category, htmlText);

Backendless.Geo.savePoint(geoPoint, addPointCallback);

```

A project on developing a mobile app for easily finding daily necessary services

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