

**PROJECT NAME: PHYLANCER: DEVELOPMENT OF AN
ANDROID APPLICATION, A CONNECTING PLATFORM FOR
PRODUCERS&CONSUMERS.**

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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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APPROVAL

This Project titled “**PhyLancer**”, submitted by Sumon Paul, ID No: 141-15-3117 and Shaon Kanti Nath, ID No: 141-15-3145 to the Department of Computer Science and Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment 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 11th December, 2018.

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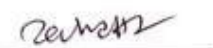
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We hereby declare that, this project has been done by us under the supervision of **Ms. Samia Nawshin, Lecturer, Department of CSE, Daffodil International University.**


We also declare that neither this project nor any part of this project has been submitted elsewhere for award of any degree or diploma.

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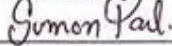
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ABSTRACT

Modern era has blessed mankind with many uncountable blessings by the help of technological improvement in every sector that can be named. Starting from one's very own kitchen to the mechanical lab of SpaceX, modern technology has shaped everything in such an amazing way which brought speed, ease and comfort in mankind's daily life. The one blessing has the highest influence and use in everyday life is the tiny device which is called Smartphone. In this era of modern technology it's hard to spend even a day without the help of a Smartphone. Now people are living in a time where even a farmer can afford a smartphone. Using the advantage, this is where the project "Phylancer" comes. This project and the project report focuses on the "**Design and Implementation of Phylancer**". This application is an android based application which requires an android device to run. The sole purpose of this application is to make a bridge among Producers and consumers by cutting off the intermediate brokers. This will help the producer to get perfect value for their product and the consumer to get the product in desired price. The implementation of this project is thoroughly discussed in this project report.

Upon completion of the development session of this application it was tested by multiple users who found it very user friendly, easy to use and a very well build application which runs perfectly on any android device.

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CHAPTER 1

Introduction

1.1 Introduction

From the very beginning of mankind's existence, the role of producer and consumer has been working as wheels of the economy of this world. In the ancient times, exchange of goods was the only way to fulfill the demand of everyone. Along with time, a new unit for exchange was determined, which is currently known as money. The invention made the structure of world economy stronger than ever before by creating a bridge and tightening the bond between producer and consumer. However by the time the population of the world increased vastly, distance between the producer and buyer also started to increase. Some people took the advantage and started working as inter medium between producer and consumer by changing the much known path of economy, who are later also known as Brokers. This situation started affecting the world economy slowly but little did people know it will bring the whole trading system at stake. "Phylancer" will be a helping hand for producers and consumers by ensuring the removal of inter medium cut off in profits. Moreover through "Phylancer" Consumer and Producer will be able to make deal on their own considering their preferences.

1.2 Motivation

Some might take side of the brokers, even inter medium connecting chain can be appreciated by all until the bitter truth behind it comes out in the light. Bangladesh is full of resources and by the help of them, amazing goods are produced. For instance, in the rural area of Bangladesh, eye catching handicrafts can be found at a very cheap price. But anyone will get speechless when they will get to know that, even a simple Punjabi which is produced in the rural area for only BDT 400, is being sold in various Shopping malls in Dhaka and other cities for more than BDT 3000, which is not even close to the producing

cost. But the more interesting part is, the handicraft maker doesn't even get a proper share of the profit, sometimes not even the proper producing price. From the bottle of salt in the kitchen to the Nike Shoes in a cupboard, the same thing can be observed. The only thing responsible for it is the distance between the consumer and the producer of goods and not to mention the people who are working as a connecting medium to fill their pockets. People are paying more than double, in some cases even more to buy goods, while the producer isn't getting enough pennies to manage their daily meals. This information all alone worked as motivation for developing the application which will directly connect the consumer and producer.

1.3 Objectives

Clear image of objectives always helps escalating the research behind the development. First of all, an android application will be developed which will be user-friendly as well as will be easily accessible by everyone. Secondly, Consumer will be able to find their desired supplier upon their own agreed terms not only from nearby locations but from all over the world. The same goes for the suppliers or Producers. The last objective is to connect the producers and buyers so that both of them get what they desire without paying to a 3rd or 4th person.

1.4 Expected Outcome

There has been a very few research and development which helped mass people and world economy at the same time. It is expected that, the outcome of the proposed application will vastly affect the world economy as well as the financial situation of mass people. The outcome can be expected from the research and developed application is given below:

- Producer or Supplier will get the proper price for their produced goods.
- Buyer will be able to cut their expense by getting desired products in desired price.
- People will be able to find desired work as a freelancer.
- Reduce unemployment by building this platform.
- Employment will directly affect the poverty level and economy of the country.

Last but not the least, this project will work as building block of the Global economic system.

1.5 Report Layout

Chapter 1: Introduction

Motivation of this project along with objectives, expected outcome and report layout of this project have been thoroughly discussed in this section. In introduction an overall view of this project can be found.

Chapter 2: Background

This chapter mainly focuses on the background issues behind the implementation of this project, the projects that have been developed similar to this which is related works, also the comparison with those works named comparative studies as well as scope of the problem and challenges.

Chapter 3: Requirement Specification

The portrayal and description of Business Process Modeling, Requirement collection and analysis, Use case modeling and description, logical data model and design requirements is included in this chapter.

Chapter 4: Design Specification

This chapter discusses Front-end-design, Back-end-design, Interaction Design and UX as well as Implementation requirements of this project. To simply put it the whole design part is discussed here.

Chapter 5: Implementation and Testing

Implementation of database, implementation of Front-end-design, implementation of interaction, testing implementation as well as testing results and reports of this project are being added in this section.

Chapter 6: Conclusion and Future Scope

This is the final chapter of this report which contains Discussion and conclusion as well as Scope for further development.

CHAPTER 2

Background

2.1 Introduction

Bangladesh was always blessed with plenty of natural resources. Producer of every goods and supplier of every service never had hard time providing those because of the resources. Moreover the government of Bangladesh worked hard to build a top notch transportation and communication system to escalate the business deals as well to keep people closer. However, even having all those in favor, many of the producers and suppliers can't even feed all the mouth in the family properly just because they don't get proper value for their products and services. Because of the Brokers who stands in middle of our trading system, these hard working producers and suppliers very often gets properly paid. On the other side, consumers who works day and night to provide their family a moderate life often can't find a penny in their wallet at the end of the month because of high price of products. The application "Phylancer" will change the whole trading system by removing the brokers and bringing producer and consumer closer making their life a lot easier to lead. It will bring ease in everyone's daily life.

2.2 Related works

From a thorough search it has been found that there is no work done or application built exactly like "Phylancer" before. There are many people in this world who gives their best effort for the good of humankind. Some of them concentrated on building applications which will connect clients and employees, help people to work from home and many more. This applications are slightly related to our field of work. Some of those applications are given below

2.2.1 Fiverr – Freelance Services

"Fiverr – Freelance Services"[1] is an android application which connects only entrepreneurs and freelancers in a digital marketplace.

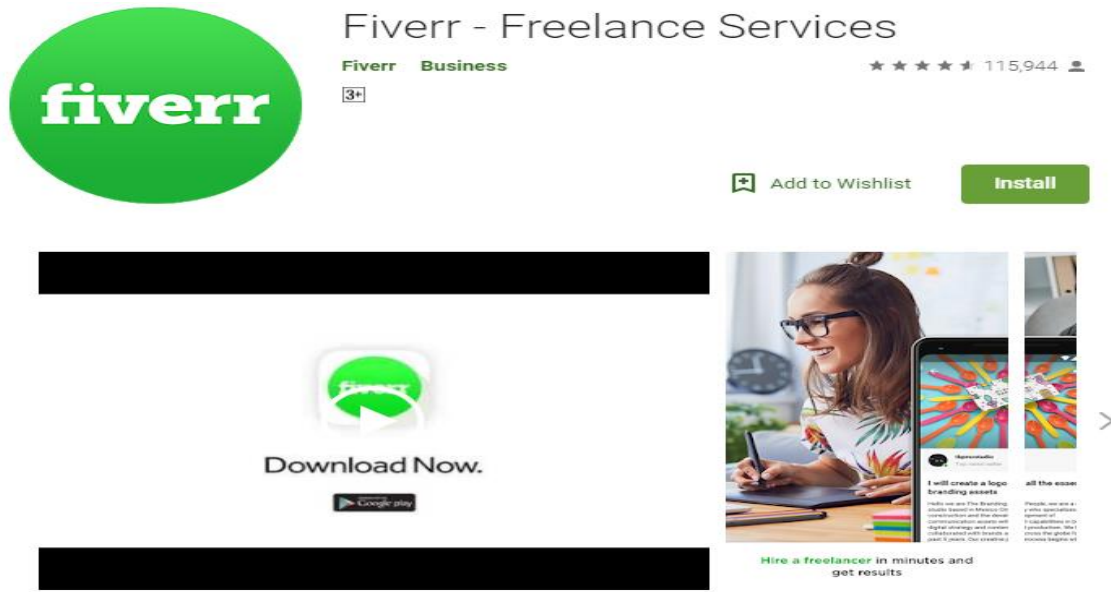


Figure 2.1: Fiverr – Freelance Services

2.2.2 Freelancer: Experts from Programming to Photoshop

"Freelancer: Experts from Programming to Photoshop"[2] is also an android based application which only focuses on jobs that requires uses of computer.

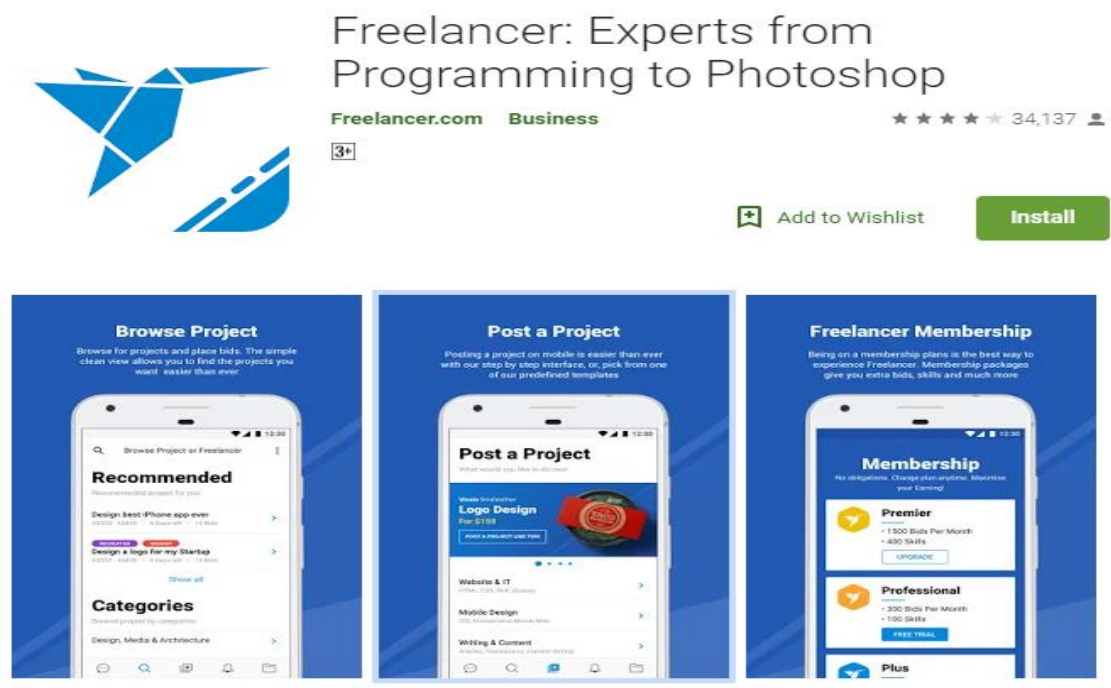


Figure 2.2: Freelancer: Experts from Programming to Photoshop

2.2.3 Search Jobs & Hire Freelancer

"Search Jobs & Hire Freelancer" [3] mainly concentrates on helping people by providing jobs who are willing to work from home.

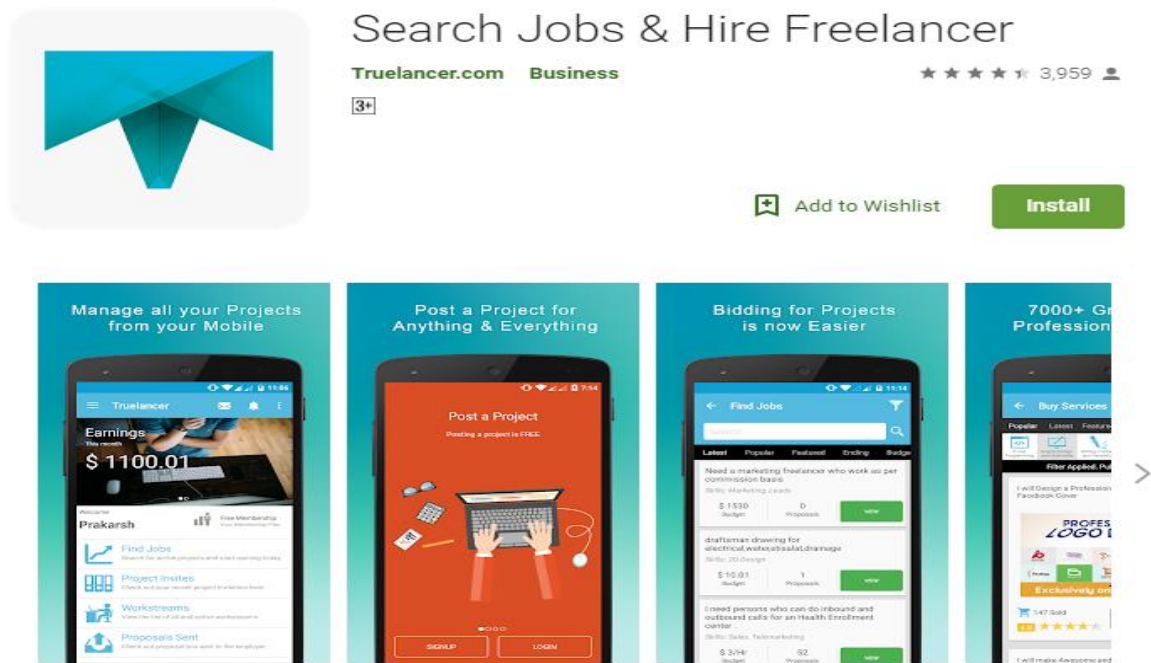


Figure 2.3: Search Jobs & Hire Freelancer

2.2.4 Upwork: Easily connect on the go

"Upwork: Easily connect on the go"[4] is the best android application as a digital marketplace, but like others it only focuses on connecting clients and employees who works on digital platform.

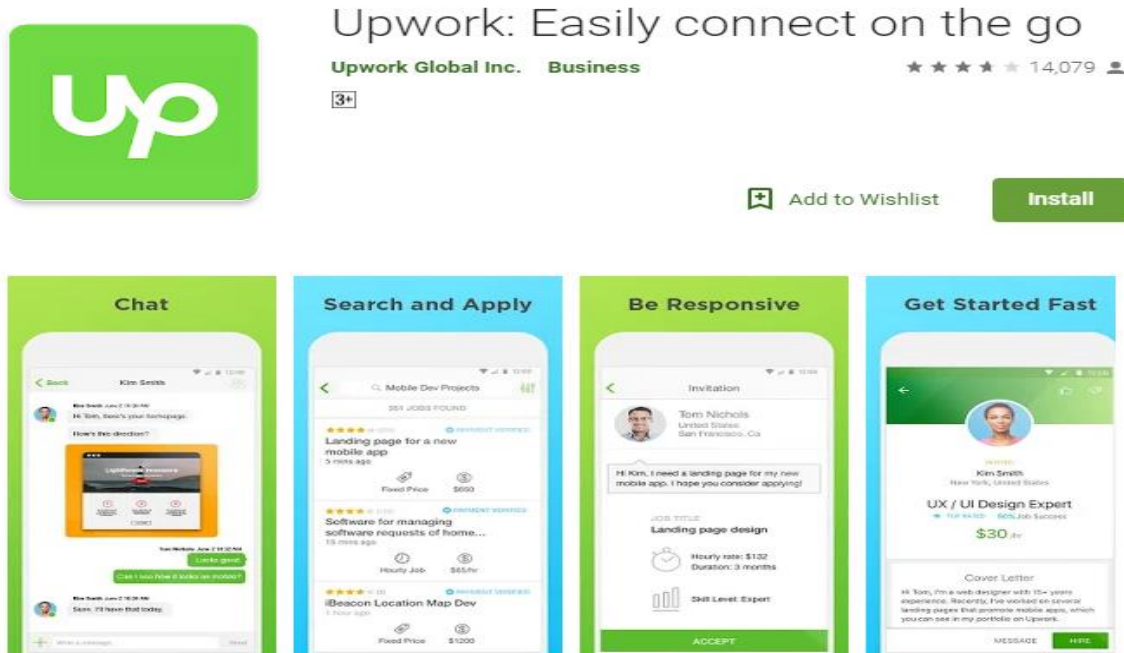


Figure 2.4: Upwork: Easily connect on the go

2.3 Comparative Studies

There are very few android applications which provides an online marketplace for digital platform. But there is literally no android application which provides an online marketplace for analog platform and also intends to remove brokers at the same time. The comparative studies can be portrayed as below

General Purpose Digital Marketplace Applications:

- Only focuses on jobs which require digital equipment to accomplish.
- Usually include jobs like Website development, Graphics Design, Data entry etc.
- Only helpful for educated people who have knowledge on programming and in relevant sectors.
- Not developed for analog market.
- No motive of removing Brokers is found behind development.

Phylancer:

- Connects all Producers and Consumers despite of their different kind of products and services.
- Main purpose is to cut off all the brokers or inter mediums.
- Intends to bring positive change in trading systems.
- Products and services can be selling mangoes, handicrafts, furniture, selling all kind of goods as well as every digital service.
- Easy to find desired products anywhere at a reasonable price by bidding system.
- Focuses on changing world economy.

2.4 Scope of the problem

Compared to the Scope of this project, the scope of the problem might seem very little which can be ignored later by implementing other features for this application.

- Brokers will have to look for other jobs.
- Search options which are more unique.
- Can't surf through the application when the device is offline or not connected to internet.
- Verifying users properly.

2.5 Challenges

New challenges create chance for better optimization. Some challenges might occur, which are:

- Storing information related to every deal for future inconveniences.
- Huge amount of user might slow down the system.
- Arranging transportation for delivering products.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling

Business process modeling (BPM) in business process management and systems engineering is the activity of representing processes of an enterprise, so that the current process may be analyzed, improved, and automated. BPM is typically performed by business analysts, who provide expertise in the modeling discipline by subject matter experts, who have specialized knowledge of the processes being modeled or more commonly by a team comprising both. Alternatively, the process model can be derived directly from events' logs using process mining tools [5]. While business process modeling, as a concept, is extremely useful, it's not usually used as a stand-alone. Having a graphical representation of a process is good, but without the right implementation, things won't go too far [6]. A UML Use Case Model is being implemented to describe business process model of this project.

3.2 Requirement Collection and Analysis

Requirements collection is the process of collecting requirements from the user of a new system or application for making the application convenient to them. Requirements analysis is the process of analyzing those collected requirements and modify them if needed. Functional requirements are also known as the process of requirement collection and analysis. Staying in touch with the users in time of implementation also ensures avoidance of conflicts with different requirements among users. Instead of pressuring the user to use predefined features, it is highly suggested to collect requirements from user and implement those in the project. In case of “Phylancer”, following requirements were collected and analyzed and implemented later for convenient use:

- Location based search was implemented.
- Added more fields in user details.
- Rating system for a producer was implemented.
- Implemented Bidding process.

3.3 Use Case Modeling and Description

A use case is a methodology used in system analysis to identify, clarify, and organize system requirements. The use case is made up of a set of possible sequences of interactions between systems and users in a particular environment and related to a particular goal. It consists of a group of elements (for example, classes and interfaces) that can be used together in a way that will have an effect larger than the sum of the separate elements combined. The use case should contain all system activities that have significance to the users. A use case can be thought of as a collection of possible scenarios related to a particular goal, indeed, the use case and goal are sometimes considered to be synonymous [7]. “Phylancer” has following UML

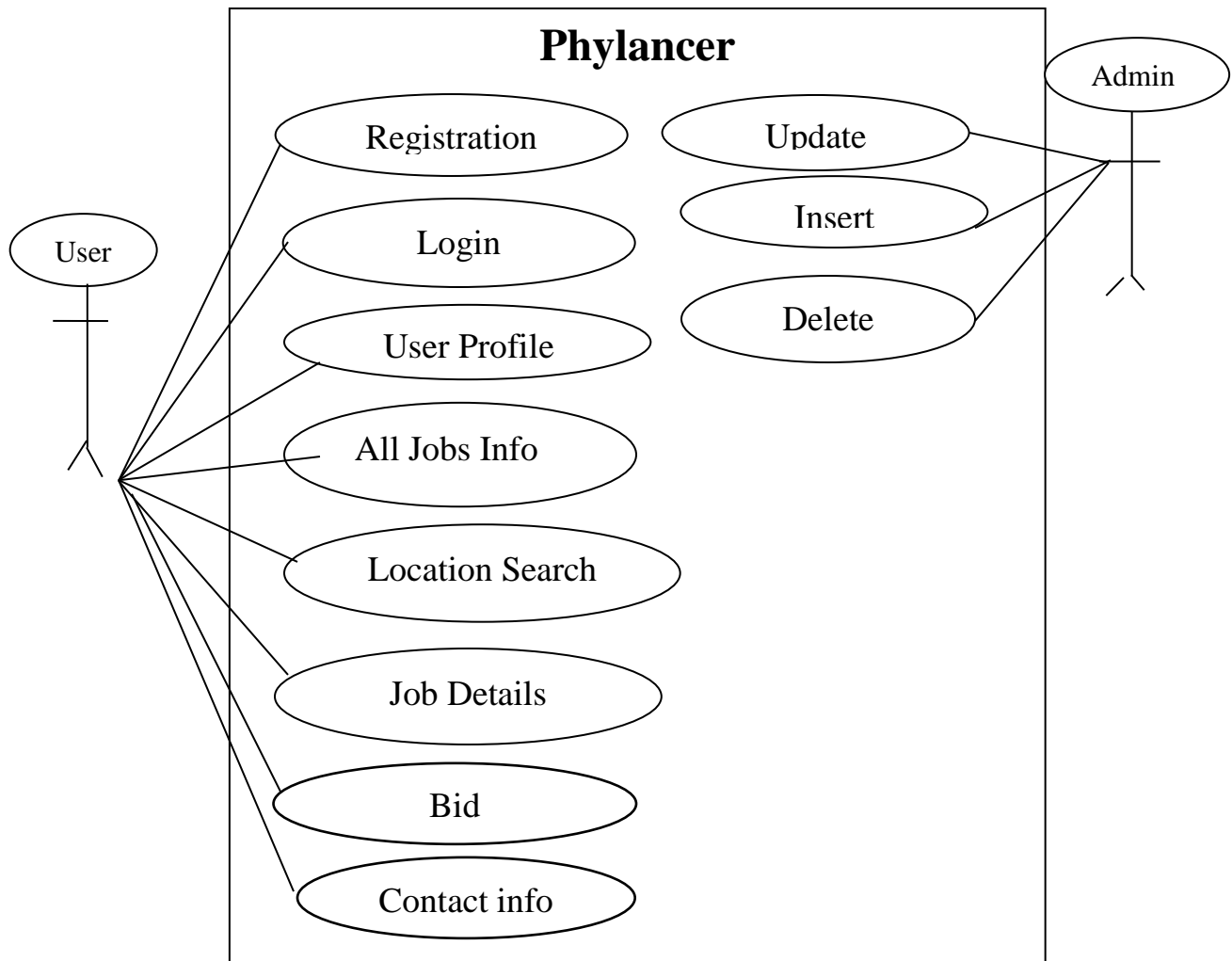


Figure 3.1: Use case diagram of Phylancer

3.3.1 Use Case Description

Table 3.1: Use Case description of registration

Use Case	Registration
Primary Actor	User
Secondary Actor	Null
Pre-Condition	Null
Scenario	<ul style="list-style-type: none">• Enter valid Email address• Enter a password containing 8 characters• Enter valid name• Enter valid age• Enter Gender• Enter Location
Post-Condition	<ul style="list-style-type: none">• Successfully registered or not• Complete profile

Table 3.2: Use case description of login

Use Case	Login
Primary Actor	User
Secondary Actor	Null
Pre-condition	Registration
Scenario	<ul style="list-style-type: none">• Enter valid email address• Enter valid password
Post-condition	<ul style="list-style-type: none">• Successfully logged in or failed• All jobs info

Table 3.3: Use case description of User Profile

Use Case	User Profile
Primary Actor	User
Secondary Actor	Null
Pre-condition	Login
Scenario	<ul style="list-style-type: none"> • Complete information of user • Update information
Post-condition	<ul style="list-style-type: none"> • Successfully updated or failed • View profile

Table 3.4: Use Case description of All Jobs Info

Use Case	All Jobs Info
Primary Actor	User
Secondary Actor	Null
Pre-condition	Login
Scenario	<ul style="list-style-type: none"> • List of all jobs from various location • Select a job to view
Post-condition	<ul style="list-style-type: none"> • Full description of job • Details of user • Bid

Table 3.5: Use Case description of Location Search

Use Case	Location Search
Primary Actor	User
Secondary Actor	Null
Pre-condition	Login
Scenario	<ul style="list-style-type: none"> • Enter right location
Post-condition	<ul style="list-style-type: none"> • Show Job results of those location • Bid

Table 3.6: Use Case description of Job Details

Use Case	Job details
Primary Actor	User
Secondary Actor	Null
Pre-condition	Login
Scenario	<ul style="list-style-type: none"> • Complete view of job • Know the price and related information
Post-condition	Null

Table 3.7: Use Case description of Bid

Use Case	Bid
Primary Actor	User
Secondary Actor	Null
Pre-condition	Login, Location Search
Scenario	<ul style="list-style-type: none"> • Bid for job at a certain price
Post-condition	<ul style="list-style-type: none"> • Shows the bidding price

Table 3.8: Use case description of Contact info

Use Case	Contact info
Primary Actor	User
Secondary Actor	Null
Pre-condition	Login, Job details
Scenario	<ul style="list-style-type: none"> • Show contact info
Post-condition	Null

Table 3.9: Use case description of Insert

Use Case	Insert
Primary Actor	Admin
Secondary Actor	Null
Pre-condition	Log into admin panel
Scenario	<ul style="list-style-type: none"> • Admin can insert any data • Admin can insert new fields in this application.
Post-condition	<ul style="list-style-type: none"> • New fields will be visible to users.

Table 3.10 Use case description of Delete

Use Case	Delete
Primary Actor	Admin
Secondary Actor	Null
Pre-condition	Log into admin panel
Scenario	<ul style="list-style-type: none"> • Delete any data from database • Delete any specific section or more.
Post-condition	<ul style="list-style-type: none"> • Deleted data won't be visible to user anymore • Deleted section will not be visible as well

Table 3.11: Use case description of Update

Use Case	Update
Primary Actor	Admin
Secondary Actor	Null
Pre-condition	Log into admin panel
Scenario	<ul style="list-style-type: none"> • Update data by replacing old one • Change anything inside application
Post-condition	<ul style="list-style-type: none"> • Update will be visible to user end.

3.4 Design Requirements

- This application or system includes Producer and consumer as user and there is also Admin.
- Users (Producer and Consumer) can register and login and later can update profile.
- Admin can insert, delete and update all the data inside the system.
- User can post job.
- User can bid for specific job.
- User can search for jobs.
- User can view contact information.
- User can see the bids for his product.

CHAPTER 4

Design Specification

4.1 Front-end Design

First impression matters, which is why front-end design of any application is important. Front-end design represents the application to user. Without a moderate design the value of that application will decrease eventually. Front-end design is also known as client-side development. Front-end designs of “Phylancer” are given below:

4.1.1 Login Page

Login Page is the first page displayed in this application which requires successful login to continue to next page.

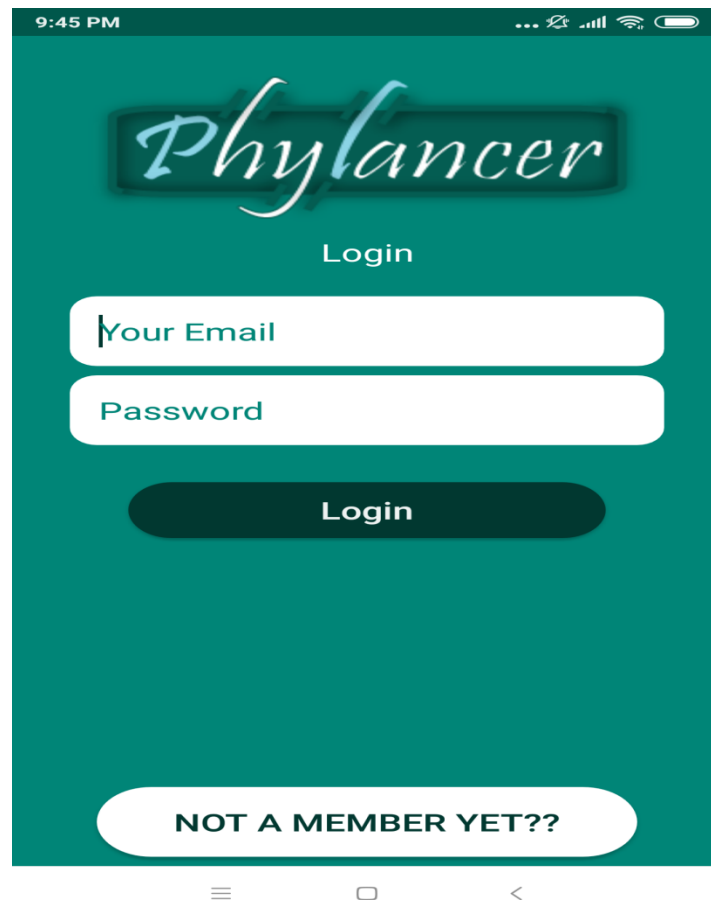


Figure 4.1: Login Page

4.1.2 Registration Page

The registration page includes the registration credential fields.

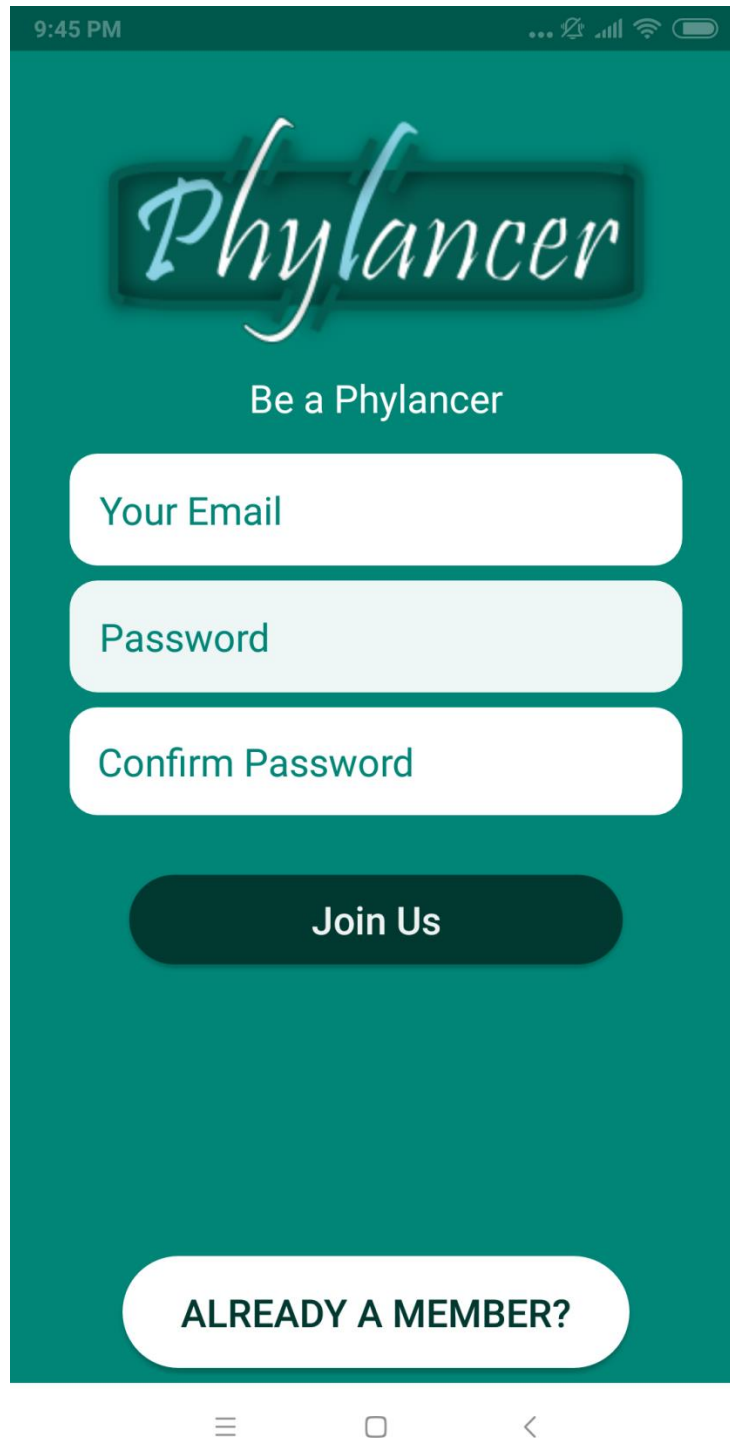


Figure 4.2: Registration Page

4.1.3 User Profile Page

This page of front-end design includes profile information of a user.

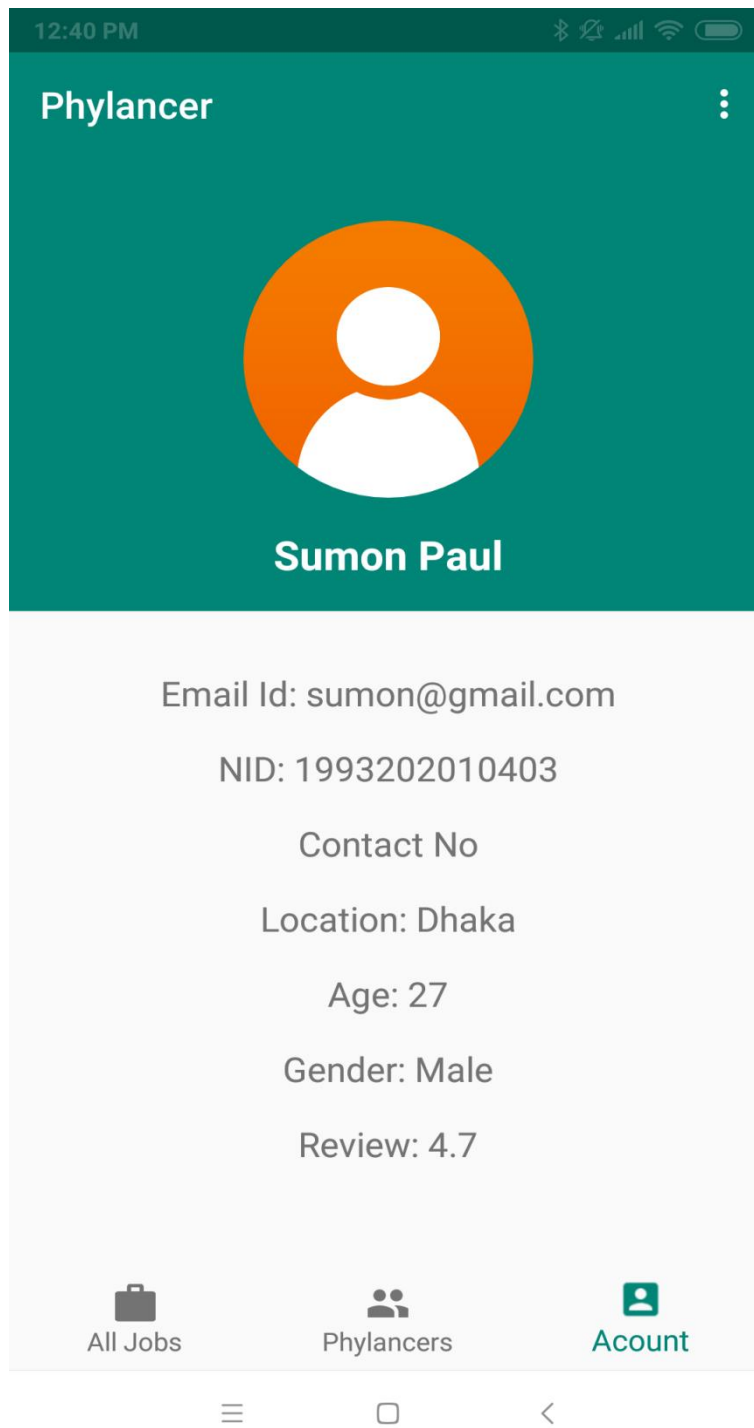


Figure 4.3: User Profile Page

4.1.4 Account Setup Page

User need to provide information in this page to complete their account.

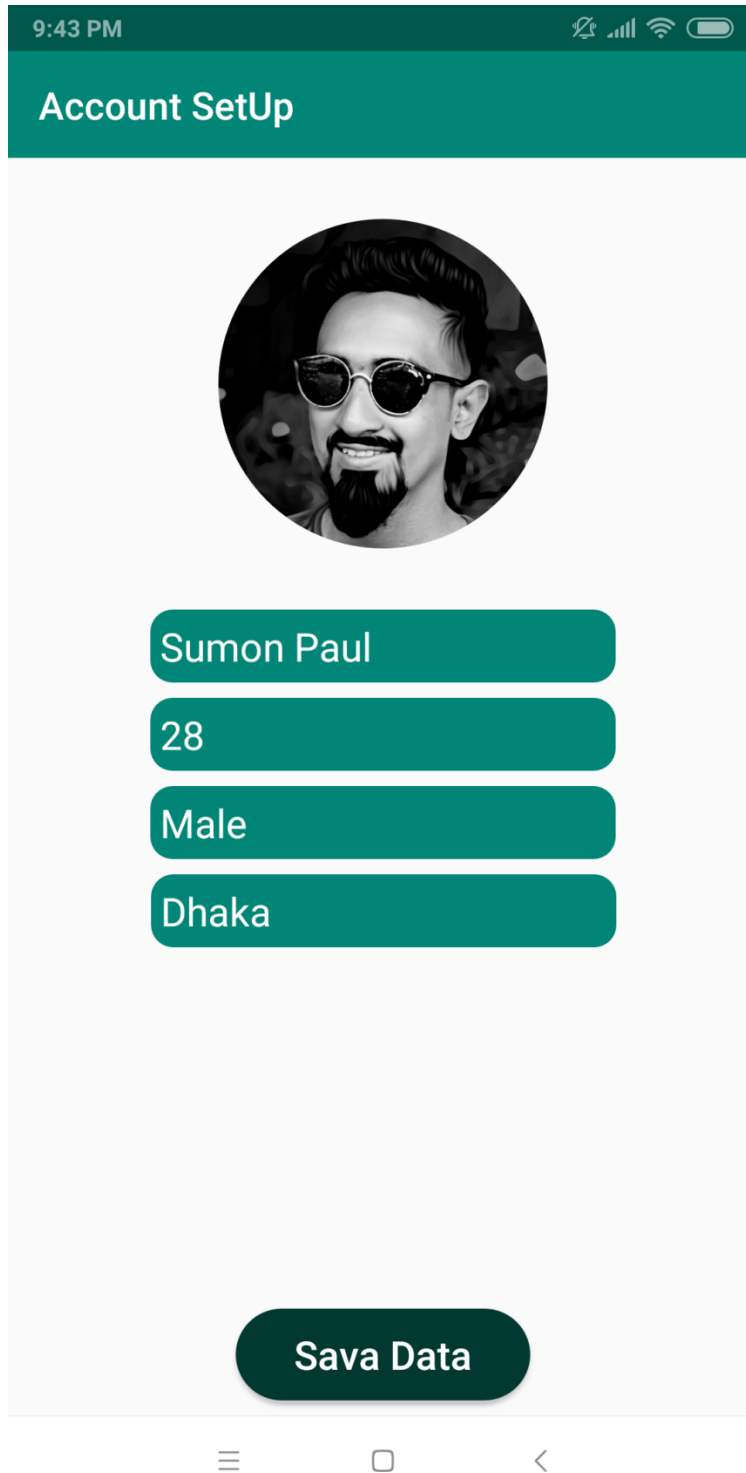


Figure 4.4: Account Setup Page

4.1.5 Phylancer Page (list of all users)

This page shows full list of all the users who are already registered.

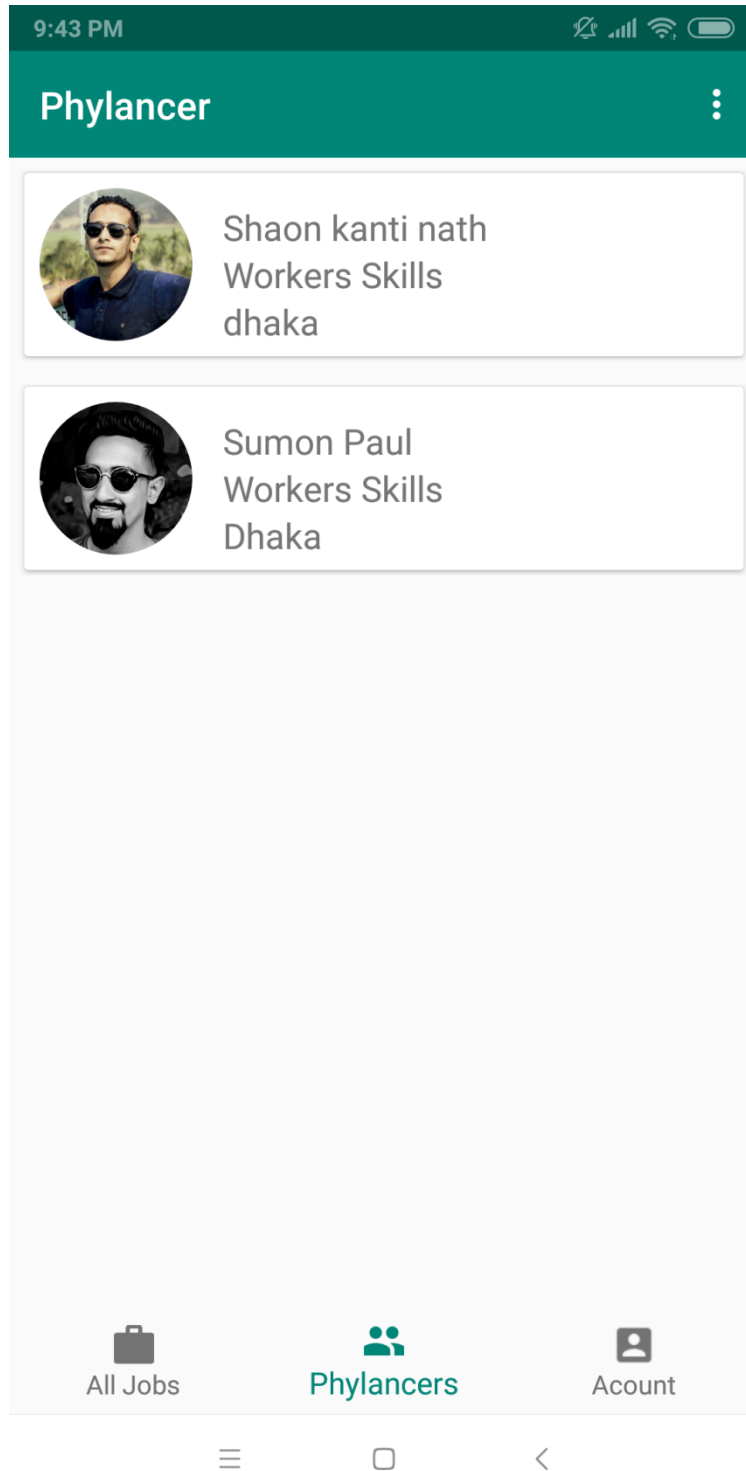


Figure 4.5: Phylancer list page

4.1.6 All Job Posting Page

All the jobs based on location search are posted here.

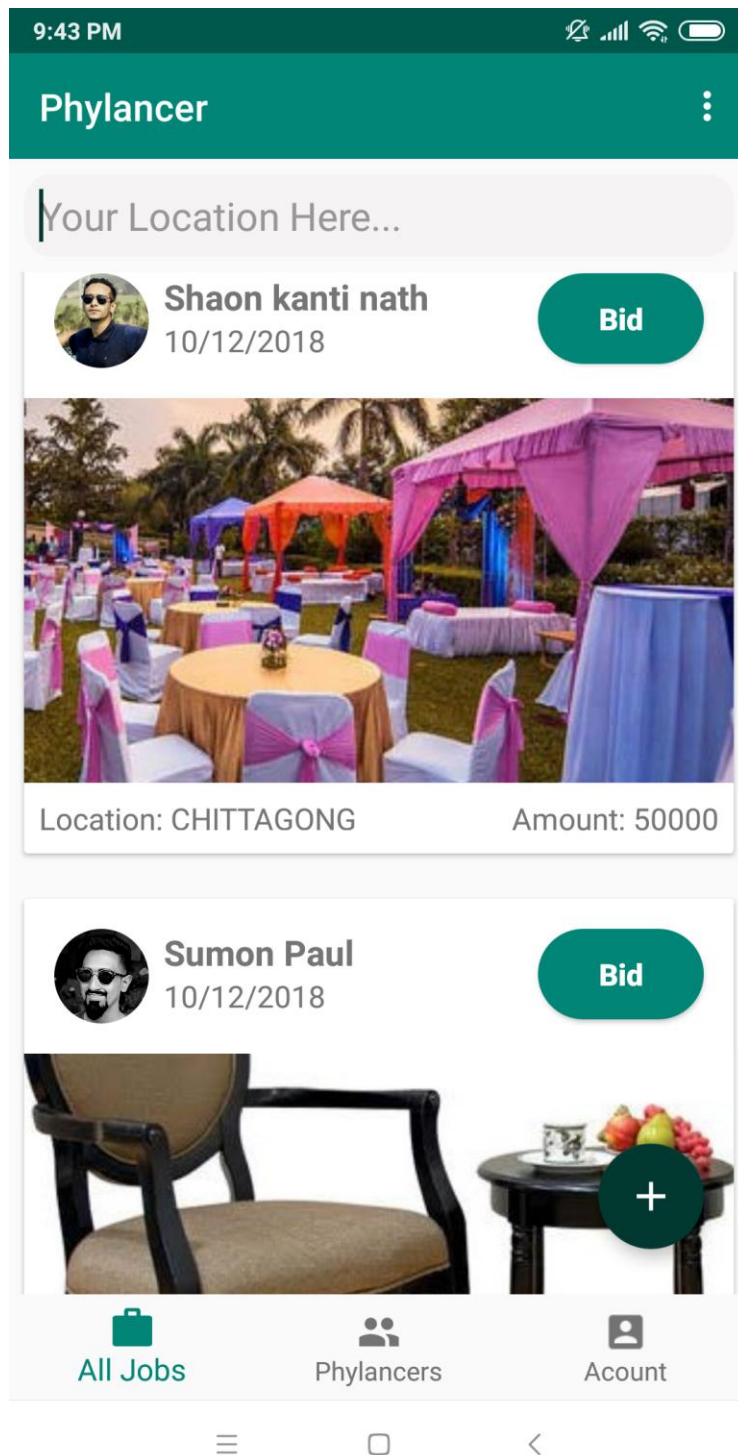


Figure 4.6: All job posting page

4.1.7 Job Details info Page

The detail information of any job is given in this page.

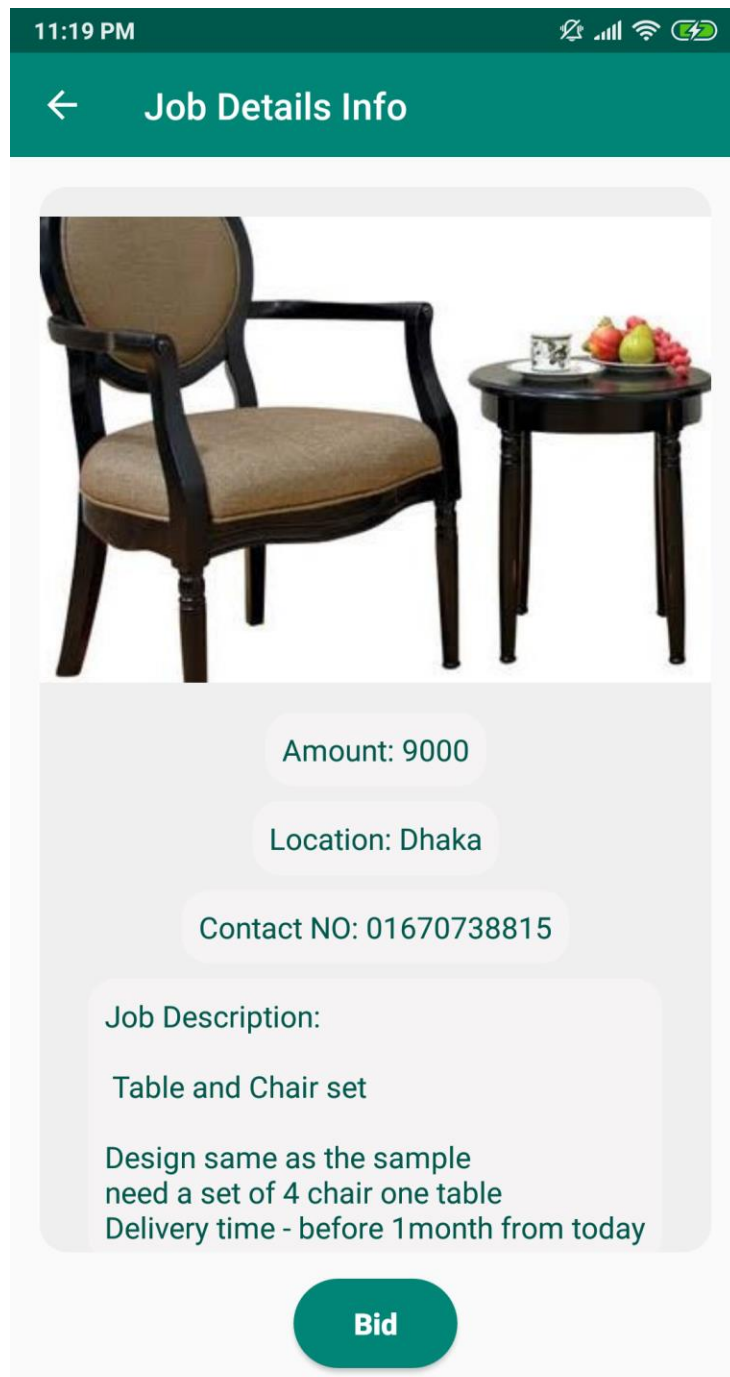


Figure 4.7: Job details info page

4.1.8 Bids Page

Bids for any specific job are shown in this page.

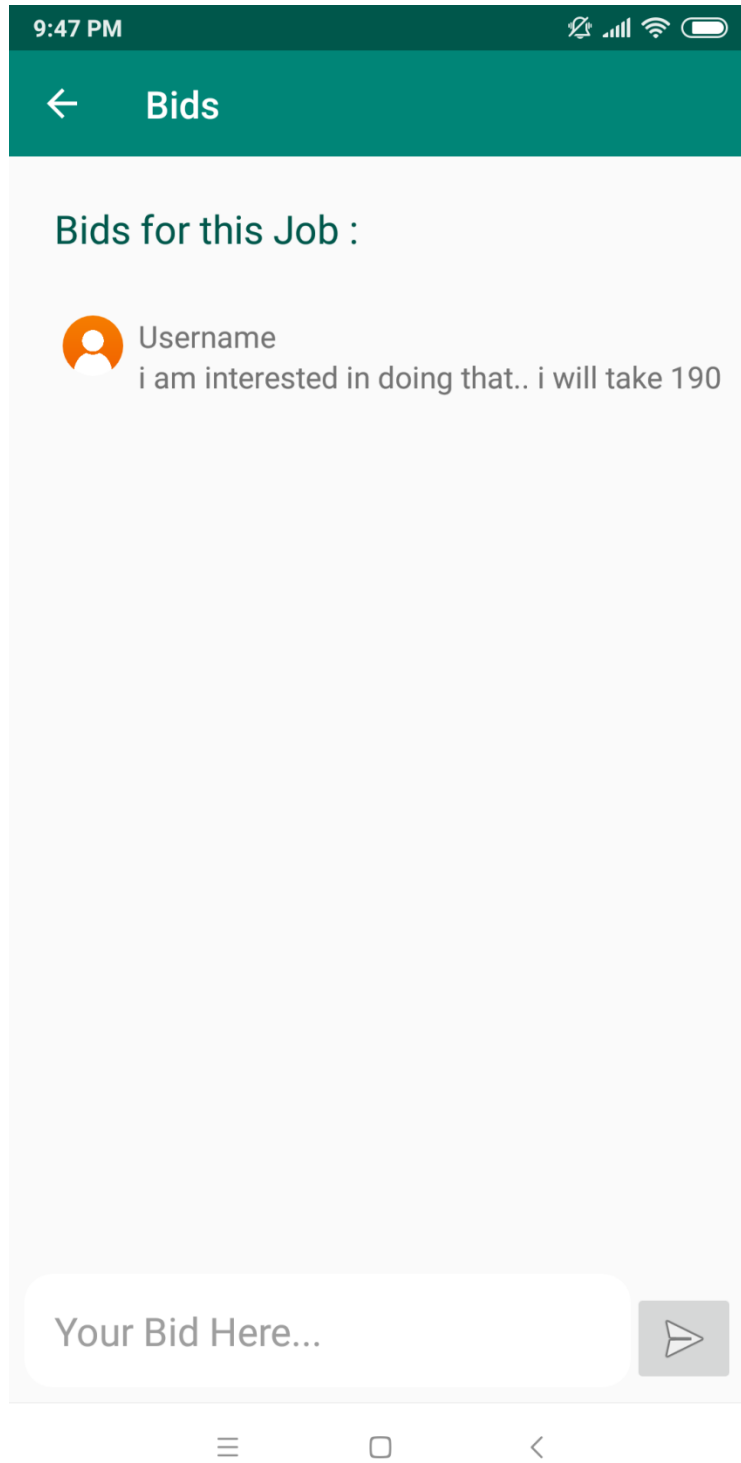


Figure 4.8: Bids Page

4.1.9 Account Settings and Logout Page

Account settings and logout can be accessed from this page.

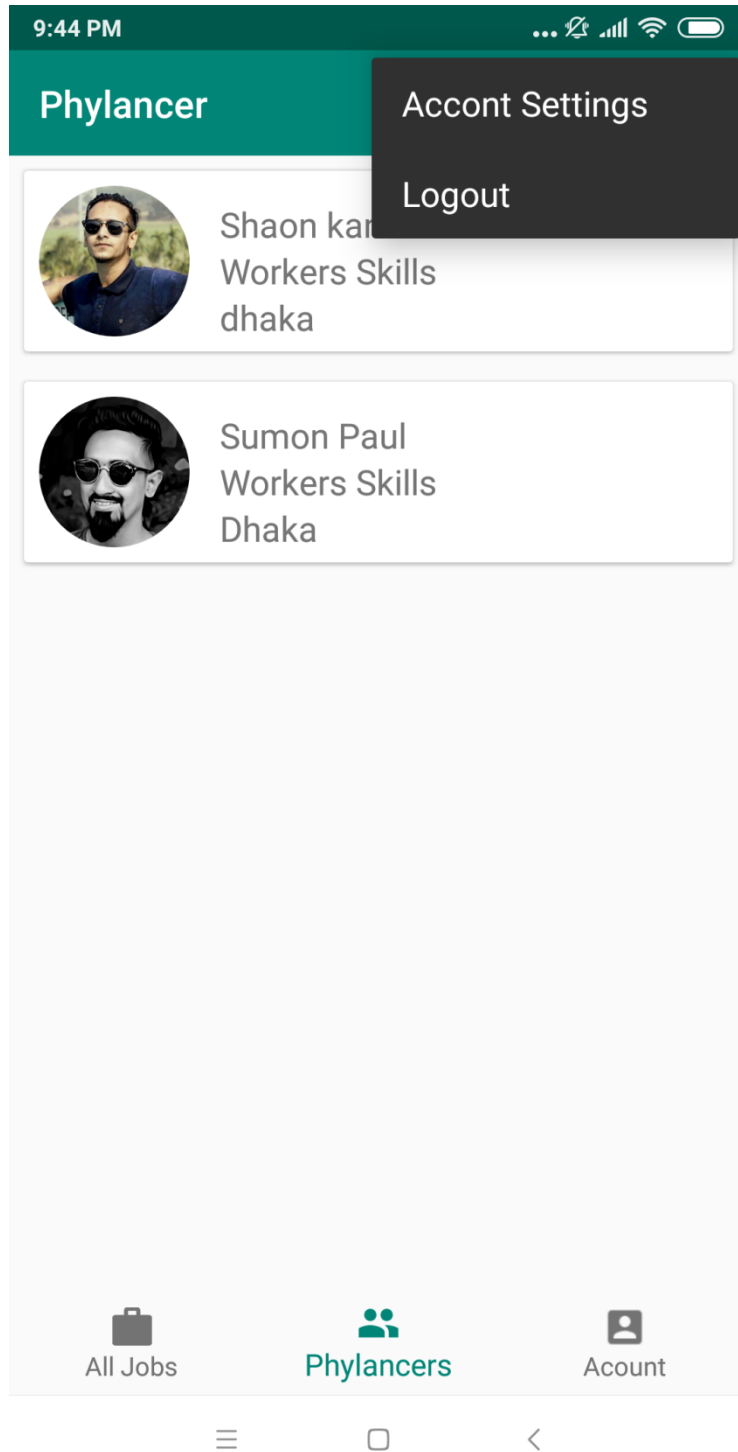


Figure 4.9: Account settings and logout page

4.2 Back-end Design

Back-end design usually handles all the logical part of a system. All the important processes is implemented through this. To simply put the whole system is dependable on back-end design. Back-end can also be called server side processes. Among many factors server side consists of server side language, automated framework, database management, security, authentication, authorization, data parsing and so on. For the implementation of “Phylancer”, FirebaseFirestore was used for storing data, FirebaseStorage was used for storing image files and FirebaseAuthSystem was used for authentication.

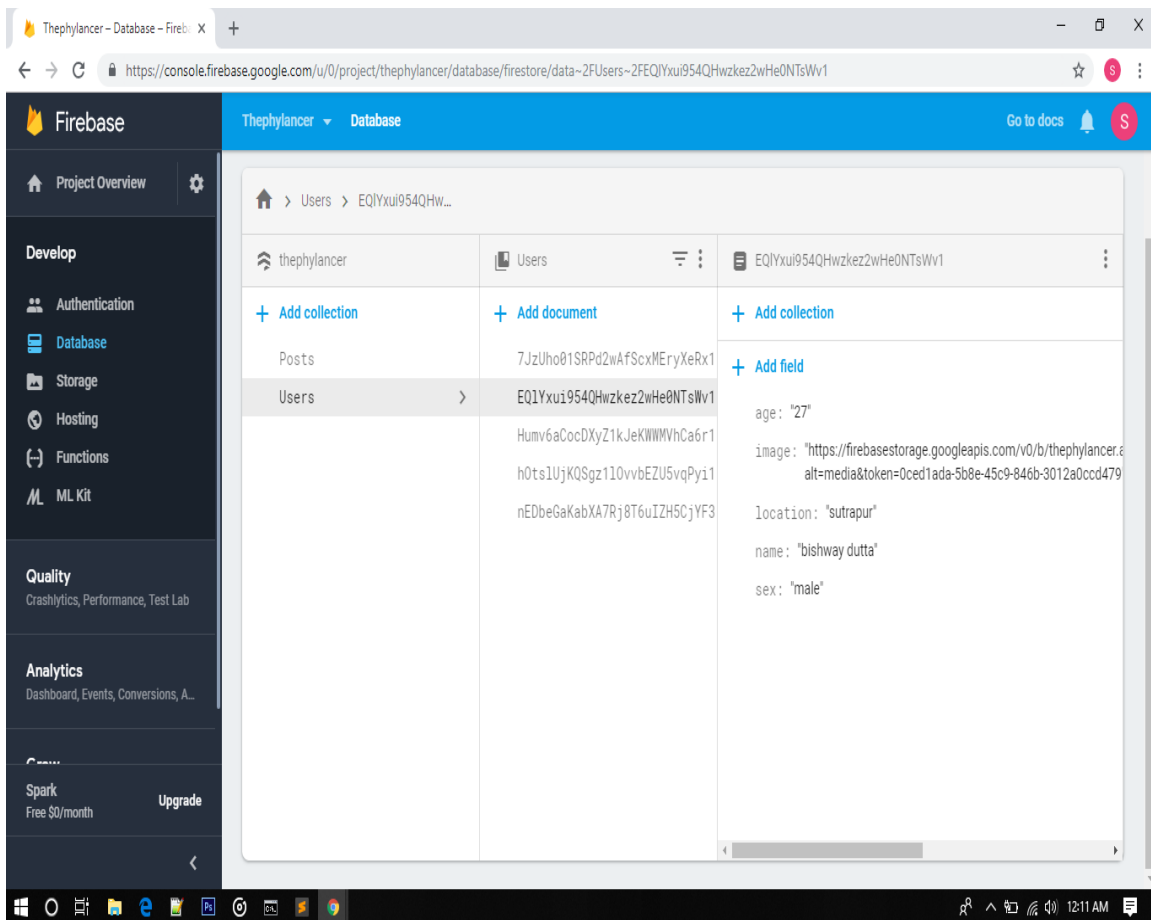


Figure 4.10: Back-end Design(1)

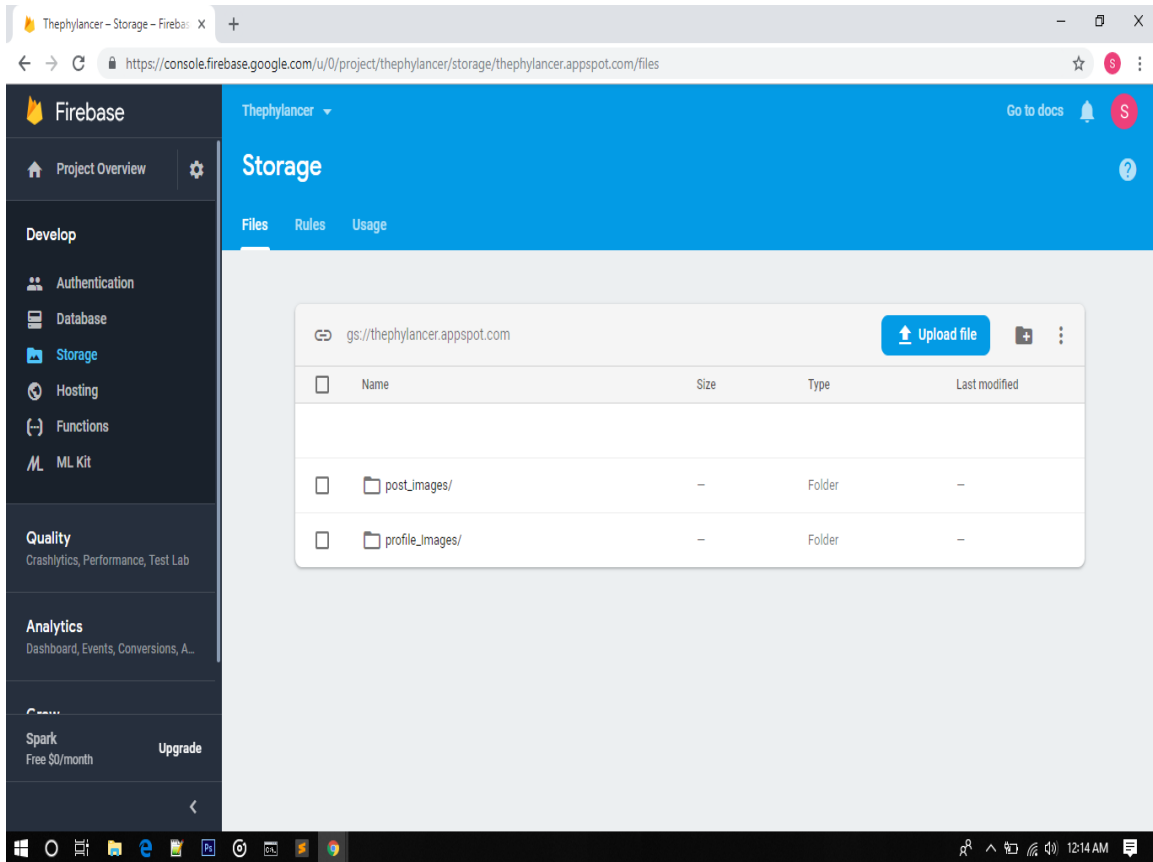


Figure 4.11: Back-end design(2)

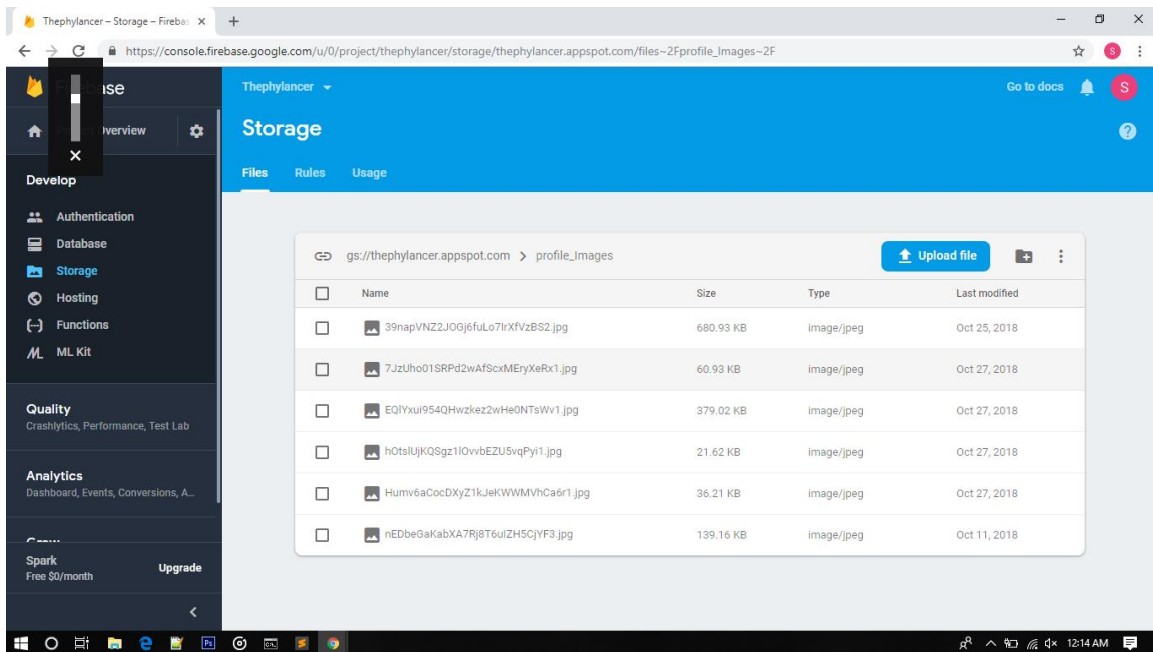


Figure 4.12: Back-end Design(3)

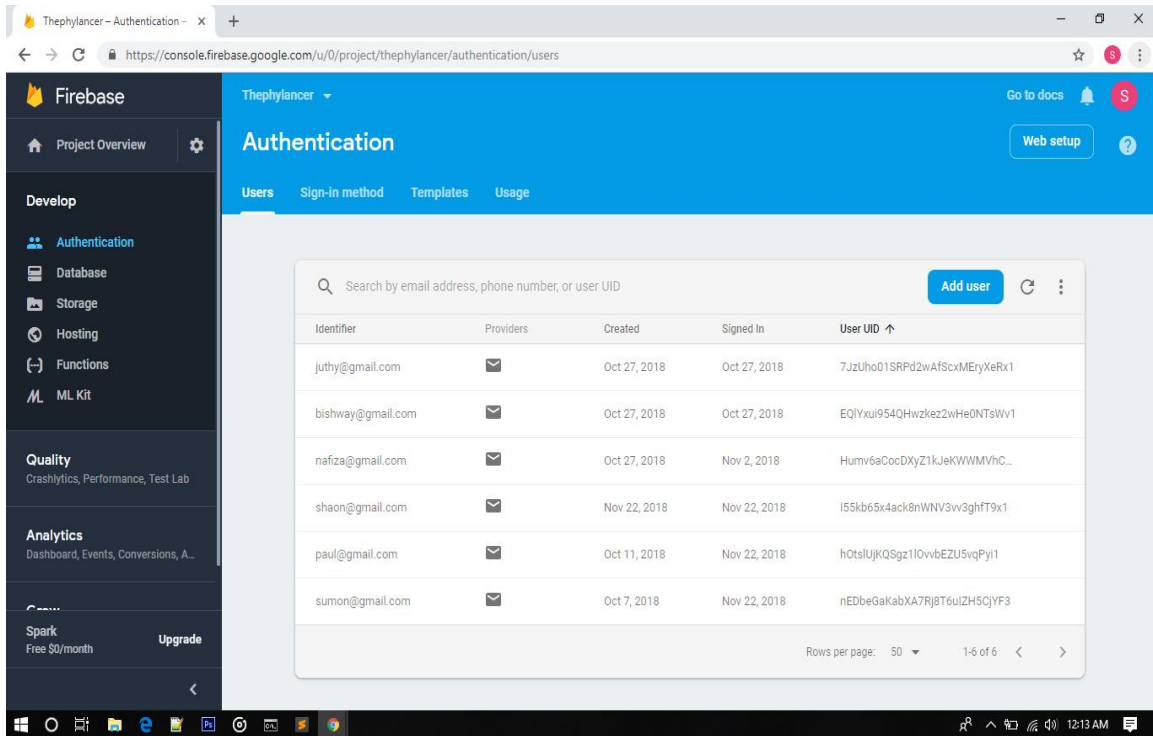


Figure 4.13: Back-end Design(4)

4.3 Interaction Design and UX

Interactive design of any application makes it user friendly, easy to use and overall satisfactory. An application can only be successful when user can interact with the application with ease. Android studio was used to make this application interactive, UI was designed using XML, codes were mostly written in Java.

4.4 Implementation of Requirements

- The design was implemented in XML with the help of Android Studio.
- Firebase was used as database.
- Hosting can be used from Google Firebase.
- For authentication Firebase Authentication can be used.
- For invalid input toast message should be displayed.

CHAPTER 5

IMPLEMENTATION AND TESTING

5.1 Implementation of Database

Since Firebase was used for database implementation, no additional table was created apart from the given ones below:

User Collection:

This table was used to store related information of users. Starting from registration to anything the user adds in their profile will be stored in this table.

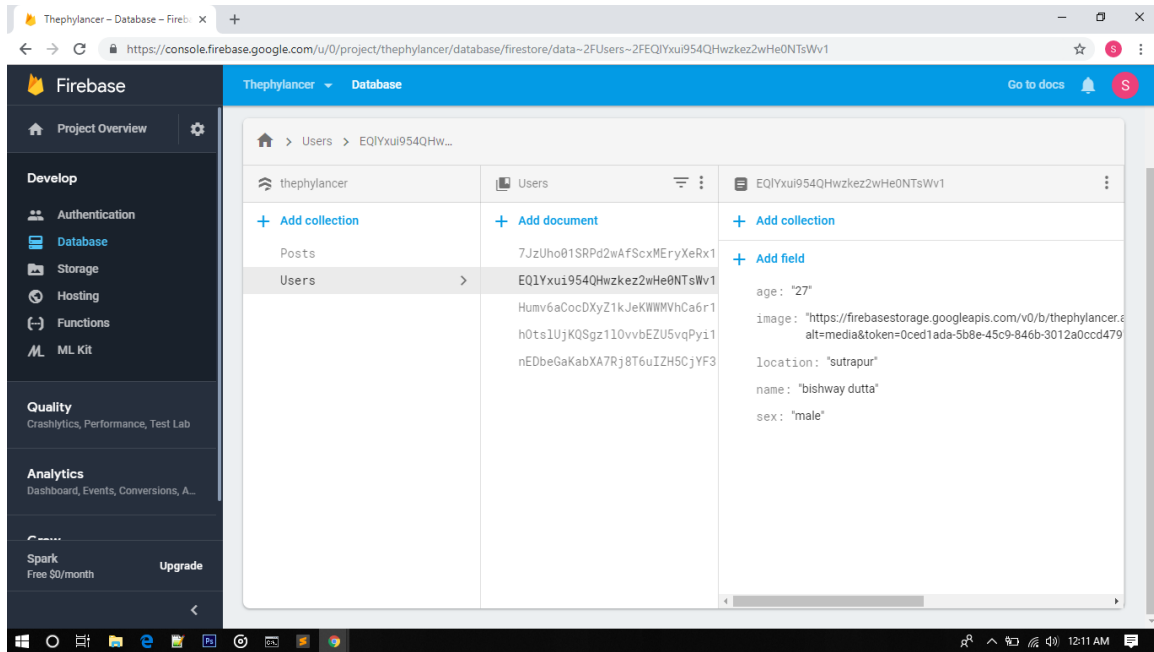


Figure 5.1: User collection

Post Collection:

Users post will be collected and stored in this table named post collection.

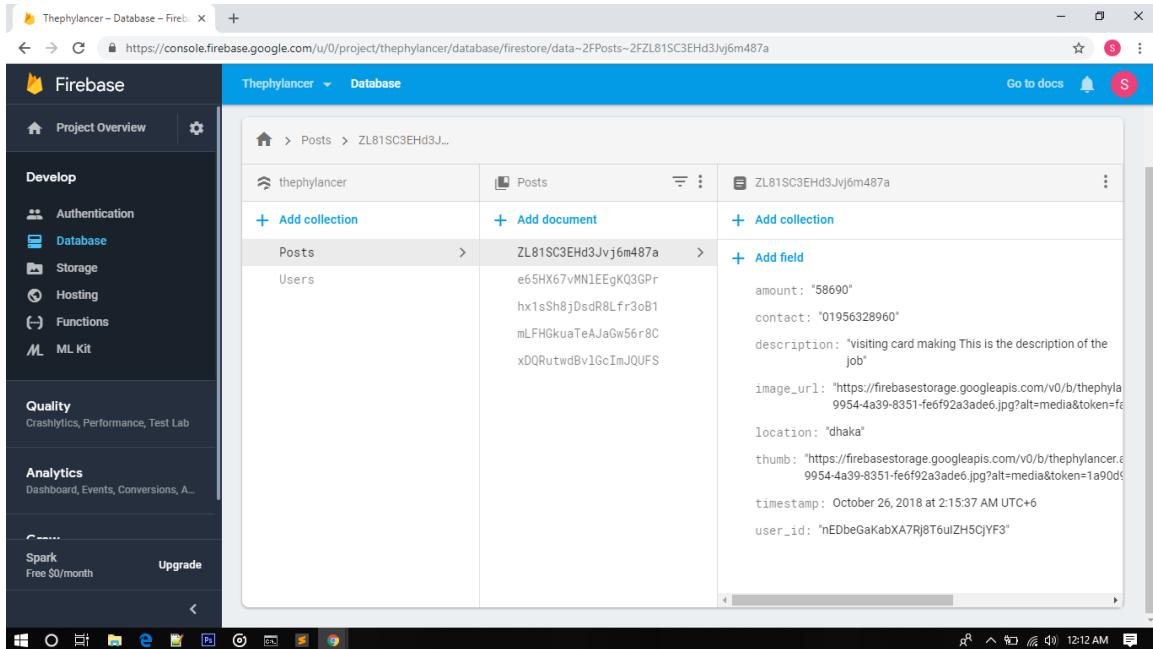


Figure 5.2: Post Collection

Bids collection:

All the bidding information done by the users is stored in Bids Collection table.

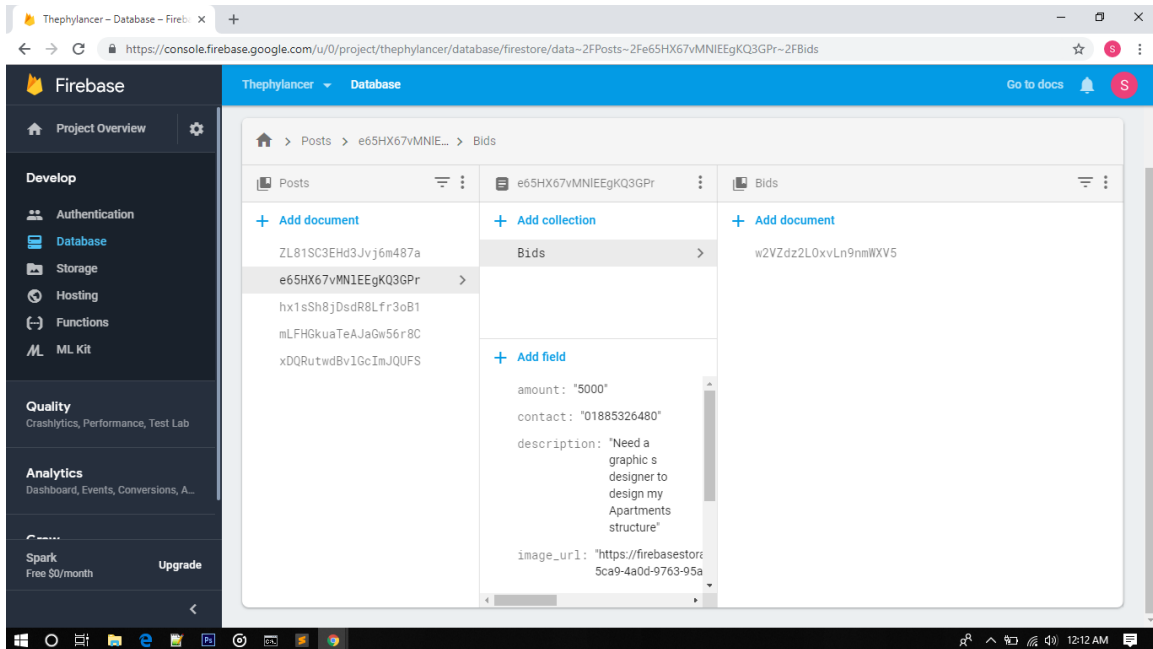


Figure 5.3: Bids Collection

Storage:

Photo collection table inside storage is used to store all the images from the application.

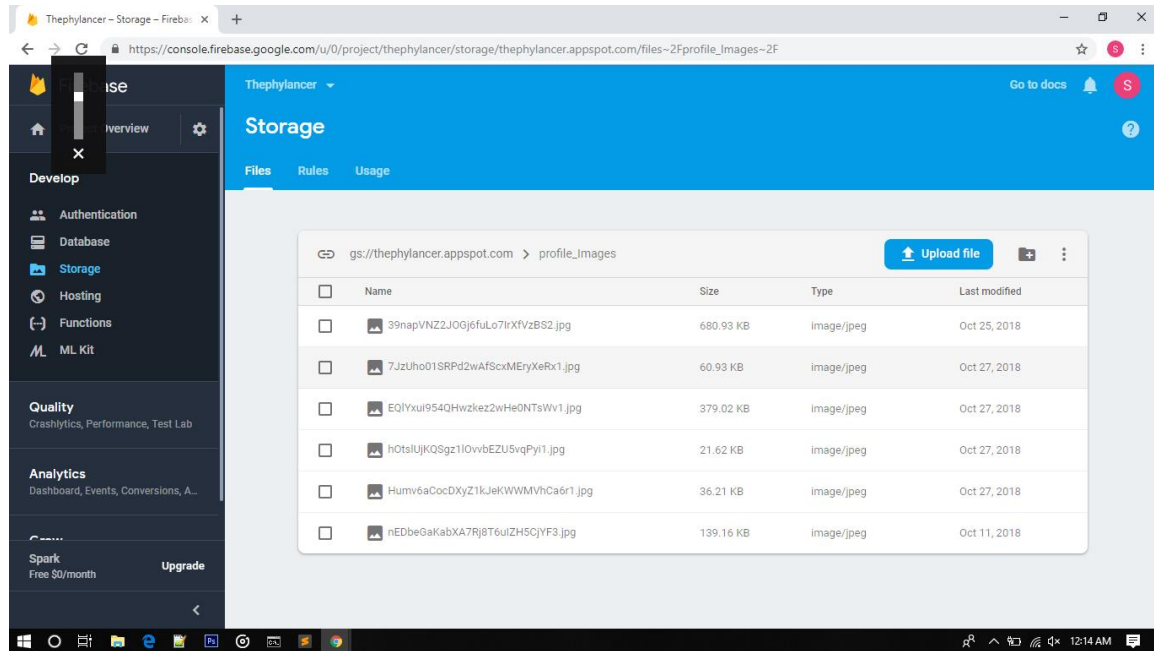


Figure 5.4: Storage(Photo Collection)

5.2 Implementation of Front-end Design

A simple yet responsive user interface design provides user satisfaction. To implement the front-end design, Android Studio was of great help. Developing a responsive application ensures that the application can be accessed from any kind of device without any inconvenience at all. Some factors related to the implementation of front-end design are the following ones:

- To use this application, every user will have to register by providing related credentials.
- After registration user will be able to login through their valid email id and password.
- Admin, Producers and Customers will be the user of this application.
- Without filling up account information user can't surf through the application.

5.3 Implementation of Interactions

To provide a great user satisfaction as well as to make the application super interactive, the application was optimized at a great extent. By using buttons, drop down menus and icons the application became more interactive. Anyone will be able to use this application at ease without any inconvenience because of its responsive user interface.

5.4 Testing Implementation

Testing implementation is used for ensuring a bug free, properly working application. Functionalities are tested through inputs and outputs. Test case evaluation is given below:

Table 5.1: Test Case evaluation

Test Case	Test Input	Expected Output	Actual Output	Result
Registration	Empty email, password, confirm password	Toast message to fill all the credentials.	Fill all the require fields.	Passed
Login	Using multiple devices with proper credentials	Successful login	Successfully logged in.	Passed
Password	Blank field and wrong password	Enter password or incorrect password	Showed empty field and incorrect password	Passed
User Profile Update	Kept few fields blank	Must have to fill all the fields.	Showed toast message to fill in the blank fields	Passed

Location Based Job Search	Searched for Dhaka	Should only show Dhaka.	Showed jobs inside Dhaka	Passed
Bidding System	Clicked bid for product bidding.	It should notify the user about the bids on his product.	Notified of the bid.	Passed
Posting Jobs	Posted with keeping all fields blank	Should notify to fill in the blank fields	Notified to fill in the blank fields.	Passed
Logout	Clicked on logout	It should logout the user.	Logged out successfully	Passed

5.5 Test Results and Reports

Portraying the test results using reports helps the developer to understand the results more easily and also helps them to find out the bugs and the sectors that should be checked again. Test reports keep records of the test results in an organized manner. Test reports determine whether the application is ready to release or it needs further implementation.

Couple of testing methods are given below:

- Functionality
- Regression
- Security
- Performance
- Scalability
- Usability
- System Interoperability
- Localization
- Disaster Recovery

- Installation/Upgrade

All this testing methods needs to be passed for an application to launch.

However among all the test results, usability testing results are carried out.

- The quality of application is good.
- Easy to use system.
- Application is more readily expected by users.
- Interactive application because of better UI.

CHAPTER 6

CONCLUSION AND FUTURE SCOPE

6.1 Conclusion

“Phylancer” is an android application which promises to change the world economy in a good way. Current trading system is crushing the poor people under its wheel and helping the brokers to rise even higher. After the implementation of this project it’s just a matter of time when producers and consumers will be connected again through this application. This application will be the key to a whole new world economic system. Especially for the people of Bangladesh, producers from a very rural area who doesn’t understand the tricks of the brokers will be highly benefited through this application.

6.2 Scope for Further Developments

The application “Phylancer” even in this phase is so much promising. However there are plenty of scopes for further developments of this project. Some of them are stated below:

- Introducing this application outside of our country, to the whole world will help it to grow even more. In that way every people will be benefited.
- Categorized search will make it more convenient to users which can be implemented later.
- By introducing trading system through live video call might encourage people to use this application even more.
- Last but not the least the whole economic structure can be changed through this application in future.

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APPENDIX

Appendix A

Project Reflection:

We have been working on this project from spring 2018. We got high hopes that this project will bring change to this world that we all want and crave for. A lot of time was spent behind the development process to make it user friendly. However we also have learned a lot of things while implementing this project and we believe it will help us in the further implementation of this project.

Appendix B

Plagiarism Check Report