

A web application for Local job, Freelancing & outsourcing marketplace.

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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/internship titled “**A web application for Local job, Freelancing & outsourcing marketplace**”, submitted by **MD HASIBUL KABIR**, ID No: **181-15-11196** 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 **4Jan2022**.

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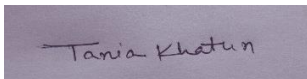
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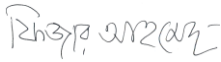
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DECLARATION

I am hereby declare that, this project has been done by us under the supervision of **Dr. Fizar Ahmed, Assistant Professor, 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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Finally, I must acknowledge with due respect the constant support and patients of our parents. ^[Font-12]

ABSTRACT

The project is like a freelancing marketplace focused on local work in basis of our country. Page | 6

This project has built in the purpose people with different types of skills on local service such as Electrical task, Plumbing, Car Wash, Mechanical task etc. can sell their services here to the general people in need those services and get paid.

Two types of users are the stakeholders of this system. Service Buyer and Service Provider. Service provider will create a representation of the service the want to provide based on their skill. On the other hand who need service find their desired service and contact to the service provider belongs to the service demo he (buyer) has selected and get the service by paying the service charge.

The project will reduce our unemployment issue also be a better medium to get desired services and get rid of hassle.

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CHAPTER 1

Introduction

1.1 Introduction:

This is a local job, freelancing & outsourcing marketplace web application. This is such a platform where the skilled people can earn by giving service to the people who need those services. And the people, need services can find and contact suitable service provider to get their solutions sitting at home without any kind of hassle. Here we are making a connection between the service provider and service recipient by this platform.

1.2 Motivation:

Unemployment has taken a terrible turn in our country. We have a huge population with various skill. But we are failing to transform the population into manpower for a limited number of workplace.

On the other side we are getting in trouble to find suitable person to get different types of service we need at our home, office or anywhere.

Here, this platform will reduce these issues. It will not only reduce our unemployment problem also make out life easier and hassle free.

1.3 Objective:

The objective of the project is to represent a platform where the people leading a miserable life with the unemployment issues get a hope and make their life change. And make general people's life easy.

Transformation of population into man power and enforce the wheel of our countries economy

1.4 Expected Outcome:

Expected outcome can be functional and non-functional. Functional expected outcome inherit the requirements.

The non-functional or social expected outcome is like both types of customers will be benefited by using the system. Service consumer can find their expected service and solve their issue. And the service provider can earn by selling the services to the consumer.

1.5 Report Layout:

Chapter-1: Introduction

- **Introduction**
- **Motivation**
- **Objective**
- **Expected Outcome**

Chapter-2: Background

- **Terminologies**
- **Related Works and Comparative Analysis**
- **Scope of the Problems and Challenges**

Chapter-3: Requirement Specification

- **Business Process Modeling**
- **Requirement Collection and Analysis**
- **Use Case Modeling and Description**
- **Logical Data Model**

Chapter-4: Design Specification

- **Front-end Design**
- **Back-end Design**
- **Interaction Design and User Experience (UX)**

Chapter-5: Implementation and Testing

- **Implementation of Database**
- **Front-end Design Implementation**
- **Testing Implementation and Results**

Chapter-6: Impact on Society, Economy and Sustainability

- **Impact on Society**
- **Impact on Economy**
- **Sustainability Plan**

Chapter-7: Conclusion and Future Scope

- **Conclusion**
- **Future Scope**

CHAPTER 2

Background

2.1 Terminologies:

Before develop a system we need to follow or maintain some terminologies. It is about development phase.

Which represents a workflow to develop a system. There has four major development phases. Which are-

- Planning
- Analysis
- Design
- Implementation

I had to think first what I will do. I had to identify why I will built this system. Then made a plan how the process will goes on.

In the analysis part I had to explore related projects, gather information, user requirements etc.

Then I have made an overview design of the project as like how it will fulfil user requirements, following which process I will develop the system.

Then the development term arrived in implementation part. Building with the programming languages, handling front-end/back-end, testing.

2.2 Related Works and Comparative Analysis:

I had explore different marketplaces where people doing freelancing, outsourcing. Here people who have skills in Information Technology sector providing service based on their skills and get paid by the service consumer.

There has so many freelancing and outsourcing marketplaces. **Upwork, fiverr, freelancer.com, gigstar** are most popular from those.

Inspired by these projects I made the decision to develop my desired project.

But these projects are not efficient for all classes of people. I have made a decision to implement something exceptional in the basis of our country.

Till now our country fallen backward from other developed country in IT sector. Yes, it is growing so faster.

Even then every people will not be able to touch this sector, but they have another skills. Then I thought how these skills put to use. And I have planned to build a local job marketplace. Information Technology also be included here in future scope.

2.3 Scope of the problem and Challenges:

As the stakeholders of this system will every classes of people, they can be educated or less educated so the system must be efficient and standard to all of them.

When they will interact with the system the UI should be standard.

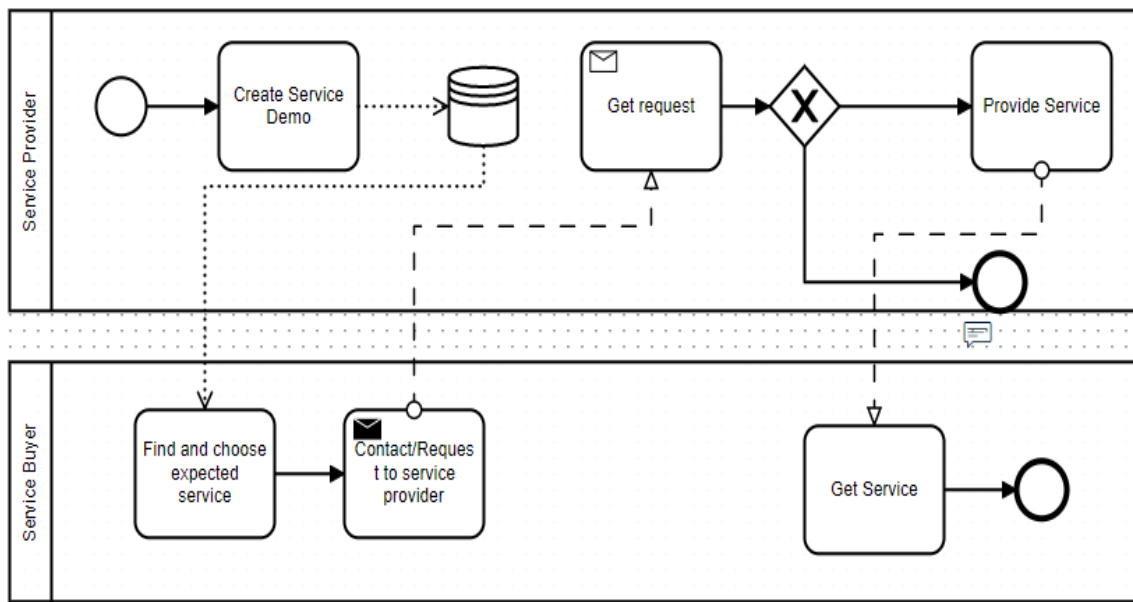
Another challenge is our poor internet connection. According to an observation our country ranked 135th out 137 countries. So data processing or functional model should be simpler either user experience would be bitter.

CHAPTER 3

Requirement Specification

3.1 Business Process Modeling:

Here a graphical representation of the project’s workflow is given below as business process modeling.



Business Process Model

Figure: 3.1.1

According to the diagram service provider creating service demo which is being stored on database. Then service consumer can find his expected service from the stored data. Then he can request the service provider of his selected service. After getting request from his client service provider can provide the service or reject it. And end up the process.

3.2 Requirement Collection and Analysis:

I have collected the requirements of the project through many process which are given below.

- Conducting a brainstorming session.
- I have explored many related web app as like different types of freelancing marketplaces (Ex.- **faverr**, **freelancer.com** etc.) and try to understand the needs of a user.
- Analyzing the natures of our countries general users.

After going through couple of brainstorming and analyzing process I have divided the requirements into two different part which are functional requirements and non-functional requirements.

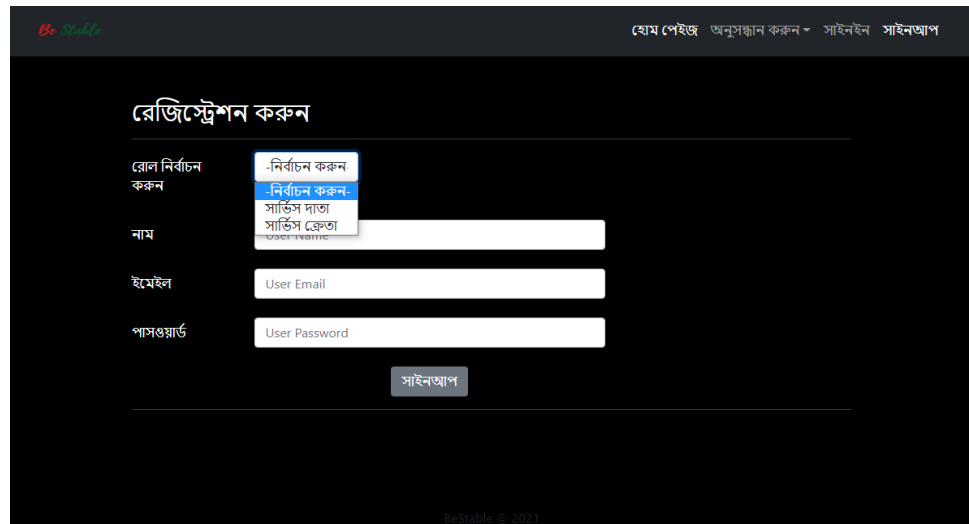
Functional Requirements:

Functional requirements are about understanding the functions of the project, the expected characteristics that should have on the system.

The requirements are given below.

- User should be able to choose user role as a service provider or consumer.

Implementation-



Role Selection

Figure: 3.2.1

- Service provider and consumer should have different dashboard. Service provider's dashboard will contain a section where he will create his service demo. Also he should be able to see all of his services he has created.

Implementation-

The screenshot shows a web form titled 'কাজিত সার্ভিস ডেমো তৈরী করুন' (Create Service Demo). It contains the following fields:

- ছবি সংযুক্ত করুন: (Attach image) with a 'Choose File' button and 'No file chosen' text.
- ইউজার আইডি: (User ID) - text input field.
- তারিখ: (Date) - date input field.
- সার্ভিসের বর্ণনা: (Service description) - text area.
- পারিশ্রমিক: (Fee) - text input field.
- সার্ভিস প্রদানের সম্ভাব্য সময়: (Possible service duration) - text input field.
- ক্যাটাগোরি নির্বাচন করুন: (Select category) - dropdown menu with '----ক্যাটাগোরি----' selected.

 A 'সাবমিট' (Submit) button is located at the bottom left. The footer says 'BeStable © 2021'.

Service demo adding form

Figure: 3.2.2

- Service consumer should be able to find the service he want also see the service provider details and reach out him.

Implementation-

The screenshot shows a service details page titled 'ইলেক্ট্রিক্যাল সমাধান' (Electrical Solution). The details are:

- Price: ৳200
- Description: যেকোন প্রকার ইলেক্ট্রিক্যাল সার্ভিস প্রদান করে থাকি। আমরা ট্রেনিং সেন্টার থেকে কারিগরী সনদ প্রাপ্ত ও চার বছরের অভিজ্ঞতা সম্পন্ন।
- সার্ভিস সম্পন্ন করার সময়: 2 দিন
- সার্ভিস দাতা:
 - নাম
 - হাসবল কাবর
 - আইডি: 6172b9c0bebf0a944916b11

 A 'যোগাযোগ করুন' (Contact) button is at the bottom.

Service details & reach out service provider

Figure: 3.2.3

Non Functional Requirements:

These requirements are categorized focusing on the performance, user experience etc. of the system.

Non-functional requirements are differ from any kind of functional term and need of the system.

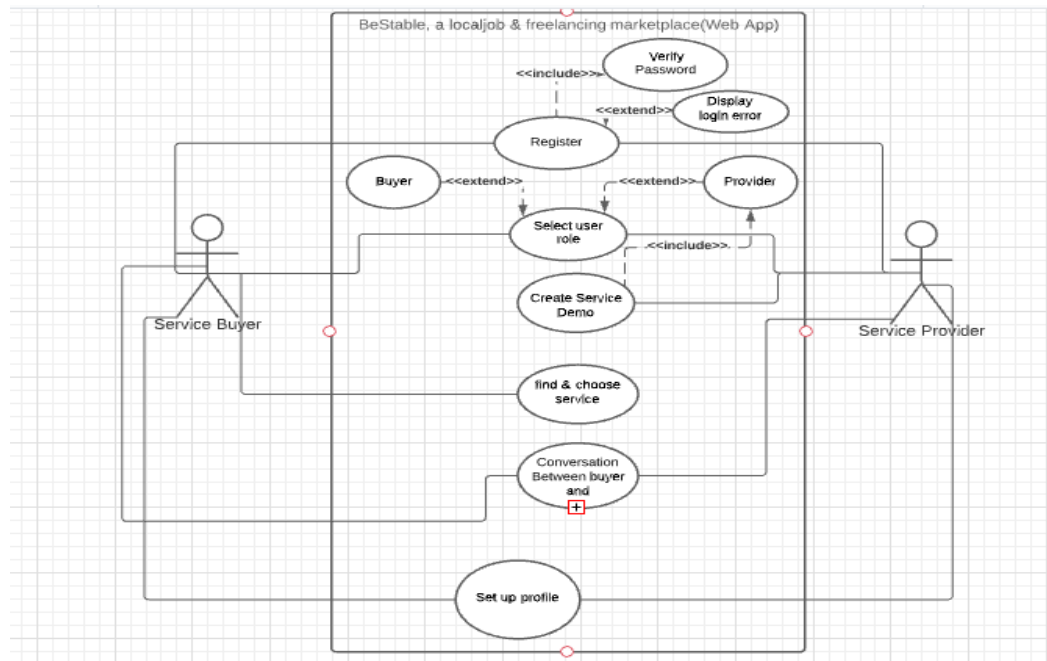
These requirements are given below.

- The system must be secured and dependable.
- Data fetching functionality should be faster.
- The system should be easy to use for the user.
- Should have the ability to operate anytime.

3.3 Use Case Modeling and Description:

Now I am going to describe how different types of users interact with the project system and the behavior of it.

A use case model of the project system given below.



Use Case Diagram

Figure: 3.3.1

According to the use case model of **figure:3.3.1** there has two different types of users. One is service Buyer/Consumer and another is service Provider. They both are able to register on the system and choose their role. Password verification is included and display error message is extended with this entity. Buyer and Provider entities are extended with user role selection.

Service provider can create service demo based on his skill. And it should be included with provider entity. That means a service provider can only create service demo.

On the other hand the consumer/buyer can find the services he need. And contact/message the service provider belongs to the service he (buyer) selected.

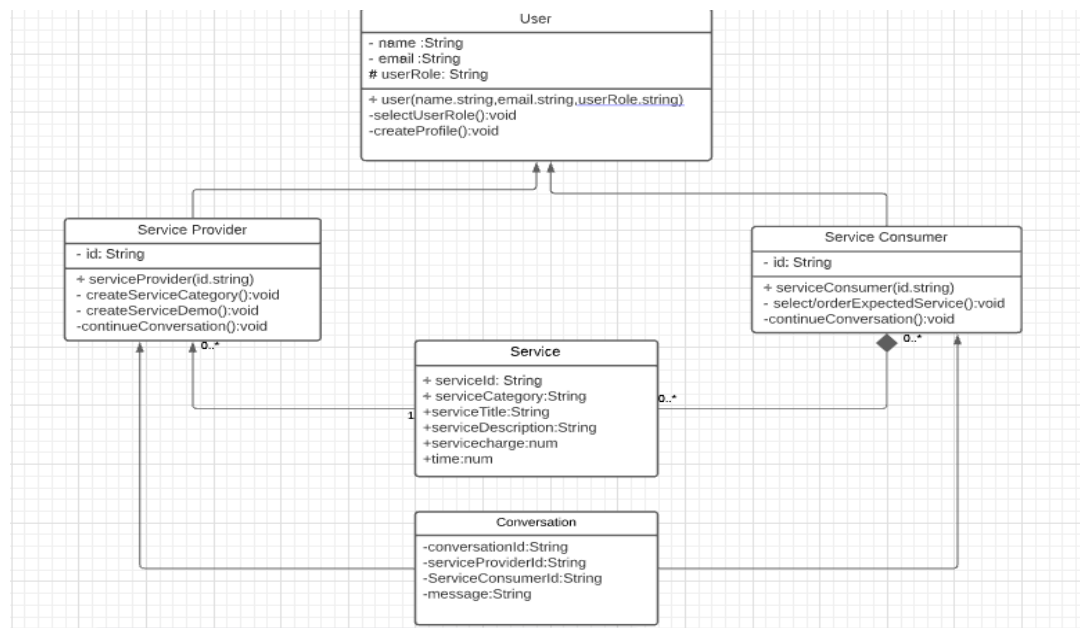
Here service provider will get request and response that means participate on the conversation with his client.

Both of the user can create their profile.

3.4 Logical Data Model:

In this term I am using a class diagram for data modeling. It is about to represent the general conceptual modeling of the formation of the project system.

The diagram has given below.



Class diagram/ data model

Figure: 3.4.1

CHAPTER 4

Design Specification

4.1 Front-end Design:

The graphical user interface of a web application, which a user can view and interact with the system is it's front-end.

To develop a web application the HTML (Hyper Text Markup Language) must be needed to make the basic structure of the front-end. CSS (Cascading Style Sheets) is used for the basic design of the frontend. And JavaScript for different types of functionality as like handling various event, document object model etc.

These are for the basic structure of the front-end.

But to develop a high-end dynamic front-end web application advanced JavaScript must be needed.

In continuation of this purpose I have used ES6 (ECMAScript 6) to develop the project.

Different types of JavaScript libraries are also used to develop enterprise quality dynamic web application. Many popular libraries are –

- Angular JS
- React JS
- React-native
- VUE
- Inferno
- Solid JS

Among of these I have used 'React JS'. React JS is the most declarative, efficient and flexible library to develop user interface.

This library is component based. We can use functional component or class component in this purpose. I have used functional component in most case. There has an interesting issue that we can't write HTML code with react JS. In this case JSX format needed.

Some snippets of front-end design developed by react JS are given below.

Home page declaration

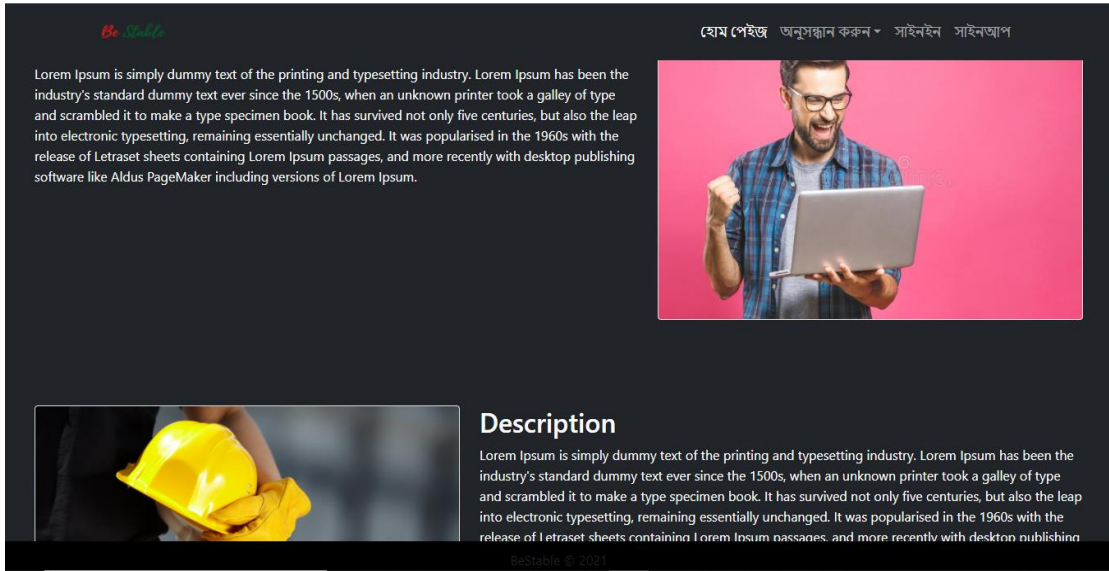


Figure: 4.1.1

User can find his expected service here,

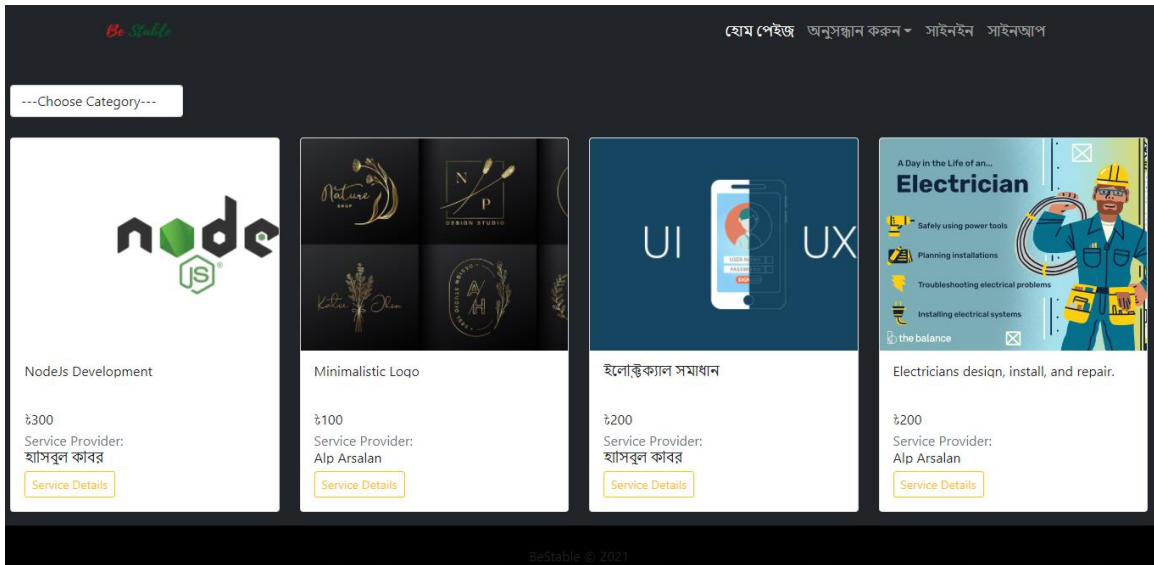


Figure: 4.1.2

User will register and select his role here,

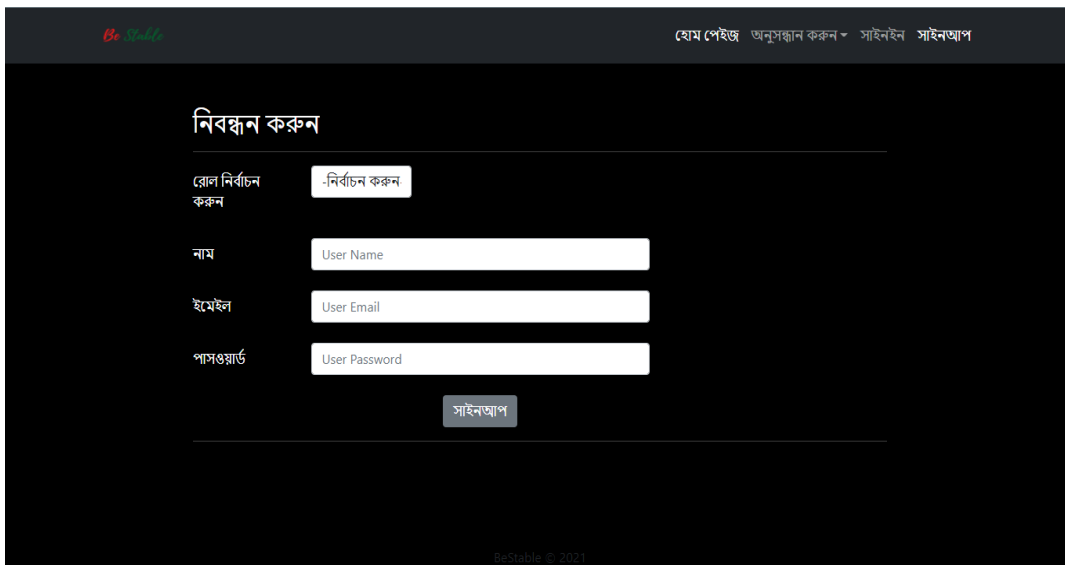


Figure: 4.1.3

This is the UI of the conversation between service provider and consumer

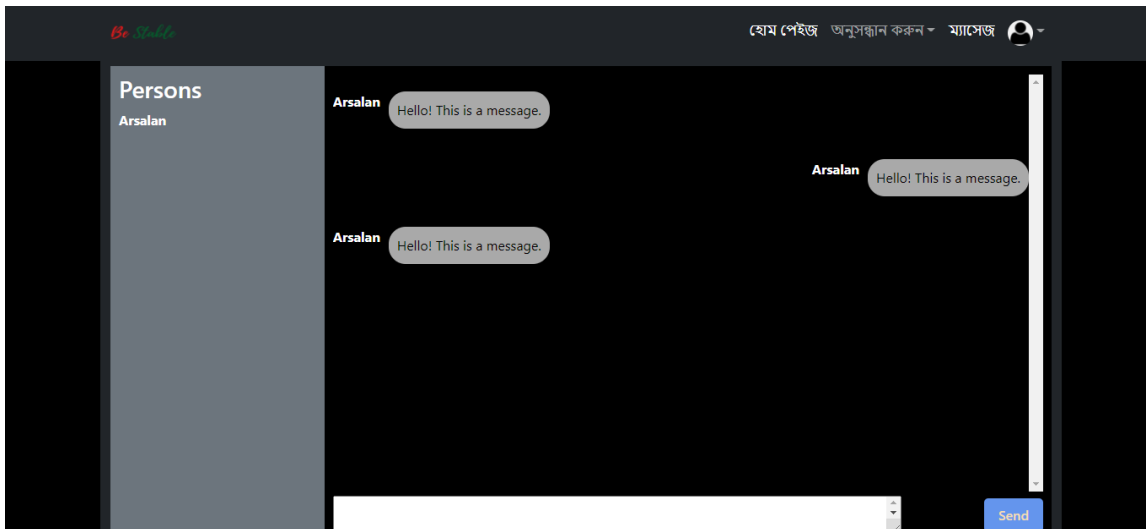


Figure: 4.1.4

Dashboard of a service provider. Here he can maintain his profile, create service insight, maintain the service demo he has created.

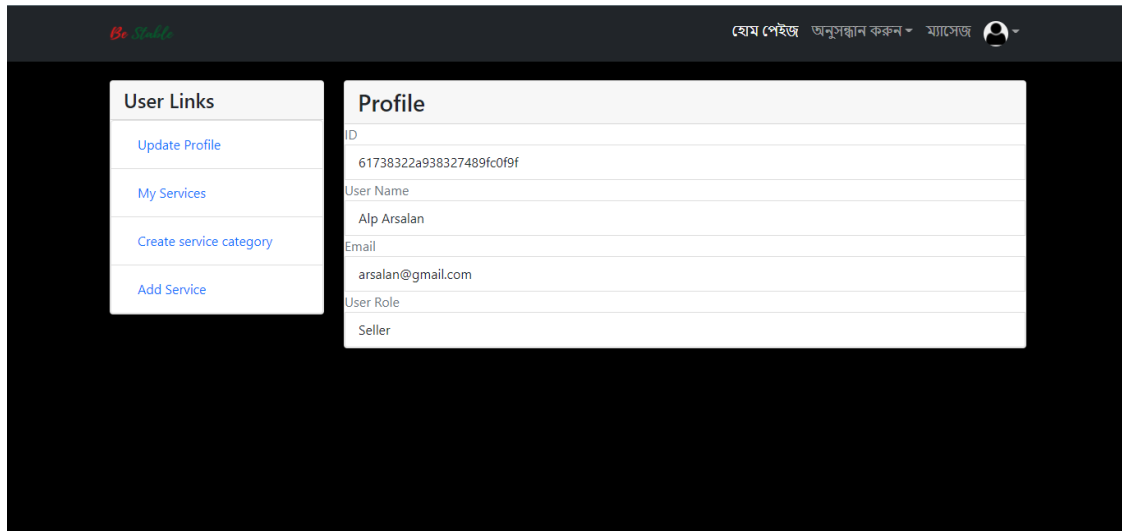


Figure: 4.1.5

4.2 Backend-end Design:

There has so many popular programming languages, libraries and frameworks to develop back-end of a web application.

As example-

- Django from Python
- PHP
- Node JS etc.

As I'm developing the project with MERN stack I have used Node JS to develop backend. It is a cross platform, back-end JS runtime environment which runs on v8 engine.

And the framework of Node JS I have used is Express JS.

To develop the backend and for making API Express is so much effective. Route handling is easier with it.

I have developed the back-end of my project handling some API's

- Registration and Login API
- Service demo handling API
- Conversation Handling API

Also have designed authorization functionality with the help of Express JS.

4.3 Interaction Design and User Experience:

The ui/ux is the design part of front-end development.

It represents how a user interact with the system, how the system response in use,
How it looks in different types of devices that means the responsiveness.

In this case I have used **bootstrap**. Also used a react package which is '**Reactstrap**'.

UI design is simpler and easier with 'reactstrap' than bootstrap in many case.

CHAPTER 5

Implementation and Testing

5.1 Implementation of Database:

To implement this part I have used MongoDB which is a document-oriented database program. It uses JSON format with optional models/schemas. It is a NoSQL database program.

In SQL database we use table format but in NoSQL as the data represented in a JSON (JavaScript Object Notation) format, models are used here.

Below I am giving the model/schema of the user I prepared to implement the database for ease of better understanding.

```
const mongoose = require('mongoose');

//user model/schema
const userSchema = mongoose.Schema({
  name: {
    type: String,
    required: true,
    minlength: 3,
    maxlength: 100
  },
  email: {
    type: String,
    required: true,
    minlength: 5,
    maxlength: 255,
    unique: true
  },
  password: {
    type: String,
    required: true,
    minlength: 5,
    maxlength: 1024
  },
  role: {
    type: String,
    enum: ['Buyer', 'Seller'],
    default: 'Buyer'
  }
}, { timestamps: true });
```

User Schema

Figure: 5.1.1

And the sample output of User database,

```
_id: ObjectId("6172b9c0bebf0a944916b11")
name: "হাসিবুল কবির"
email: "hasibul15-11196@gmail.com"
password: "$2b$10$j0JLLwJwk.AZliboNEAQK07viTYu7q0VTZ1NusoehiA5GGpEKaFmI"
role: "Seller"
createdAt: 2021-10-22T13:16:48.378+00:00
updatedAt: 2021-10-22T13:16:48.378+00:00
__v: 0
```

```
_id: ObjectId("61737f7345b5a094b4b8ead0")
name: "jahid hassan"
email: "jahid@gmail.com"
password: "$2b$10$j36jBlHUtZzjjvClD0tUyp.6a392f2YF8du9T7M0pHkPAL3oz0u90C"
role: "Buyer"
createdAt: 2021-10-23T03:20:19.127+00:00
updatedAt: 2021-10-23T03:20:19.127+00:00
__v: 0
```

```
_id: ObjectId("617380a355c22884fccdb88")
name: "shahadat hossain"
email: "shahadat@gmail.com"
password: "$2b$10$jXvftD0owNb2pLmhhb8tORNo3Sqw00AHRQXKeLdzBoyhVEN40ysi"
role: "Buyer"
createdAt: 2021-10-23T03:25:23.511+00:00
updatedAt: 2021-10-23T03:25:23.511+00:00
```

User database

Figure: 5.1.2

5.2 Front-end Design Implementation:

At first I have tried to implement the front-end with core html, jquery but after few steps I realized that these are not enough to design the front-end of an enterprise level system. Then I tried to learn the React which is a library/framework of Java Script. Which reach the frontend development to next level. It has reduced couple of my work from backend part. I could prepare some validation process with it more smartly.

5.3 Testing Implementation and Results:

Testing is an essential term of software management data flow. It must be needed to check how the system perform with respect to the expected outcome and requirements.

Testing can be implemented with two major ways. These are,

- Black Box Testing
- White Box Testing

One another has with included with the two, is Grey Box Testing.

White Box Testing is being implemented by third party. They can be a tester also a general user.

As my project haven't launched yet I have Implemented the testing process in the way of Black Box Testing. This term is being implemented by the programmer and associated persons with the development.

In the way of Black Box Testing the testing is going through Unit Testing process during the time of development.

Unit testing is the process of testing every functionality or component of the system part by part.

As example I have to go through the unit testing process during development. I had to check the error handling process working or not, the system can response to the request perfectly or not, authorization functionality working or not, about the response status etc.

I used **postman** development to check the response status of API.

Here a basic test report given below implemented by the process of unit testing of my project.

| FUNCTIONS | DESCRIPTION | STATUS |
|----------------------|--|---------------|
| Registration Process | User can registration choosing his role with validation. | Passed |
| Authorization | User should be authorized to login to the system | Passed |
| Server Response | Server will send response status and message to the client fluently | Passed |
| Private path | Without authorization user will not be able to visit every path/route of the | Passed |

| | | |
|----|---|-------------------|
| | system. The system will redirect the user to login page | |
| UI | User Interface will work properly, responsive, load data properly | Success rate- 95% |

Table: 1

CHAPTER 6

Impact on Society, Economy and Sustainability

6.1 Impact on Society:

The system I have built will have an effective impact on society. People can earn showing their different types of skills. Can be self-reliant.

And the people who needs skilled people for their work, or solution can hire from here very easily. They don't have to waste time in search of service provider.

It will make peoples life easier.

6.2 Impact on Economy:

Unemployment is a major obstacle to the economic development of our country.

Till now a large number of population of our country are unemployed.

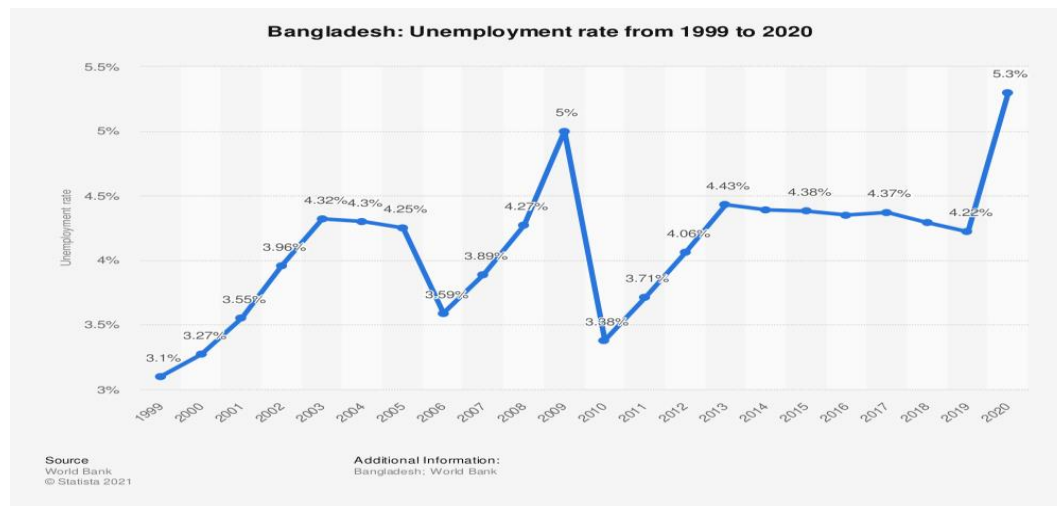


Figure: 6.1.1

We have also noticed that in this year during the pandemic situation huge number of people lost their job. This is especially true for the lower class people. But people can get job here without any hassle. They need not doing here and there for a job.

In this way unemployment will decrease and our economy will be more influential.

6.3 Sustainability Plan:

To achieve long-term goals we have to plan and maintain some strategies, activities which is called Sustainability.

I have also made sustainability plan. In this case I had to keep in mind about three major pillars of sustainability. These are-

- Economy
- Society
- Environment

Here I will discuss on the environment. After launching the project we need to analysis the term 'where it is going on'.

In future online services also should needed. So I have made a plan to work on it.

A feature also can be added in this system which is about skill growing up training.

So that people also gain skill from this system and can earn by burn it.

I think these plan will be able to enrich the sustainability of the system.

CHAPTER 7

Conclusion and Future Scope

7.1 Conclusion:

The present study about the project about provide and consume local services as people's needs. People who want to earn money providing local services will register as a service provider. And who needs any service find and choose the desired service. And contact with the provider of the selected service.

7.2 Future Scope:

I have already planned about the future scope of the project. Now it is focused on local job. Because it is so much needed in our country. People using different types of marketplaces for online services but the scope local job was not established yet.

But in future scope I desire to implement online service providing and consuming functionality. Also able to transaction through this system.

Also want to enrich the communication system between service provider and service consumer.

Another functionality to implement in the project is providing IT teaching as like an online IT teaching institution do.

So that the people learn from here and earn by working on those domain he learn.

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