

Mini Project Report

(FTMS-Farmers' Transaction Management System)

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1 Abstract

For a farmer getting crops harvested after many months' long process is just half of the task, getting crops sold to market-place can be tiring, hard and extremely disadvantageous to a farmer if he is not completely acquainted with the process. This is where the FTMS steps in; it is a simple all-in-one application for farmers, retailers(buyers) and corporations alike that enables an easy flow of information and communication between the users. This application allows retailers to raise quotes on purchase of crops from farmers which not only makes it easier for farmers to contact their buyers directly but also allows other customers to see their competitions. This process removes the need for a middleman for the purchasing process which tend to take their own proportions of money from farmers. All a farmer has to do is choose retailers from a list of retailers who are offering the best quote for the crop and contact him directly instead of scrambling in a market searching and asking around for the best buyer. With just a click away, all these features can really come to aid for anyone associated with the agriculture business. But mainly, from this project, we hope to create an easier world for farmers who are the driving force of our nation's growth.

2 Introduction

FTMS is an user friendly application that allows easy communication between farmers and crop buyers during the purchasing phase. It allows buyers or cooperatives to raise quotes on certain crops they wish to buy and these are made visible to farmers making finding the right buyer a tireless process. The purpose of the project is to ease the purchasing and selling process of farmers and buyers alike for it is the most critical stage of their entire harvesting process as it determines the profits and losses that are thereby generated.

It is SQL and Python-Tkinter based application that is mainly dependent on Database Handling of various Tables. The project allows new users to register as 2 type of users: Farmer or buyer. Upon the selection, each user is transferred to their corresponding portal where they can access a variety of facilities and options. Some of the key features of our application include: Login and Sign-Up facility, buyer search using User-ID, best search based on quote and location for farmers, adding and removing quotes for buyers along with visibility change feature and all quote issued history.

To prevent confusion and to increase appeal, a creative user interface was used on the application. Furthermore, to keep privacy and information safe of each user, a user ID-password system was implemented. Each user has the freedom to choose his or her own User ID with a condition that it is not already in use with another account, on which case the application will notify the same. The users can also Sign-out of their accounts and allow other users to Log-In without the need to close the application.

3 ER Diagram

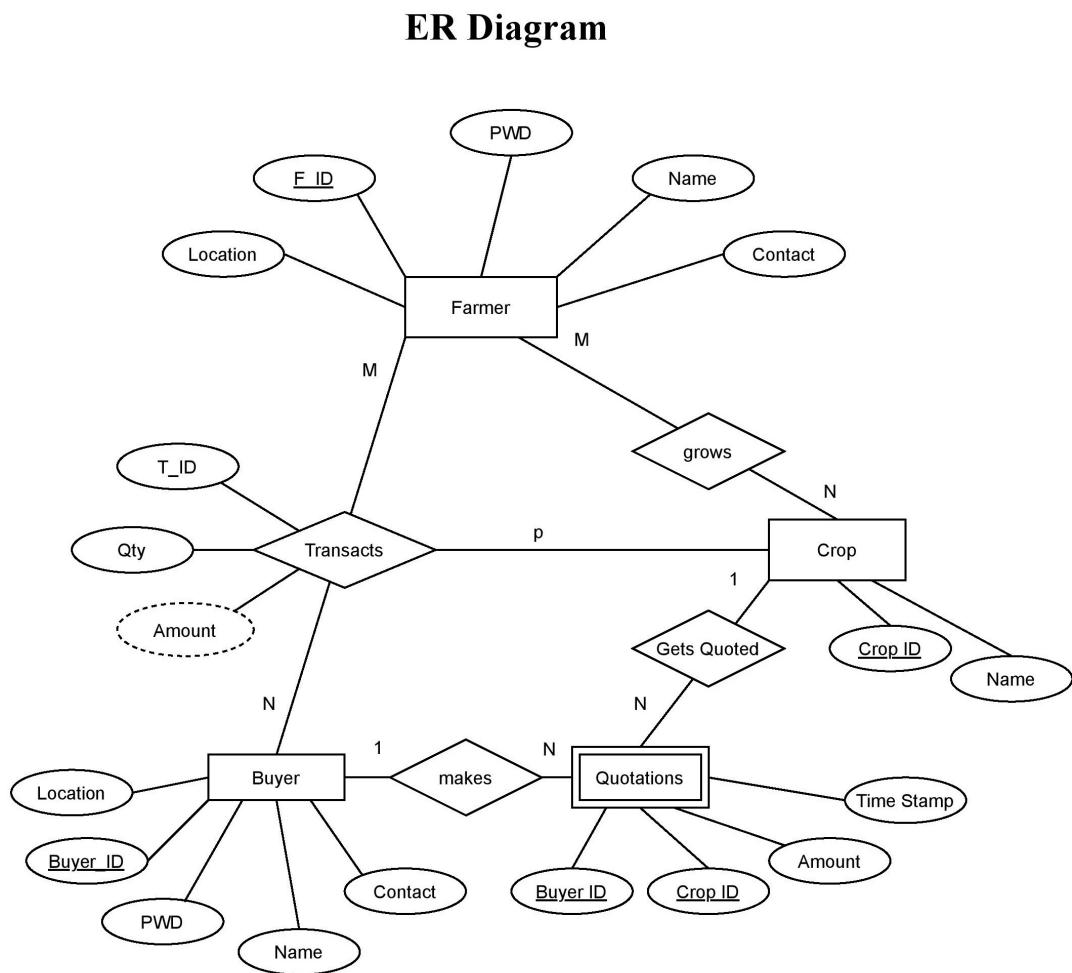


Figure 1: ER Diagram

4 ER mapping and Normalizations

4.1 Mapping ER model to the relational model

4.1.1 Mapping of regular entity types

The regular entity types and their mapping to the relational model is shown below (* indicates that normalization has been used for that entity type, and it will be explained in detail in the next section):

1. Farmer: Relation FARMER(F_ID, Name, PWD, Contact, Location)
2. Buyer: Relation BUYER(B_ID, Name, PWD, Location, Contact)
3. Crop: Relation CROP(CROP_ID,Name)

4.1.2 Mapping of Weak entity types

The weak entity here is Quotation, as it does not have its own primary key. It is mapped to the relational model as the relation QUOTATIONS(B_ID,CROP_ID, Amt, Timestamp). B_ID and CROP_ID are foreign keys from BUYER and CROP relations.

4.1.3 Mapping of binary 1:N relationship types

The binary 1:N relationship types “BUYER makes QUOTATIONS” and “CROP gets quoted” implemented when the weak entity QUOTATIONS is implemented.

4.1.4 Mapping of binary M:N relationship types

The binary M:N relationship type here is FARMER grows CROP and it is modelled as the relation CROP_GROWN(F_ID,CROP_ID). F_ID and CROP_ID are foreign keys from FARMER and CROP relations respectively.

4.1.5 Mapping of N-ary relationship types

“Transacts” is a ternary relationship type involving the FARMER, BUYER and CROP entity types. It has been mapped to the relational model as the relation TRANS(T_ID,F_ID,B_ID,CROP_ID, TIMESTAMP).

F_ID, B_ID and CROP_ID are foreign keys from FARMER, BUYER and CROP relations respectively.*

4.2 Normalizations

The first and the second normal forms are satisfied in the tables inherently. Explicit normalization is required only in the TRANS relation, where QTY (see ER diagram) depends on T_ID and AMT depends on QTY. This transitive dependency is removed by using the 3rd Normal Form, by creating the relation AMOUNTS(T_ID, AMT, QTY). T_ID is the primary key for this relation, it is also a foreign key from TRANS relation.

5 Results

The following schema was followed for developing the user interface for FTMS

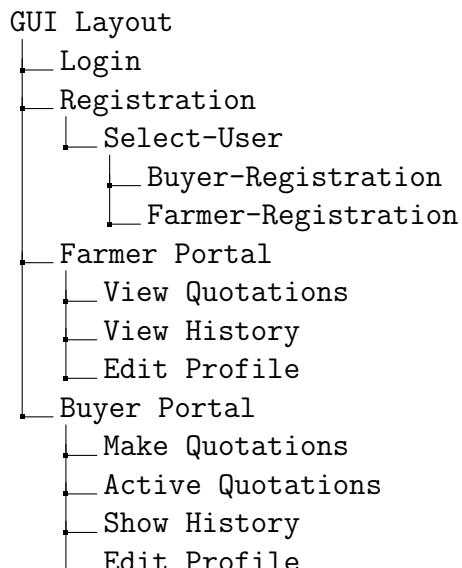




Figure 2: Login Screen

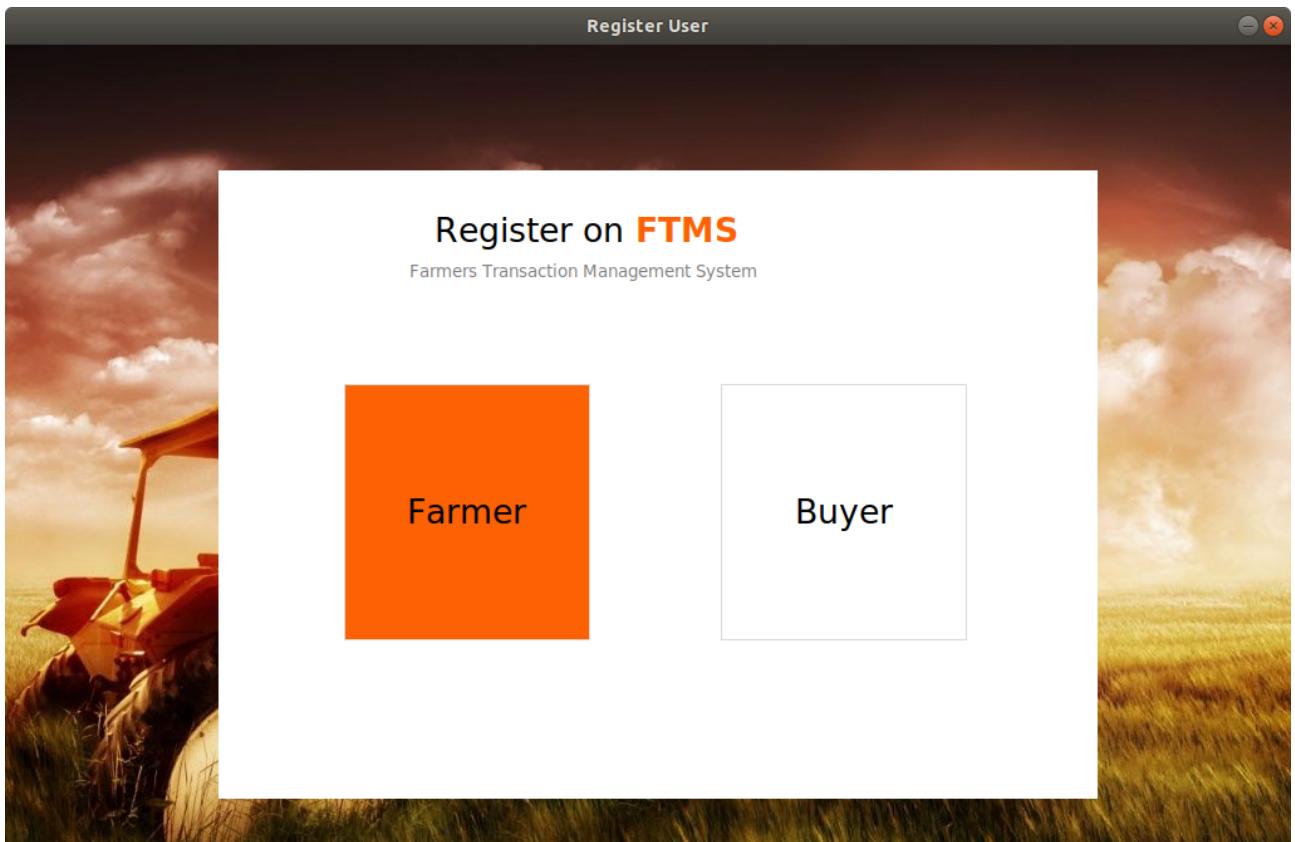


Figure 3: Registration Page

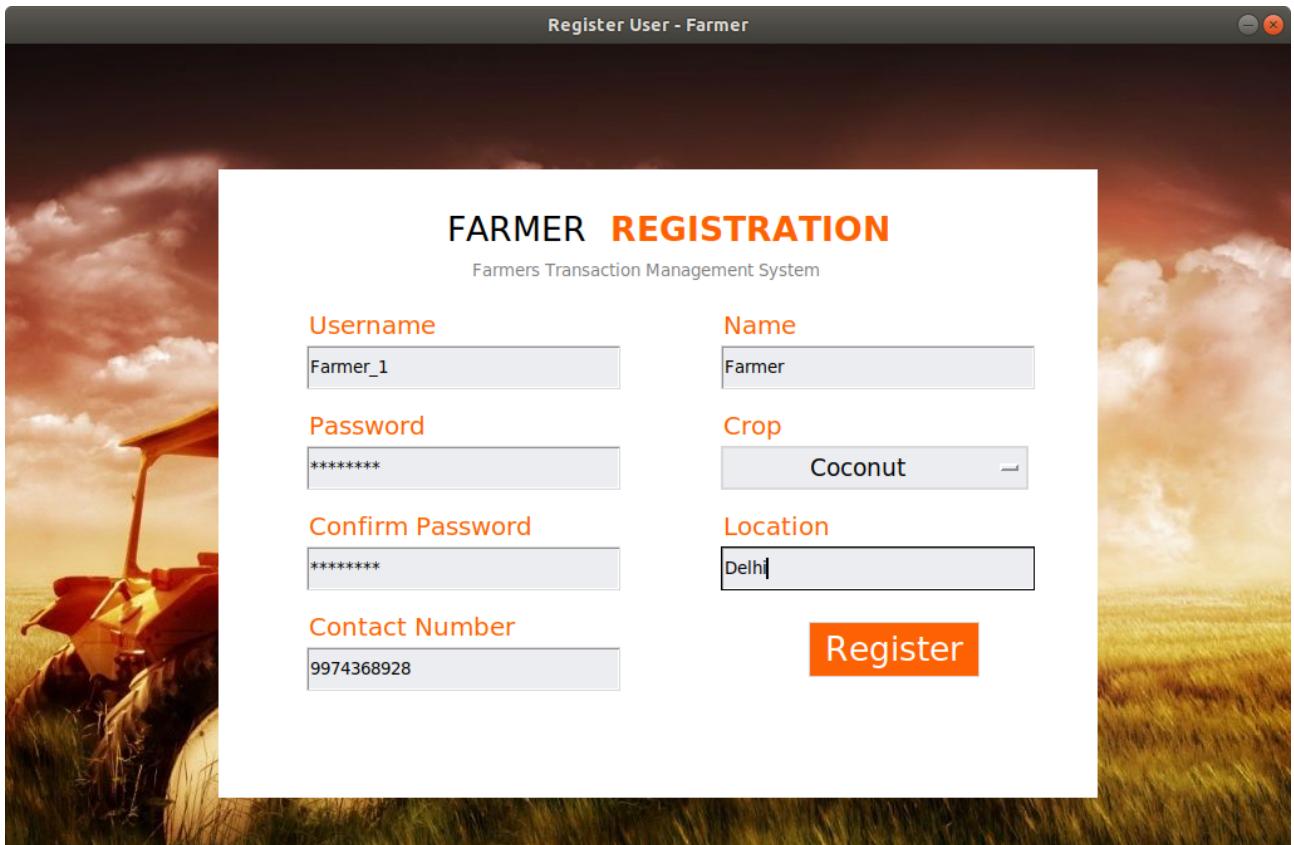


Figure 4: Registration Page for Farmer

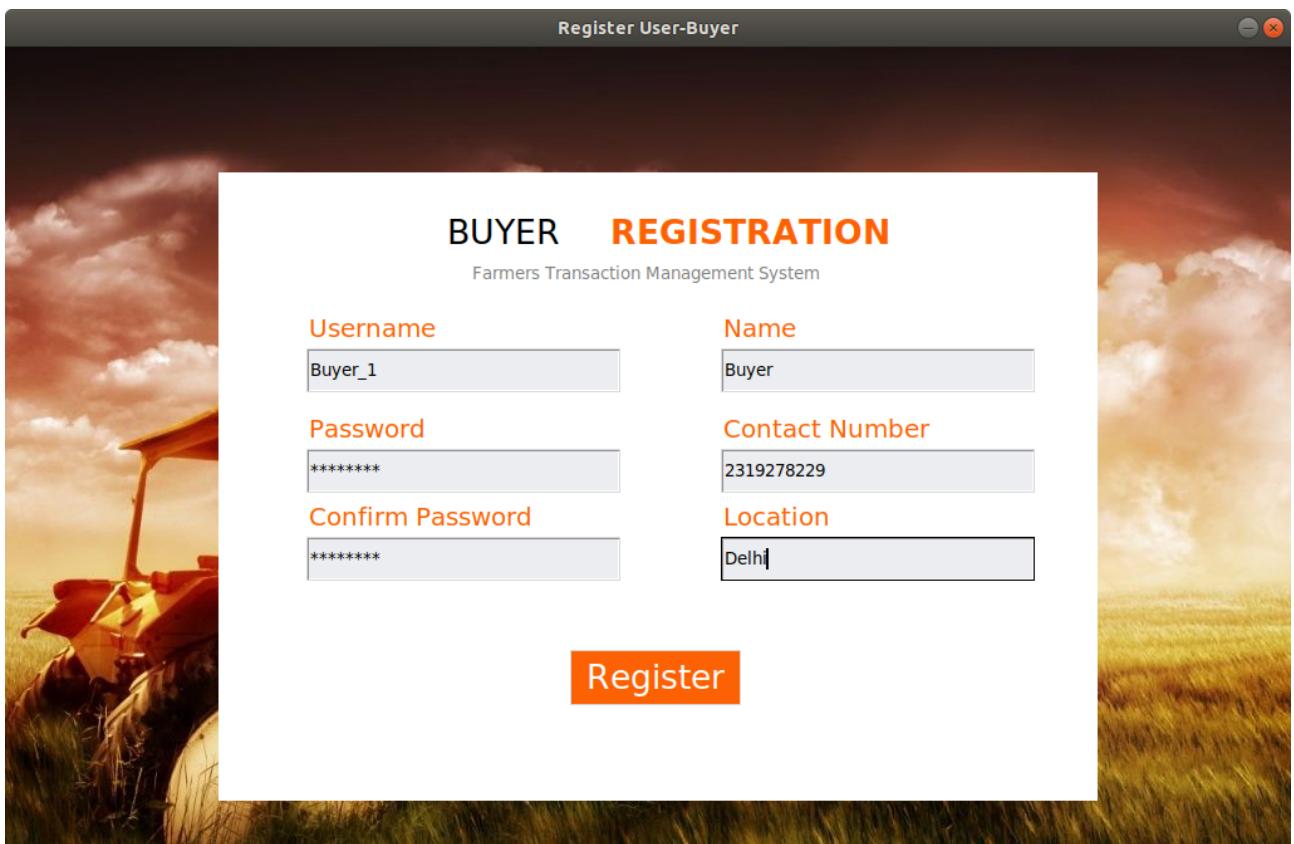


Figure 5: Registration Page for Buyer



Figure 6: Farmer Portal

A screenshot of a desktop application window titled "Quotations". The background is the same scenic agricultural landscape as Figure 6. The main content area displays a table titled "All Avialable Quotations" with the subtitle "Farmers Transaction Management System". The table has four columns: "Buyer", "Crop", "Quote", and "Timestamp". It contains two rows of data:

Buyer	Crop	Quote	Timestamp
Buyer_1	Coconut	11.0	2021-04-05 18:32:34.169859
Buyer_2	Coconut	14.0	2021-04-05 18:33:24.017221

Below the table, there is a text input field labeled "Quantity" with the value "10" and a button labeled "Contact Buyer and Generate Transaction". There is also a "Back" button.

Figure 7: Show Quotations for Farmers

TRANSACTION ID	BUYER ID	CROP	AMOUNT	Timestamp
1	Buyer_1	Coconut	110.0	2021-04-05 18:35:13.037635

[Back](#)

Figure 8: Show Past History of Transactions for Farmers

Edit Farmer Profile

Register on FTMS

Farmers Transaction Management System

Change Contact Number
9974368928

Change Location
Delhi

Change Password

Add Crop
Wheat

Confirm Change Password

[Save](#) [Back](#)

Figure 9: Edit Farmer Details

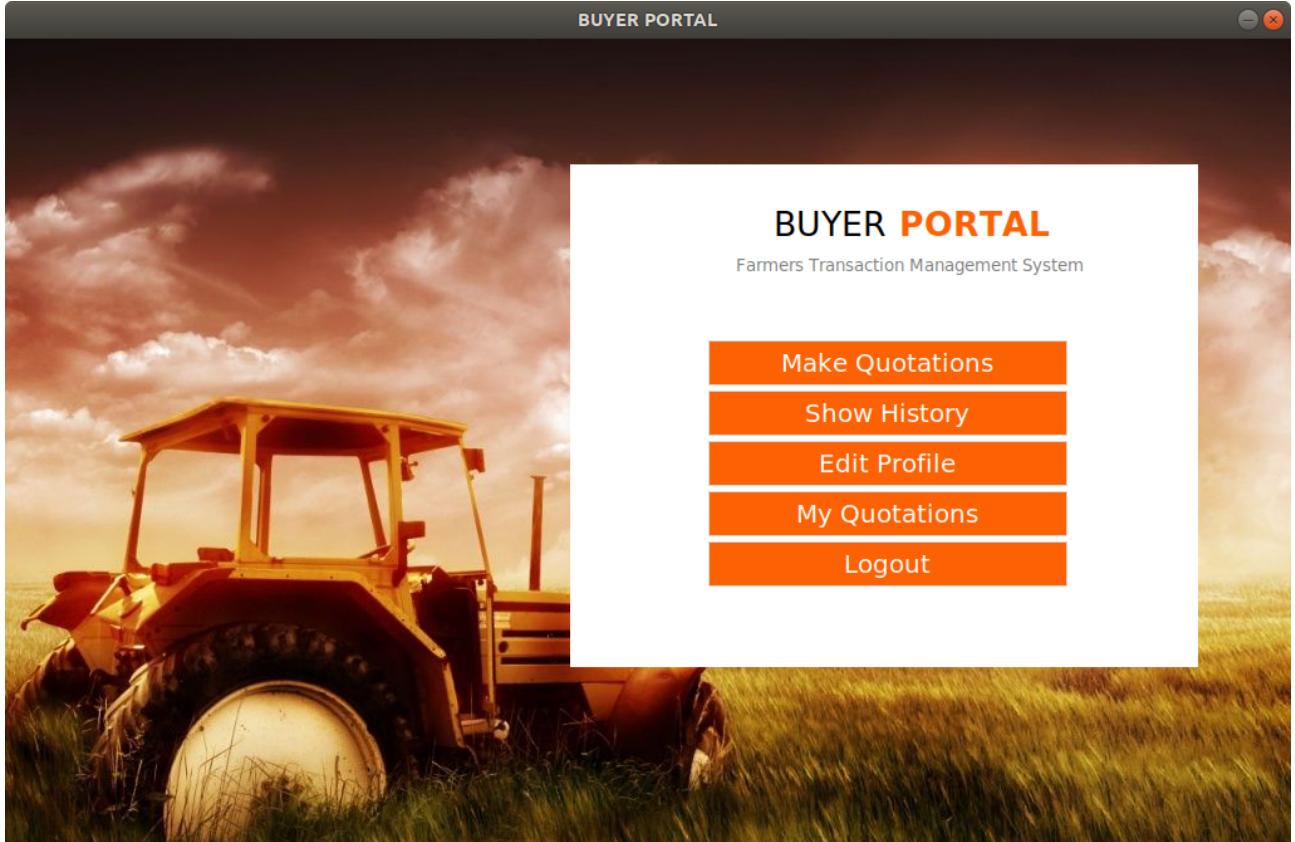


Figure 10: Buyer Portal

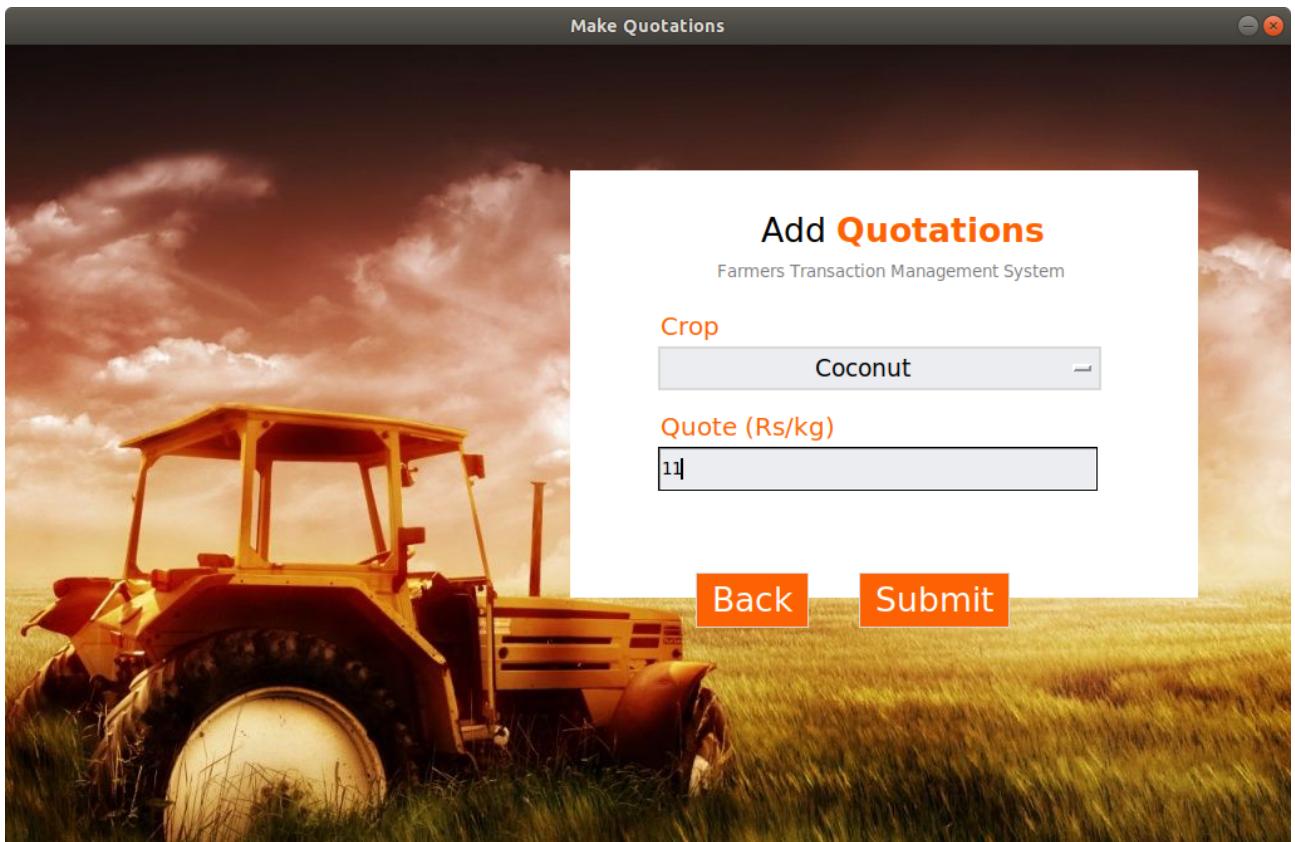


Figure 11: Make New Quotations

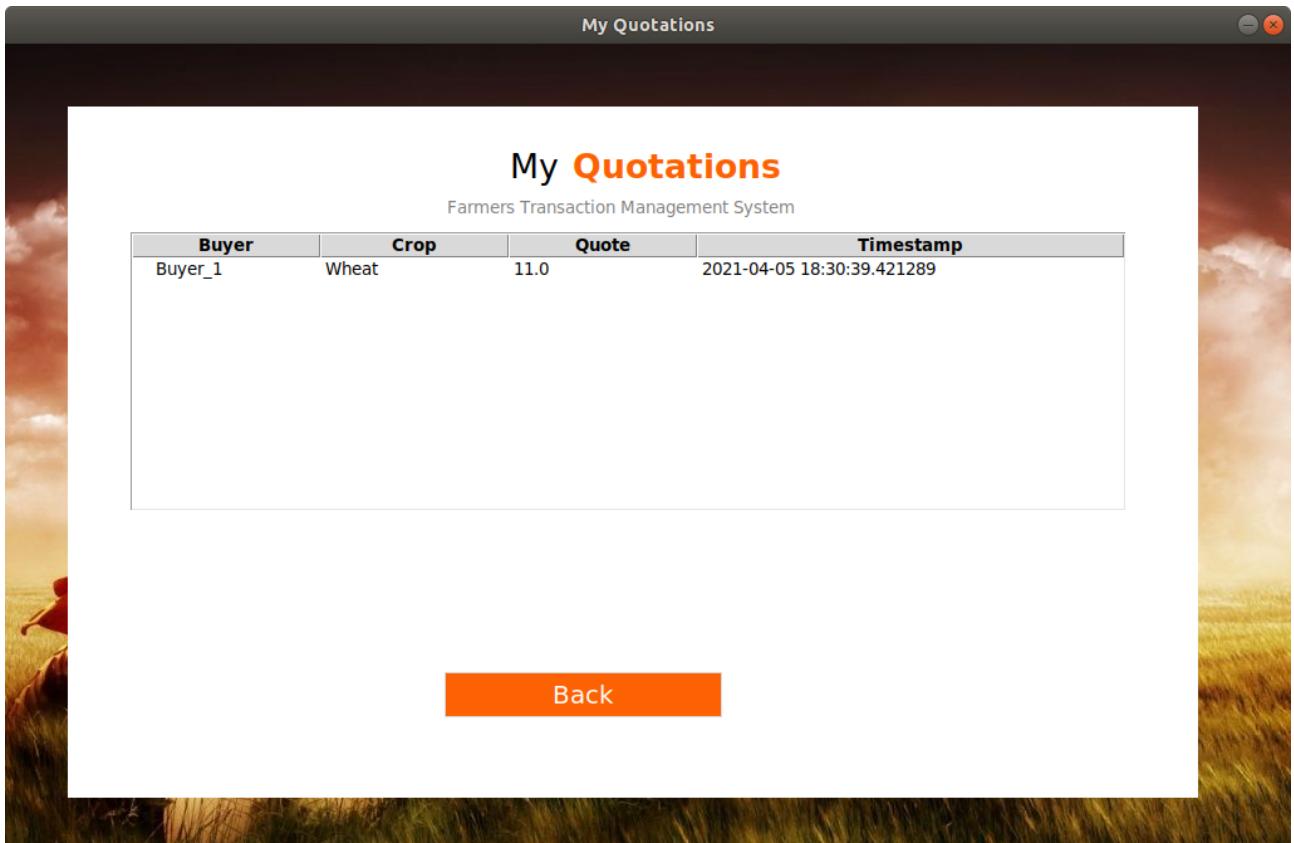


Figure 12: Show all Active Quotations

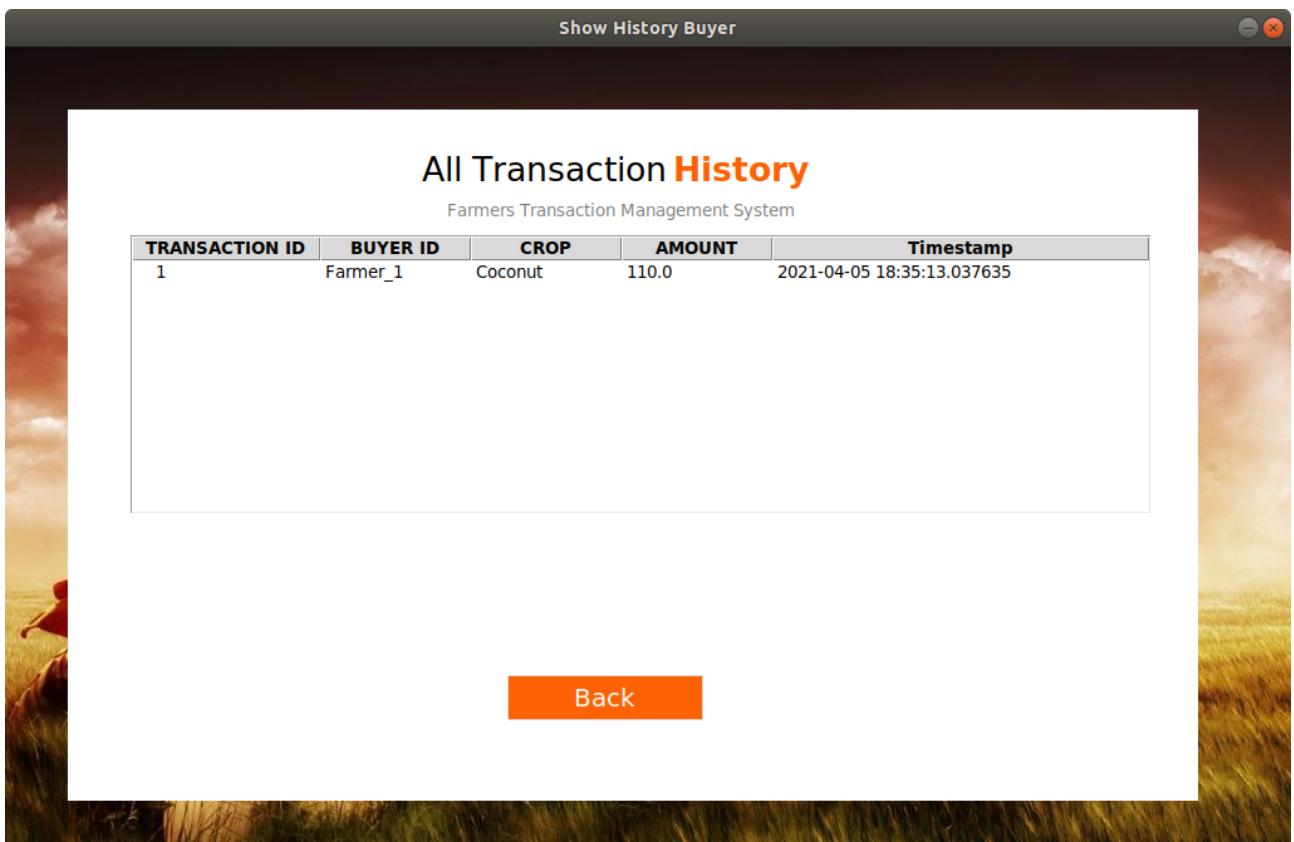


Figure 13: Show Purchase History of Buyer

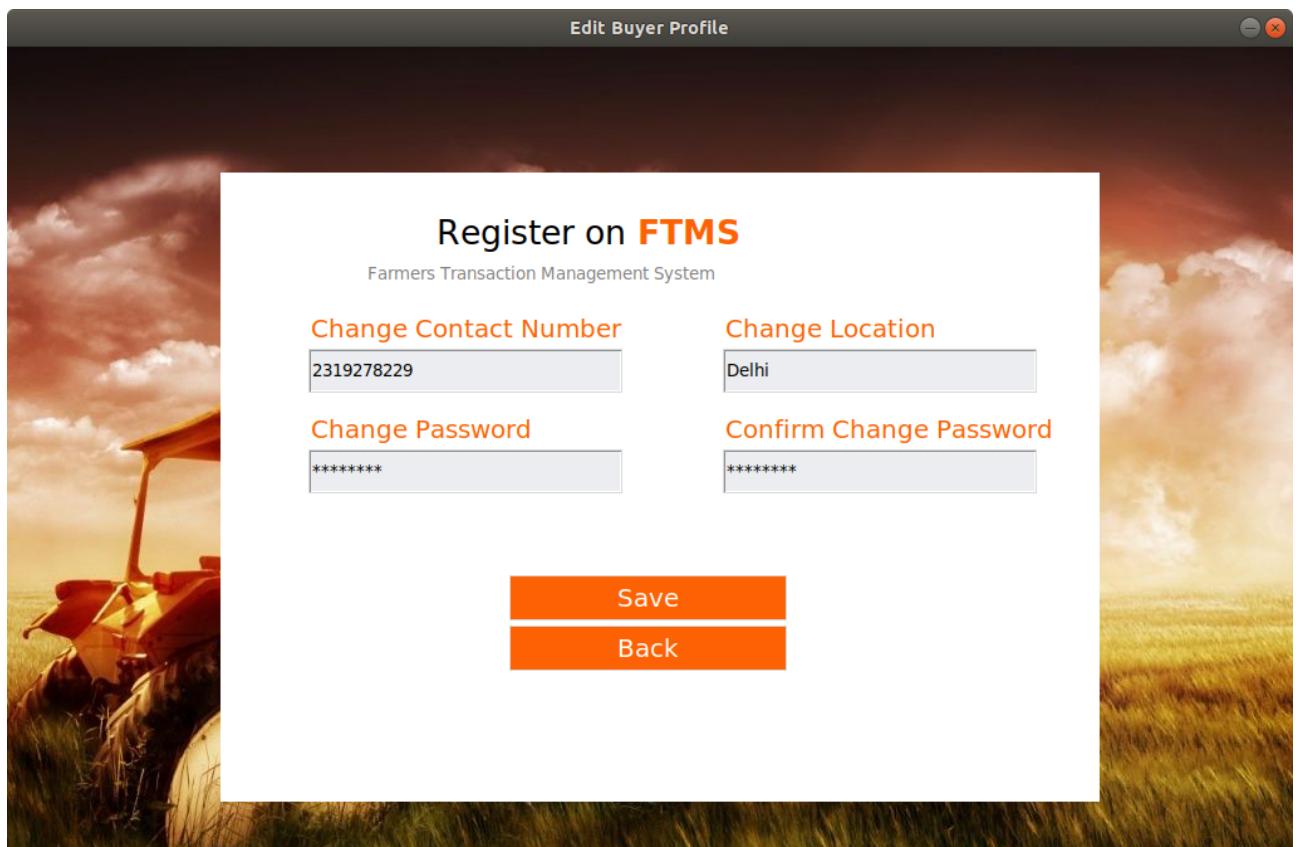


Figure 14: Edit Buyer Profile

6 References:

1. <https://farmityourself.com/how-do-small-farmers-sell-their-crops/>
2. <https://www.farmerslink.org.uk/where-and-how-farmers-can-sell-their-produce/>
3. <https://www.thebetterindia.com/101983/farmer-friend-online-vegetables-direct-from-farmers/>

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