

Digital Identity Creation and E-Commerce for FPO's

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ABSTRACT

We all know that some of the farmers suffer a lot in terms of money as they don't have proper land or get unexpected profits from their corresponding land holders. In this project we are trying to bridge the gap between farmers and their expected profits. Internet plays an important role in our daily life. We use internet daily almost for every single work. Before e-commerce buying and selling were done without internet physically in the markets but after the arrival of e-commerce in India our life has become more convenient because of its number of advantages. Online shopping is a part of e-commerce which is done mostly by the users due to e-commerce websites in India which allows us to buy and sell the products according to our choice at affordable price. E-commerce website has a lot of impacts on different markets and retailers. In this project we are introducing e-commerce in terms of seeds and crops which will be beneficial for customers and farmers both as well as for investors who are willing to sell their goods.

The other thing our project focuses on is creating farmer's unique identity that is his digital identity which will become easy for investors to find the respective farmers and hire them for work.

1. Introduction

Our project basically focuses on is every farmer should get opportunity to earn and grow goods. The question arises is how? We know that there are some investors who are ready to invest money on farmers for growing goods on their land. Our main aim is to connect such needy farmers and willing investors together. For that we will make a web application in which each farmer will have their own digital identities in which all records of farmer including personal details, past activities, work records, etc. will be stored. A contract PDF will get automatically generated by our application if both investor and farmers agree. In spite of this we will make a hybrid application which means a website and app both so that user can use it according to their convenience. In this project we are using E-Commerce for selling farmer's crop online. Customer can directly buy goods from farmer using our website/mobile application. Customer can order beforehand specifying the requirements.

1.1 Proposed System

We all know that in today's era of internet, e-commerce is growing by leaps and bounds keeping the growth of internet very rapidly. In many cases, e-commerce businesses are resorting to having a counterpart which is internet or e-commerce driven. People in the developed world and a growing number of people in the developing world now use ecommerce websites on a daily basis to make their everyday purchases. People now a day's prefer buying items online hence saving their time of shopping and availing great cash back offers online. But no such facilities for selling crops and seeds are available online. Moreover no such facility is available where farmers get their digital identity online. We are trying to overcome that which will lead to increase in farmer's income and will help farmer's to sell their goods to online.

1.2 Motivation

Now a days, number of farmers are doing suicide because they don't get enough income according to their work. So that we decided to do this project which will help in increase their income and make them happy. Other than this online marketing is very common concept now a days which motivated us to bring that concept in seeds and crops which will make farmers and customers earn more profits on goods happily.

1.3 Problem Definition

To develop an android application which will help farmers to earn more profit and have an online contract with investors about the money and time too. Information about farmers will be collected from various FPOs based on the location. And then Digital Identity will be created of that farmers.

Likewise investors and farmers both will be able to sell the crops which will be dealing with E-commerce concept.

2. The Planning Process

Our goal was to develop a web application that would be attractive enough, have a professional look and user friendly. So that people of all age groups would be its end users. Our job started with subdividing the entire task and setting milestones. The milestones would be a marker of percentage of the work actually accomplished and success story. The entire planning process took the following steps.

2.1. Defining Use Case Model

Investors can search available farmers registered through FPOs online for making work on his land. A contract PDF will be generated between farmers and investors for the duration of time they are working together through our application. The PDF includes time periods for which they are working for investor and the profit they will make for the specified duration.

Farmers and investors both can sell their goods online through the e-commerce application developed. Customer can even pre-order us their requirements if not sufficient quantity of what he requires is available. Customers Adds items into the shopping cart and finally orders the products online when the electronic copy of the bill is automatically generated. So, from the stated use case model we found out the following to be the primary requirements:

- A registration page
- Search option
- Shopping cart

- Billing system
- Contract PDF
- Pre-order of goods

2.2. Domain Modeling

As with most of the web applications developed using the Object Oriented Programming (OOP) we followed the same. So we moved forward for Object Oriented (OO) analysis. We are developing hybrid application which follows OO analysis using Ionic Framework.

2.3. Architectural Pattern

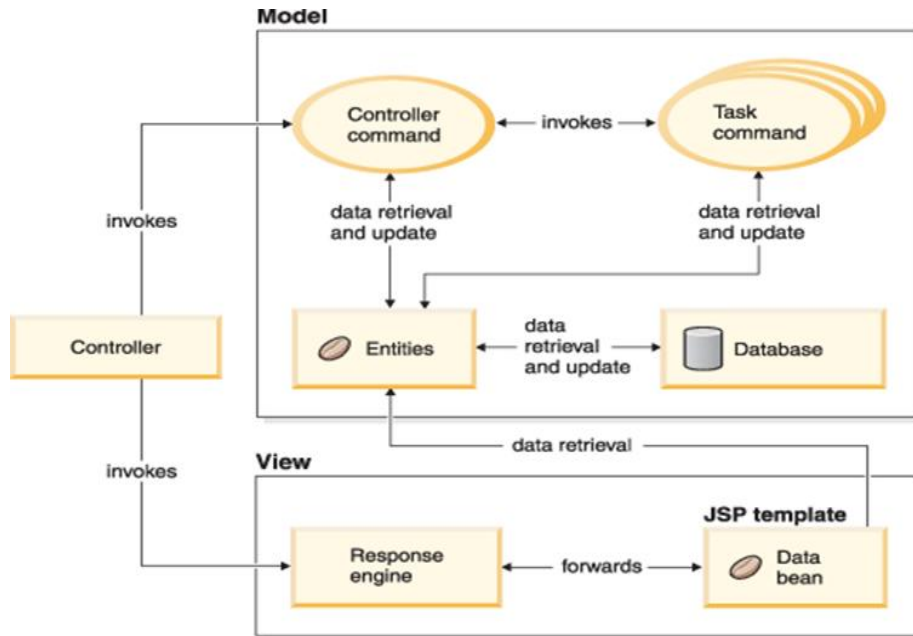


Fig 1: MVC model

Our application has been developed using the standard “Model-View-Controller” pattern. The model-view-controller (MVC) design pattern specifies that an application consist of a data model, presentation information, and control information. The pattern requires that each of these be separated into different objects.

The model (for example, the data information) contains only the pure application data; it contains no logic describing how to present the data to a user. The view (for example, the presentation information) presents the model's data to the user. The view knows how to access the model's data, but it does not know what this data means or what the user can do to manipulate it. Finally, the controller (for example, the control information) exists between the view and the model. It listens to events triggered by the view (or another external source) and executes the appropriate reaction to these events. In most cases, the reaction is to call a method on the model. Since the view and the model are connected through a notification mechanism, the result of this action is then automatically reflected in the view.

3. Development tools

The entire development process has been subdivided into two: the front end development and the backend development.

The front end comprises of the visually visible parts such as the home page, admin panel, shopping cart page, register FPO page, generate PDF page. The back end contains the database and its interaction with the front-end.

3.1. Front End Development

The front end was initially raw coded using Type Script. Type Script is a client side scripting language which is a dedicated language for web development. Type Script code was simply mixed with the Hypertext Mark-up Language (HTML) code. Hypertext mark-up language is the language used to design the web pages of an application. A static page is an HTML document that is stored on the web server and does not change. This was performed by Cascading Style Sheet (CSS). CSS is a style sheet language used for describing the look and formatting a document written in a mark-up language. These CSS files are linked with the class files to put the panels in order, the text with correct font, size and color. We introduced Type Script in our application. Type Script is a client side scripting language most commonly used as part of web browsers and its implementations allow client side scripts to interact with the user, control the browser, communicate asynchronously and alter the document content that is displayed.

For example, in our website the clients while registering are asked to provide their specifications which contain their name, email address, age, etc. If they miss any of the criteria then immediately the browser asks him for filling the particular field. This is implemented by a Type Script.

3.2. Back End Development

In our application we have chosen the Cloud Fire store to hold the database. It is a cloud database management system. The main reason of using this is it can scale effortlessly as your app grows. Cloud Fire store allows you to run sophisticated queries against your data. This gives you more flexibility in the way you structure your data and can often mean that you have to do less filtering on the client, which keeps your network calls and the data usage more efficient.

3.3. Database Design

One of the most important and challenging task is the database design. The information passed by the customer while registering and registered FPOs with all their details are stored in the database. The products with their identification, description and image are stored in the database. Moreover, if

we update any of the featured products the update takes place in the database. So the program has a lot to do with the database.

In our database there are different columns such as add FPO, add farmers, add items, product details, sell details, PDF generated, etc. Each table has its one or more attributes which included its detailed information like name, id, address, etc. Accessing all the queries becomes easy through cloud database. Other than this more tables are added in the database according to the requirement.

4. Coding Process

Our application has been developed using Model-View-Controller format as standard. We have separate files containing several functions to implement the proposed functionalities. View is a separate folder holding all the required files with .ts extension containing HTML tags and codes that creates the actual WebPages. These files have links to other files in the file holder entitled "Controller" which has necessary functions to correspond to the database.

Code for adding FPOs in the database is

```
createFpo(fpo: FpoDetails){
  letfpoID = this.afs.createId();
  console.log(fpo);
  letdocRef: DocumentReference = this.afs.doc(`/FpoList/${fpoID}`).ref;
  console.log(docRef);
```

Code for adding farmers in their specified FPOs is

```
createFarmer(farmer: FarmerDetails, fpoID: string){
  letfarmerID = this.afs.createId();
  console.log(farmer);
  letdocRef: DocumentReference = this.afs.doc(`/FpoList/${fpoID}/FarmerList/${farmerID}`).ref;
  console.log(farmer);
```

Code for adding items to sell is

```
createItem(item: ItemDetails){
  letitemID = this.afs.createId();
  console.log(item);
  letdocRef: DocumentReference = this.afs.doc(`/ItemList/${itemID}`).ref;
  console.log(docRef);
```

Code for accepting orders is

```
asyncaddOrder(salesOrder : SalesOrder){
  letorderID = this.afs.createId();
  console.log(salesOrder);
  letdocRef: DocumentReference = this.afs.doc(`/SalesOrderList/${orderID}`).ref;
  console.log(docRef);
```

5. Project Architecture and Design

5.1. Architecture

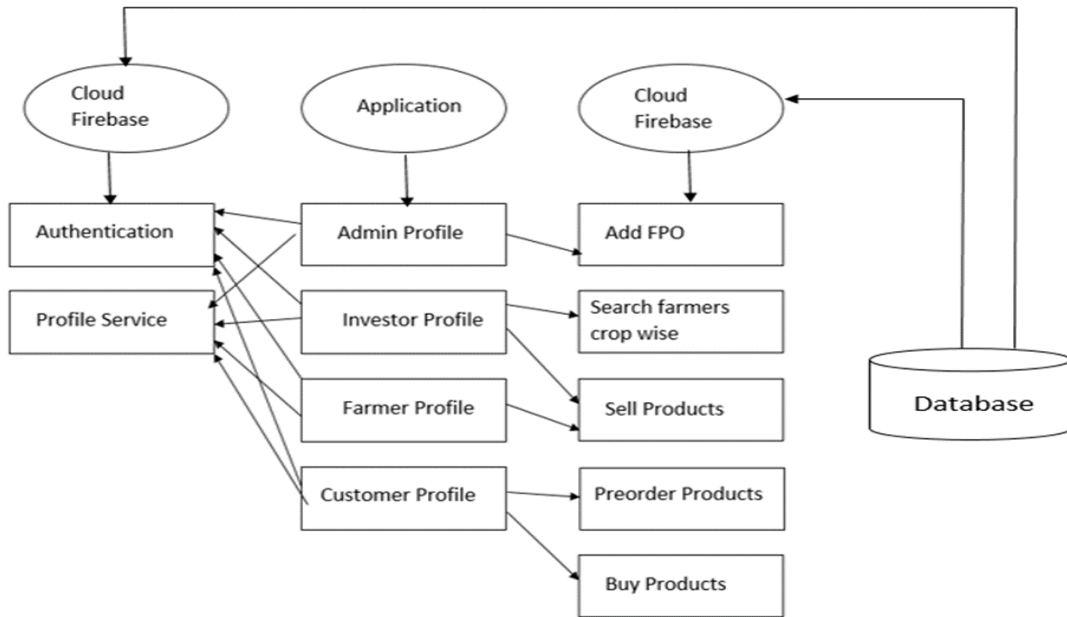


Fig 2: Architecture Diagram

1. FPO contains list of farmers. Admin registers the FPO.
2. FPO add farmers.
3. Investors can access the list of farmers.
4. Investors can also sell the crops.
5. Customers can purchase crops from Investors as well as Farmers.

5.2 Design

The design of project consists 4 modules:

A. Admin Module:

In this module admin can add FPO's and add farmers in the FPO's.

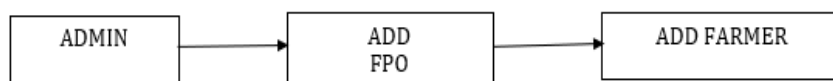


Fig 3: Admin Module

B. Investor Module:

In this module investor who wants to invest can search FPO's based on interested crops to grown and hire farmers willing to work in their land. Investor can sell crops grown by farmers to the customer.

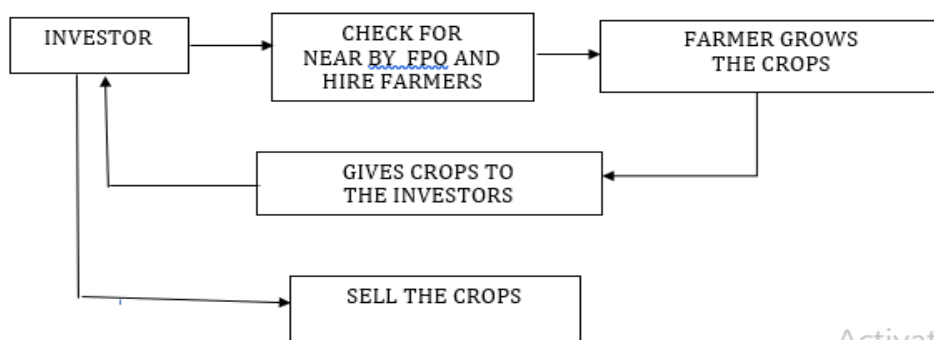


Fig 4: Investor Module

Activate

C. Farmer Module:

In this module if farmer have their own land they can grow their own crops or they can work for investors also they can sell their crops.

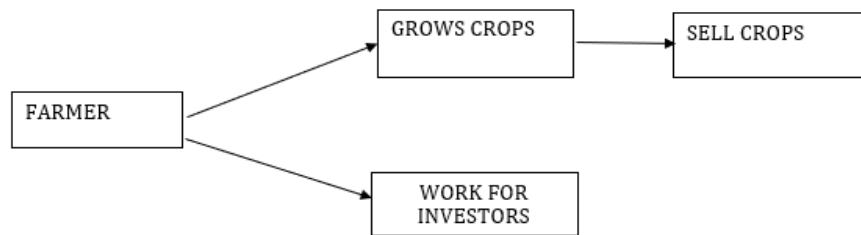


Fig 5: Farmer Module

D. Customer Module:

In this module customer can purchase crops from investors.



Fig 6: Customer Module

6. Conclusion

This project is design in order to increase the small farmer's income by connecting them with investors who are ready to invest. Due to this project buying and selling of crops became easy and possible which will give double profit to the farmers. This is a good step toward cashless transaction and to avoid the third party involvement which is unnecessarily increases the cost of product. The cashless transaction avoids the utilization of black money and makes system transparent in terms of taxpaying. There are no time barriers in selling the products. One can log on the internet even at midnight and can sell products at a single click of mouse. An interactive user friendly and focused Web App in the form of online shop can generate good business.

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