A Mini Project Report on

e-Tendering Portal

Submitted in partial fulfillment of the requirements for the award of the degree of

Bachelor of Engineering

in

Department of Computer Engineering

by

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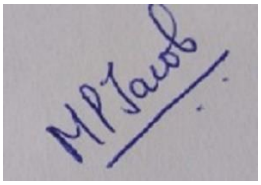
Approval Sheet

This Mini Project Report entitled ***"e-Tendering Portal"*** Submitted by ***"Omkar Chougule"(19102025),"Shreya Godbole"(19102034),"Prathamesh Hambar"(19102001),"Catherene Joshi" (19102007)*** is approved for the partial fulfillment of the requirement for the award of the degree of ***Bachelor of Engineering*** in ***Department of Computer Engineering*** from ***University of Mumbai***.



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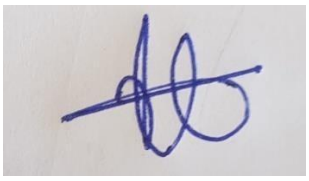
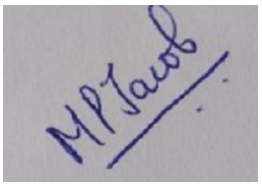


Prof. Sachin H. Malave
Head Department of Computer Engineering

Place: A. P. Shah Institute of Technology, Thane
Date: 18th December, 2020

CERTIFICATE

This is to certify that the mini project entitled ***"e-Tendering Portal"*** submitted by ***"Omkar Chougule" (19102025),"Shreya Godbole" (19102034), "Prathamesh Hambar" (19102001),"Catherene Joshi" (19102007)*** for the partial fulfillment of the requirement for award of a degree ***Bachelor of Engineering*** in ***Department of Computer Engineering.***, to the University of Mumbai, is a bonafide work carried out during the academic year 2020-2021.



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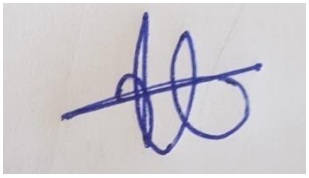

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Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

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Abstract

The rapid growth of technology has given remarkable opportunities to both small as well as large scale businesses via The Internet. Also, convenience has been one of the principal motivations underlying customer inclinations to adopt e-services. A tender is an act of inviting bids for a project. It is a method through which organizations invite bids for huge projects which should be applied for within a defined deadline. Competitive Bidding executes the understanding and translation of customer needs and requirements to the selection of capable suppliers, to realize the cost-effective acquisition, receipt, and payment of vital inputs and raw materials. Traditionally, this process is quite time- consuming. e-Tendering Portal is comparatively faster. The basic function of this system is to avail the tender online to the customers ensuring transparency between the customer and supplier while still maintaining secrecy with encryption and avoiding all major malpractices. The customer sends an Invitation to Tender (ITT) by filling a form. The supplier can respond to the Tender and submit their best competitive offer. The lowest bidder (L1) or the offer that fits the customer's requirements or the supplier with the highest ratings is awarded the contract.

Content

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List of Abbreviations

ERP	Enterprise Resource Planning
ITT	Invitation to Tender
L1	Lowest Bidder

Chapter 1

Introduction

A tender is an act of inviting bids for a project. It is a method through which organizations invite bids for huge projects which should be applied for within a defined deadline. Rather than the old paper based method, "e Tendering" is a process for sending and receiving tenders by electronic means. In our system, we tend to create a similar system that would collect data from both ends. Our primary goal is to minimize the risks and keep it secure using effective security mechanisms.

1.1 Problem Definition

In this system, the aim is to build a web portal on which the consumer can fill an easy-to-fill tender to be floated resulting in the selection of the most ideal quotation proposed by the vendors. The system would be designed in such a way that maintains transparency, yet keeping data confidentiality.

1.2 Objectives

^ To create an efficient e-Tender portal system through implementation of a comprehensive end-to-end e-procurement solution.

^ To create a coherent system by improving transparency and accountability in the tendering process.

^ To create a user-friendly portal for easy data entry.

^ To provide equal opportunity to small vendors who get sidelined in the current system full of irregularities

^ To encourage a paperless environment by covering end-to-end activities yet providing enough control over different tendering activities.

1.3 Scope

Due to the era of digitalization, tendering systems have evolved exponentially over the few decades. Companies continue to prioritize digital transformation to become more efficient, cost-effective and transparent. This becomes important to gain public trust. Companies are now inclined to use digital tools to improve efficiency, reduce costs and increase insight into profitability. With these tools, they have earned a more strategic and involved role in the business.

1.4 Existing Project

In the current tender handling system all the tenders are processed through documents. It is a manual system. All tender notices are given in newspapers with the details about work.The contractors read the tender notification and buy the tender schedule by paying the tender fee if they are interested to do that particular work. The contractors send submission details which includes quotation of the tender before tender submission closing date through post or by hand. On evaluation date, all the tender details submitted by the contractors are evaluated. It is then decided to whom to give that work. The contractor who is eligible and quoted for less amount is awarded the contract. This

process is not only time consuming but also expensive due to more person hours, travel costs, etc for both the customers as well as vendors. The personal data is not protected. Both physical tendering and the current e-Tendering Portal systems have ambiguities in its implementation which could raise security and legal issues.

Chapter 2

Literature Review

[1] Juneja et.al explains the basic idea of E-Procurement. E-procurement has been in existence for a long time in one form or the other; earlier it was done through electronic data interchange. It is nothing but electronic data transfer to support operational, tactical and strategic procurement. In the internet-based system, processes like phase requirement definition, sourcing, solicitation, evaluation, contracting and contract management are replaced by e-sourcing, e-tendering, e-reverse auction, e-ordering and web-based ERP.

[2] Martin Betts et.al proposes a new e-tendering architecture. This paper identifies key security and legal issues to be addressed in the design of e-tendering systems. Distributed trusted third parties were used to secure large-scale operations.

[3] The reference regarding the documentation and framework that is best suitable for python is Django. The website gives a high-level overview of how it's organized. The Reference guides contain technical references for APIs and other aspects of Django's machinery that describe how it works and how to use it whereas the 'How-to' guides guide you through the steps involved in addressing key problems and use-cases.

Chapter 3

Technology Stack

3.1 Python

Python is an interpreted, high-level and general-purpose programming language. The entire GUI and processing in this project will be done in python. In this project, we are going to use python's web-base framework, Django. Django's primary goal is to ease the creation of complex, database-driven websites.

3.2 SQLite

SQLite is an open-source database that helps to interact with relational databases. SQLite is stored as a single file. This makes sharing databases easier.By default, the configuration uses SQLite.

3.3 Bootstrap

Bootstrap is a framework which is used to create user interfaces in web applications. It provides css, js and other tools that help to create required interfaces. In Django, we can use bootstrap to create more user friendly applications.

Chapter 4

Benefits and Applications

4.1 Benefits for Society

- e-Tendering Portal is useful because it guides the vendors in a structured way as it works in a step-by-step process throughout the application filling process for both customers and vendors.
- There would also be information about how to apply for the necessary legal documents at the concerned local/state/central governing authorities.
- The E-tender system is divided into discrete sections to provide the buyer with adequate information.
- The system has such as design flair and addressing different criteria, so it is much easier for the evaluator to reach the objective decision with the grading process.
- It includes fool-proofing mechanisms. For example, A bidder cannot submit a tender unless he/she has completed all the mandatory legal prerequisites of uploading all the necessary documents.
- There is a facility to warn about the incomplete or the documents are not attached.
- The system invites people automatically and manages submissions, i.e. supplier bids.
- The system also values human feedback and gives it equal importance to it as that to its automated process.
- Cost Reduction leads to people/companies spending more on giving quality services and leaving the tedious work to the automated process of the portal.

- Time-saving by reducing lengthy delays for tender circulation, questioning and scrutinizing.
- Drastically reduces the malpractices of power to influence, corruption and even threatening.

4.2 Benefits for the environment

- The e-Tendering Portal is a greener and more sustainable approach to products and services.
- It acts as a paperless alternative to a highly paper intensive process which includes right from advertising, applications, physical copies of documents, etc. by being a one-stop solution.

4.3 Applications

- It can be implemented in enterprise resource planning systems using separate modules to handle the procurement function.
- It is used in two separate mechanisms: one is the upward price mechanism for selling organization and second is downward price mechanism for buying organization.
- e-Tendering Portal is used in the procurement of office supplies and services.
- In the internet-based systems e-procurement is done by e-sourcing, e-tendering, e-reverse auction, e-ordering, and web-based ERP.
- It can be utilized as a multi-purpose service for all the industries where there is a need for tenders such as agriculture, construction, automotive parts, etc.

Chapter 5

Project Design

5.1 Proposed System

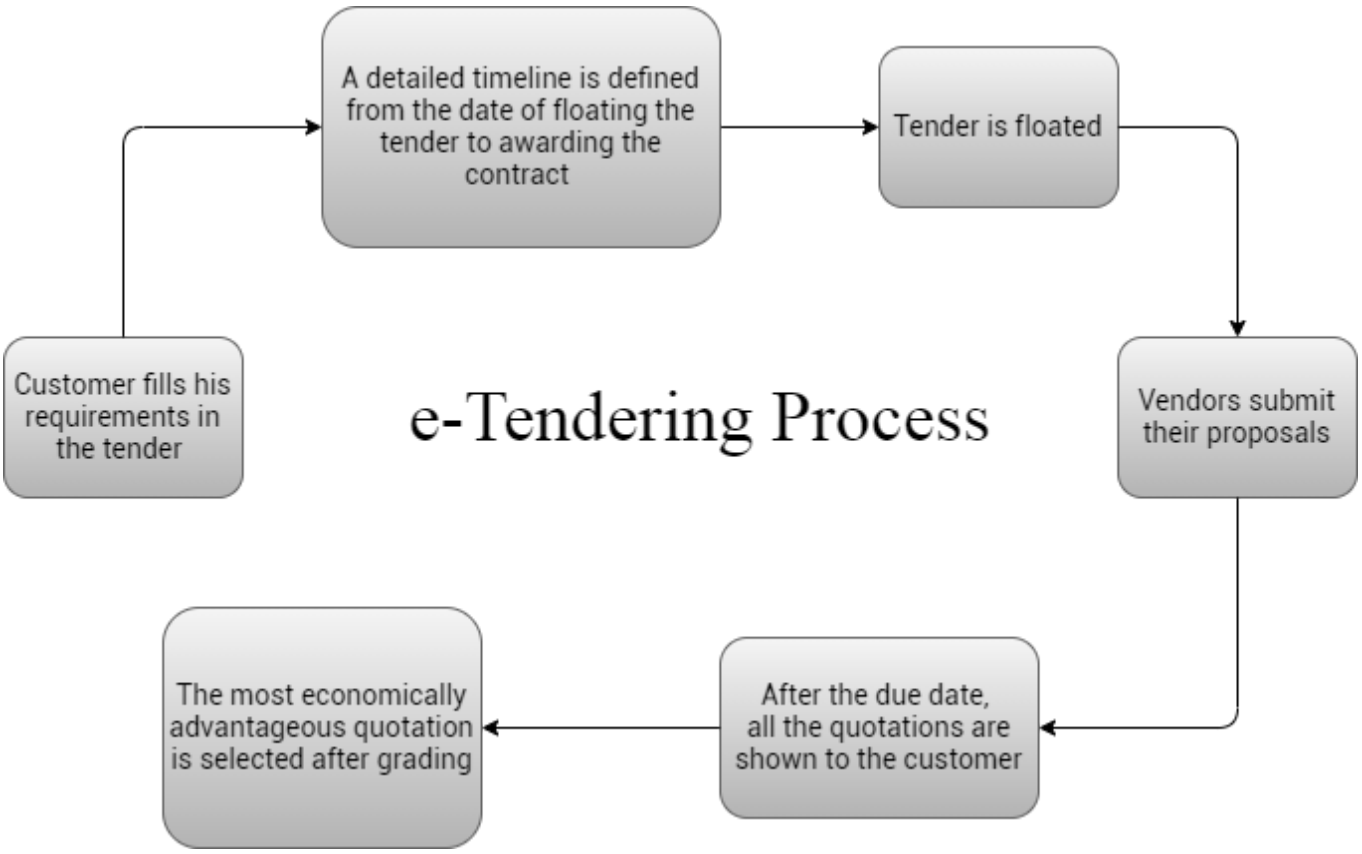


Figure 5.1: Proposed System

5.2 Flow of Modules

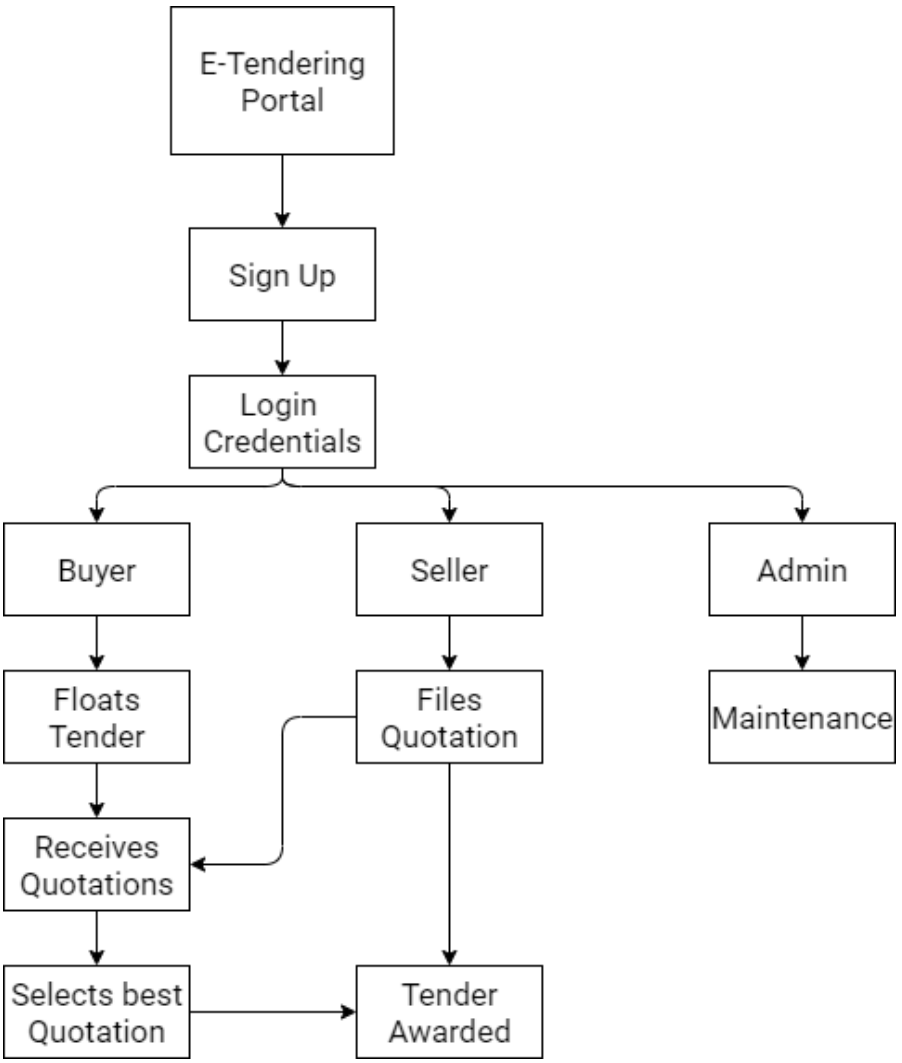


Figure 5.2: Flow of Modules

5.3 Data Flow Diagram

DFD is Data flow diagrams used to graphically represent the flow of data in a business information system. DFD describes the processes that are involved in a system to transfer data from the input to the file storage and reports generation.

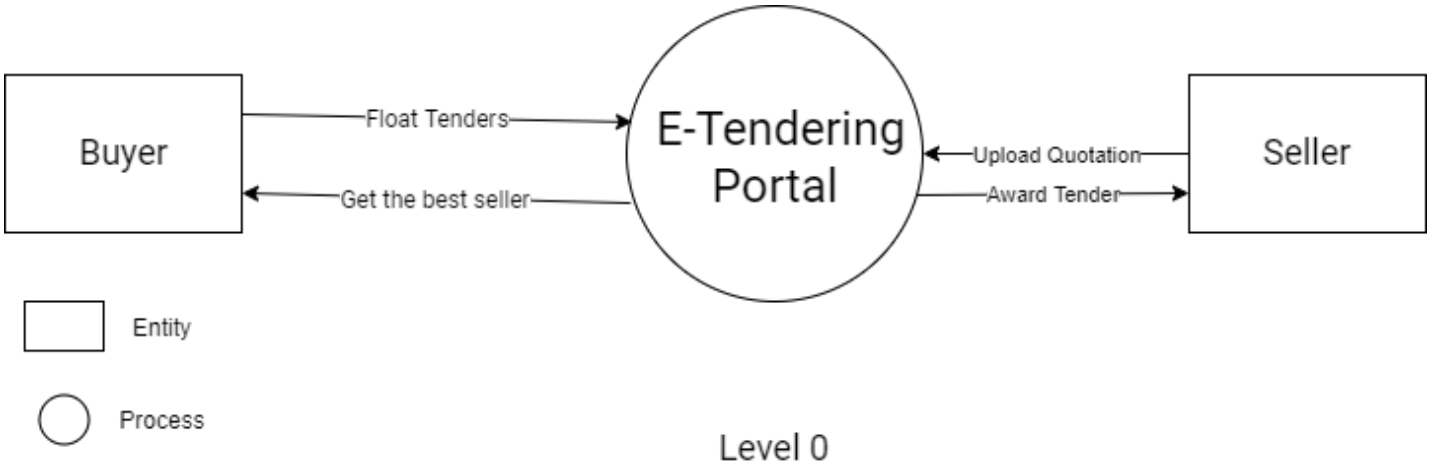


Figure 5.3 a: Data Flow Diagram

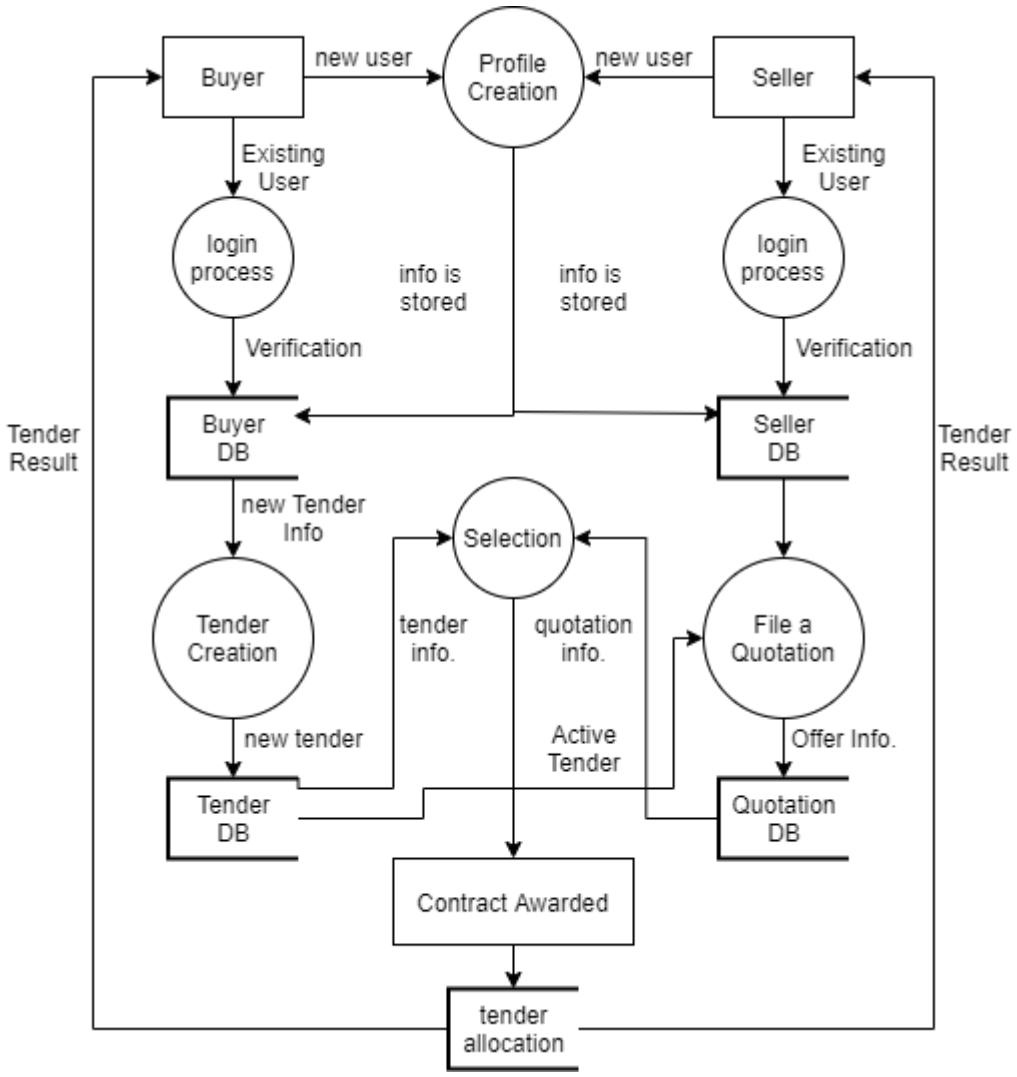


Figure 5.3 b: Data Process Flow Diagram

Chapter 6

Modules of System

8.1 Registration Page

In this, the registration page consists of fields like username, first name, last name, email, password and confirm password. The validation of the fields is according to User Model field validation. There are two buttons to register users for Buyer and Seller on the navbar. If the user selects Register as Buyer then the user will be added in the buyer group and the same for the seller. On creating an account, the user will be directed to the login page.

8.2 Login Page

The login module is where the user will have to login with their credentials after user registers. This module consists of two input fields with validations. If the username is not found in the User database or the entered password is incorrect then it will show an error message. If the user has not registered yet he/she can click on Sign Up. If the user has forgotten his/her password the user will click on Reset password.

8.3 Password Reset

This module simplifies the password reset process. With this module enabled, the user skips the one-time login form. Once the user clicks on Reset Password from the login page. Users need to enter his/her registered Email ID and submit. After the user submits the user will receive a password reset link on his/her registered Email ID. Once the user clicks on the link received in email. Here users need to enter a new password according to the conditions mentioned. After the password is reset successfully now the user can login with his/her new password.

8.4 Home Page

The ‘Home Page’ displays a list of current open tenders. Tenders whose status is ‘Awarded’ or ‘Closed’ will not be displayed. All the tenders are dynamically presented by the backend. If the due date of the tender is crossed, the tender status will be automatically changed to closed.

8.5 Floating a Tender

In this module, a buyer can float a new tender. Only the buyers will have access to this page. If a buyer wants to float a new tender user will navigate to this page and fill the form shown in the image above. This form consists of five input fields like product, description, quantity, start date and end date with validations. Users can't keep any of the fields blank. After the user submits the form the newly floated tender will be displayed with the list of tenders on the home page.

8.6 Bidding a Quotation

This is the module where a seller can quote an amount for the open tender. Only sellers will have access to this page. Sellers will fill ‘bid a quotation’ form for a particular tender.

8.7 Quotation Received

This is the Quotation Received module. Only the buyers will have access to this page. This page shows the list of quotations received from different sellers on the tender floated by the current logged in buyer. The buyer will then select a particular quotation by clicking on the ‘Update’ button.
When buyer selects the quotation,
• The quotation status will be changed to ‘Awarded’ and the awarded confirmation will be

communicated via Email.

• The tender status will be also set to ‘Awarded’. And status will be communicated via email.

• The remaining quotations to that particular tender will be closed and status will be communicated via email.

8.8 Tender Awarded

After closing and awarding tenders this page shows the list of awarded tenders and shows to whom the tender is awarded.

Chapter 7

Project Implementation

- The frontend was created using HTML, CSS and Bootstrap. It utilizes a grid layout for the web pages for the most part and extensively uses cards. It consists of 18 web pages in total with a majority of them being dynamic.
  All the major web pages have their own custom url paths set in the urls.py file. All of them reside in the templates folder.
  views.py is used to render or redirect the user to their desired web page dynamically based on their actions.

- All the processes which require input from the users are collected through forms defined in forms.py file. The data collected from these forms is stored in an SQLite database which can be accessed only by an administrator. The login credentials have their own table with SHA-256 hashing encryption technique to protect users' passwords providing security.

- The Tenders and Quotations were treated as models, defined in models.py file, so as each having its own separate database for better maintenance. Each tender has its own timeline with a start date and a due date before being awarded.

- The primary implementation involves profile creation of both buyer and seller along with a pre-configured admin. The Buyer fills a form to create a tender of his/her requirements and sets an expiration date. The tender gets listed on the homepage of the website under active tenders. Any Seller who can fulfill the requirements fills the quotation form at a competitive price.

- After receiving enough quotations/bids, the Buyer can end the tender duration on or before the expiration date. The Buyer then selects the best quotation according to him/her. The Seller whose quotation is selected, is awarded the tender with an email confirmation. The rest of the Sellers receive an email stating the tender is closed.

- To add any feature in a Django project, a set procedure has to be followed which is as follows:

    1. Import the necessary modules in models.py and settings.py file,
    2. Change the middleware accordingly in settings.py,
    3. Create a model in models.py,
    4. Create a view in views.py,
    5. Make the necessary changes for its frontend in its intended webpage,
    6. Finally, if necessary, establish a connection with the database.

Chapter 8

Result

8.1 Registration Page

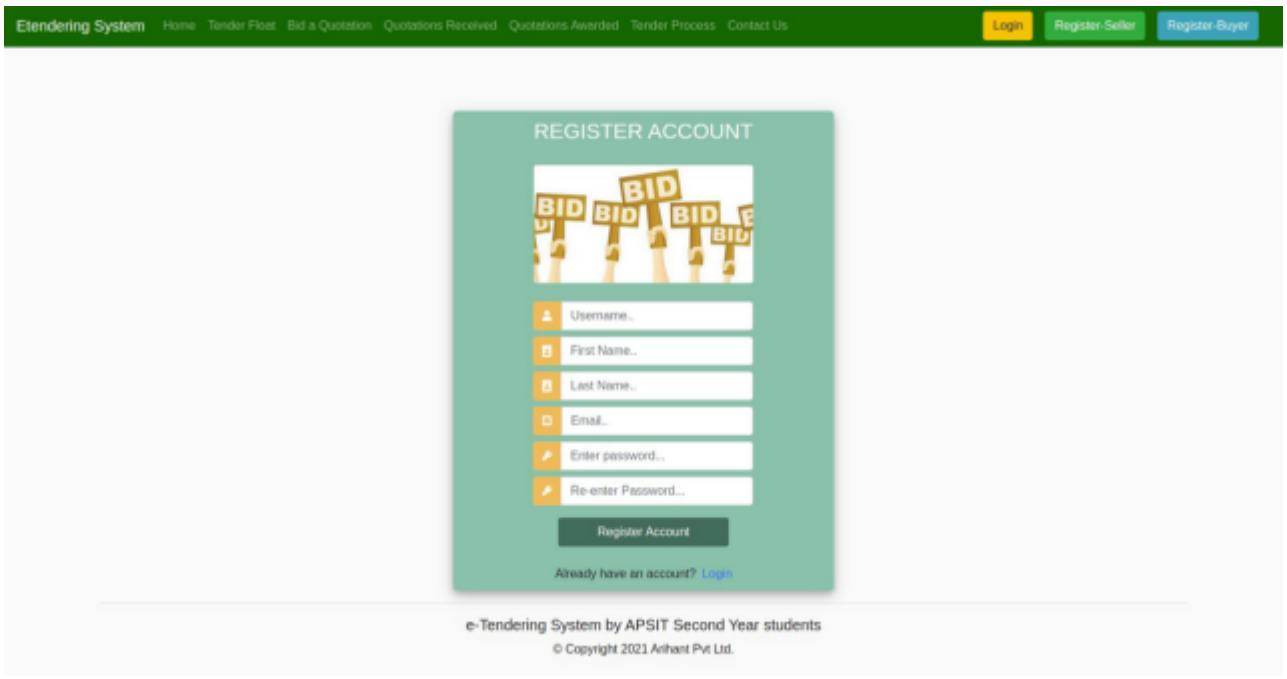


Figure 8.1: Registration Page

On this page, new users can register themselves as Buyers or Sellers.

8.2 Login Page

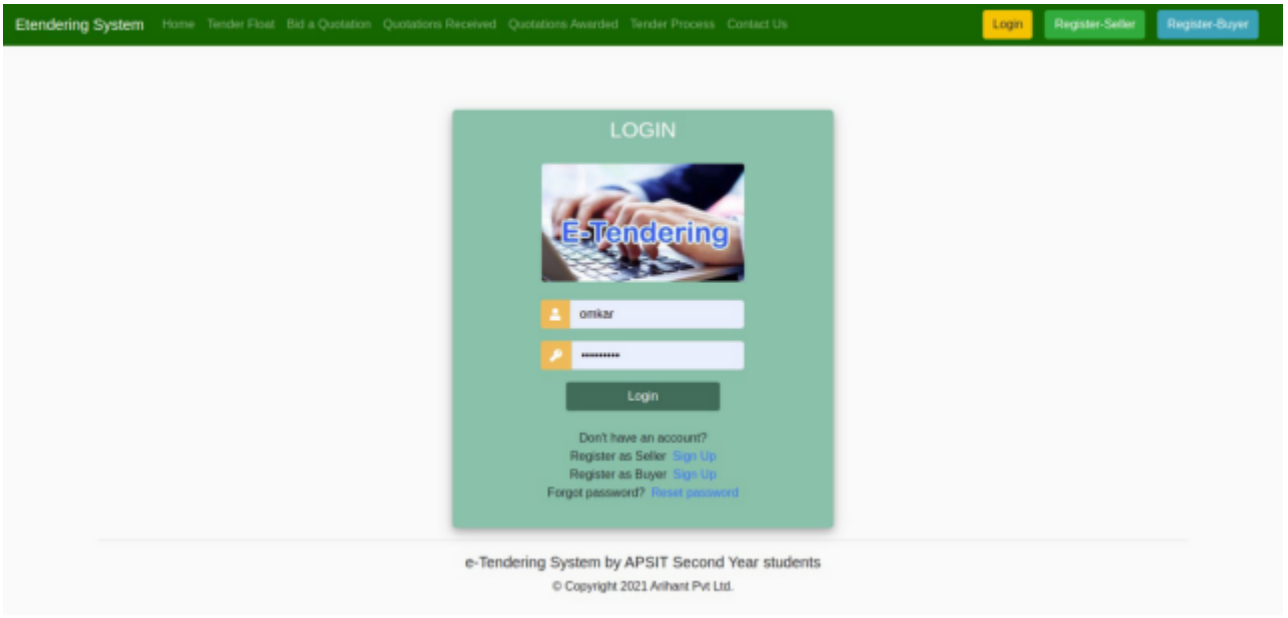


Figure 8.2 Login Page

On this page, the user can log in with their credentials after the user registers.

8.3 Password Reset Page

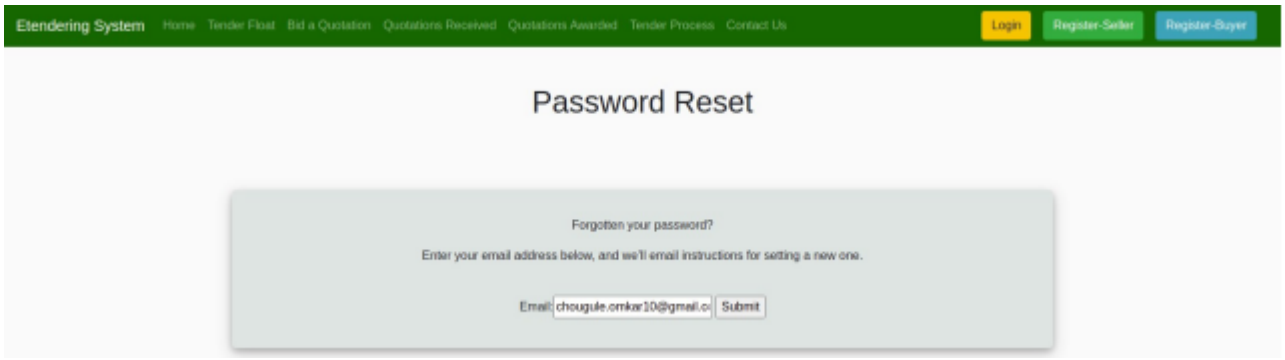


Figure 8.3a: Password Reset

Once the user clicks on Reset Password from the login page, the above page will be displayed. The User needs to enter his/her registered Email ID and submit it.

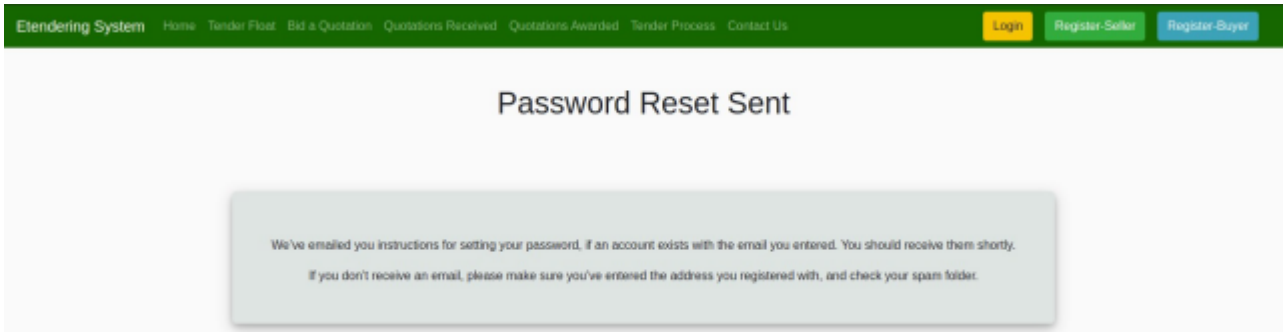


Figure 8.3b: Password Reset Sent

After the user submits, the above message will be displayed and the user will receive a password reset link on his/her registered Email ID.

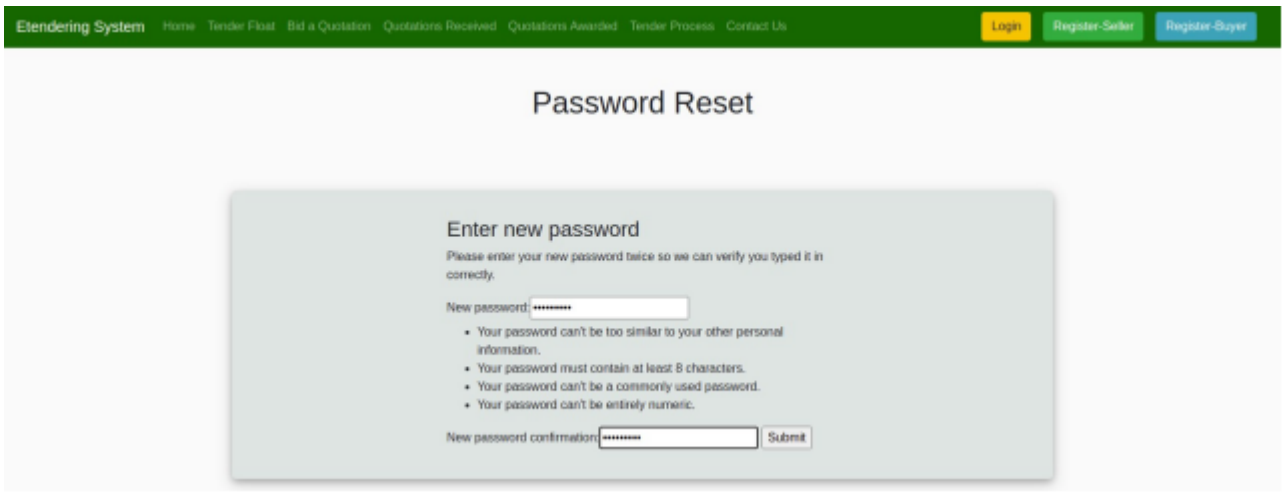


Figure 8.3c: Resetting Password

Once the user clicks on the link received in the email, the above page will be displayed. Here the user needs to enter a new password according to the conditions mentioned.

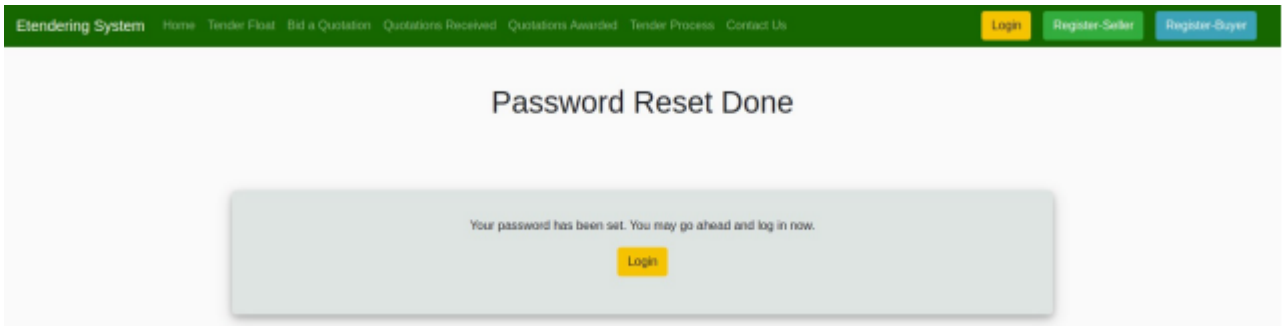
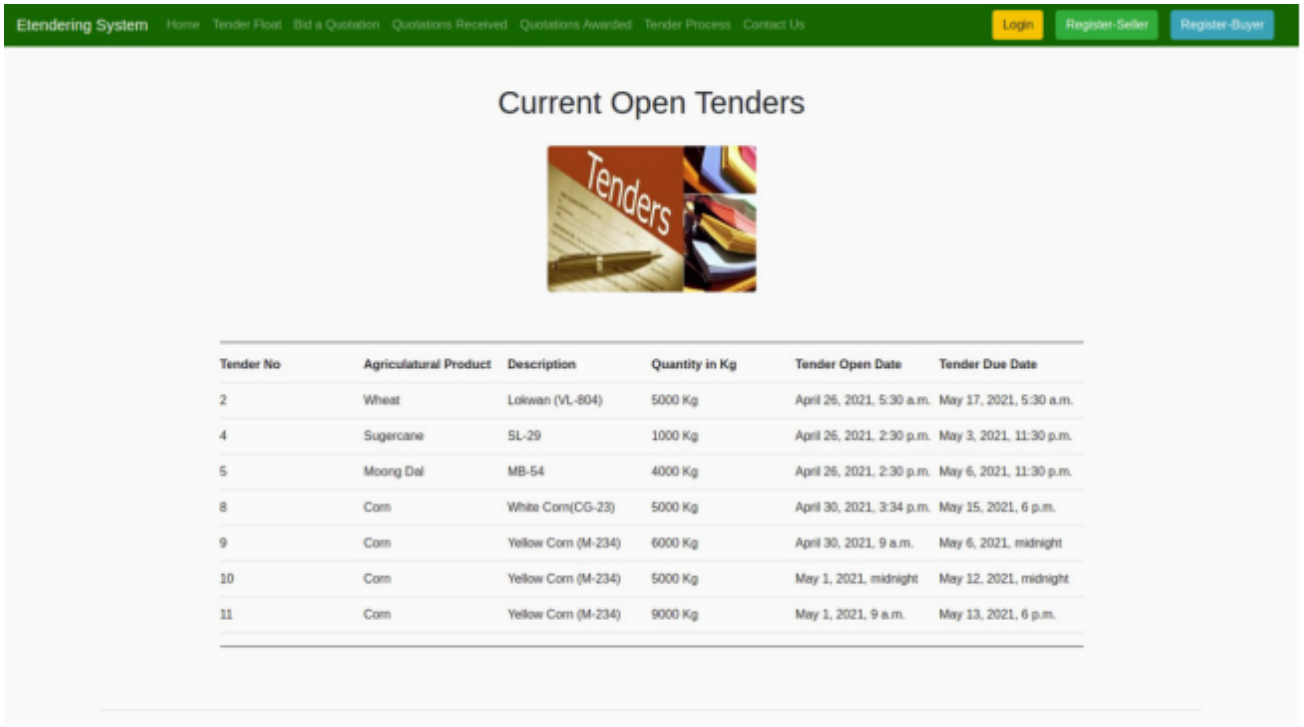


Figure 8.3d: Password Reset Sent

After the password is reset successfully, the above page will be displayed and now the user can log in with his/her new password.

8.4 Home Page



Tender No	Agriculatural Product	Description	Quantity in Kg	Tender Open Date	Tender Due Date
2	Wheat	Lokwan (VL-804)	5000 Kg	April 26, 2021, 5:30 a.m.	May 17, 2021, 5:30 a.m.
4	Sugercane	SL-29	1000 Kg	April 26, 2021, 2:30 p.m.	May 3, 2021, 11:30 p.m.
5	Moong Dal	MB-54	4000 Kg	April 26, 2021, 2:30 p.m.	May 6, 2021, 11:30 p.m.
8	Corn	White Corn(CG-23)	5000 Kg	April 30, 2021, 3:34 p.m.	May 15, 2021, 6 p.m.
9	Corn	Yellow Corn (M-234)	6000 Kg	April 30, 2021, 9 a.m.	May 6, 2021, midnight
10	Corn	Yellow Corn (M-234)	5000 Kg	May 1, 2021, midnight	May 12, 2021, midnight
11	Corn	Yellow Corn (M-234)	9000 Kg	May 1, 2021, 9 a.m.	May 13, 2021, 6 p.m.

Figure 8.4: Home Page

This is the home page of the website which displays a list of current open tenders.

8.5 Tender Float Page

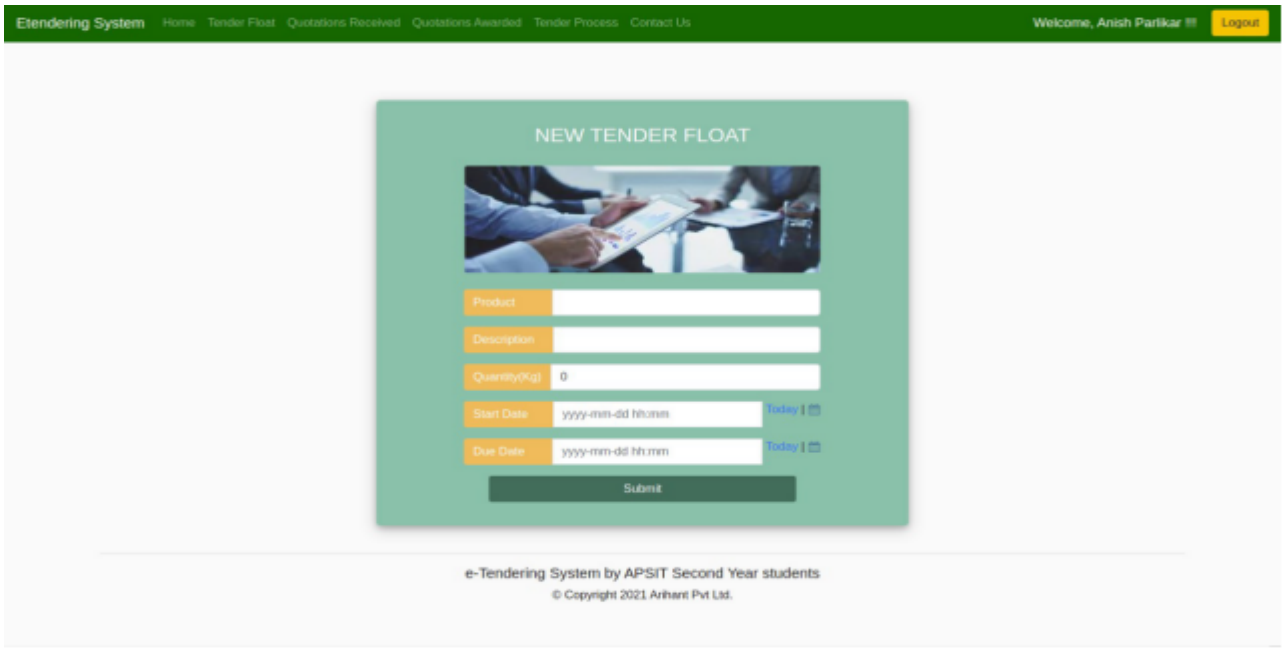


Figure 8.5: Tender Float Page

This is the Tender Float Page where a buyer can float a new tender.

8.6 Bid a Quotation Page

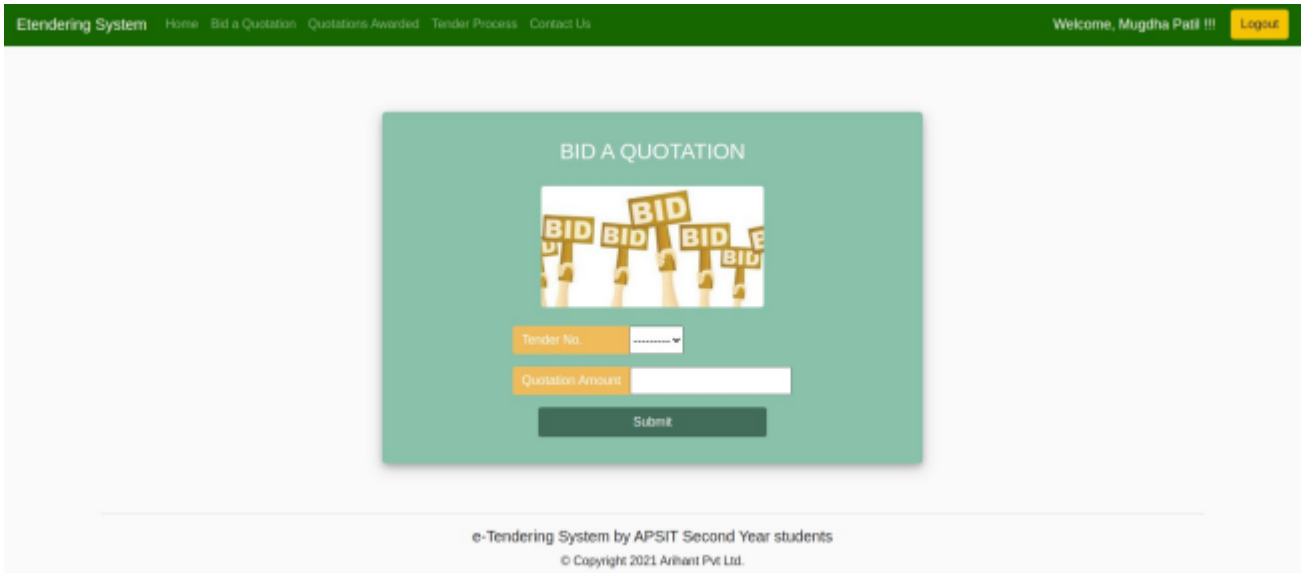


Figure 8.6: Bid a Quotation Page

This is the Bid a Quotation page where a seller can quote an amount for the open tender.

8.7 Quotation Received Page

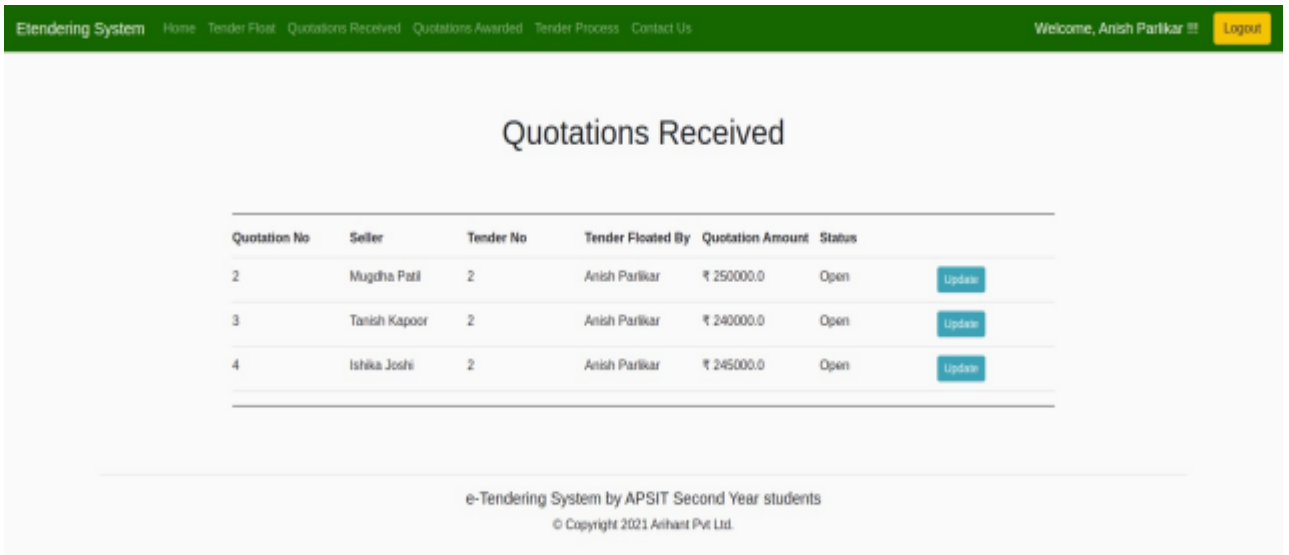


Figure 8.7: Quotation Received Page

A logged-in Buyer can view quotations received by different sellers for his/her tenders only and can select the competitive quote.

8.8 Tender Awarded Page

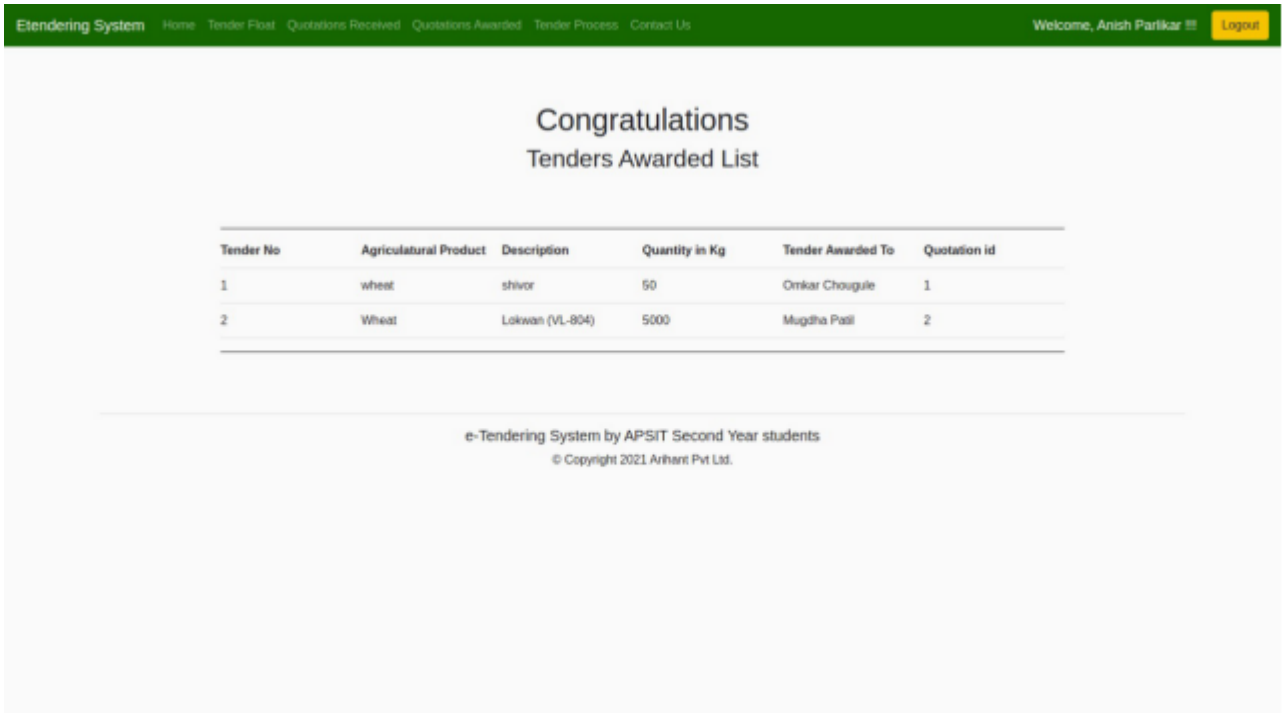


Figure 8.8 Tender Awarded Page

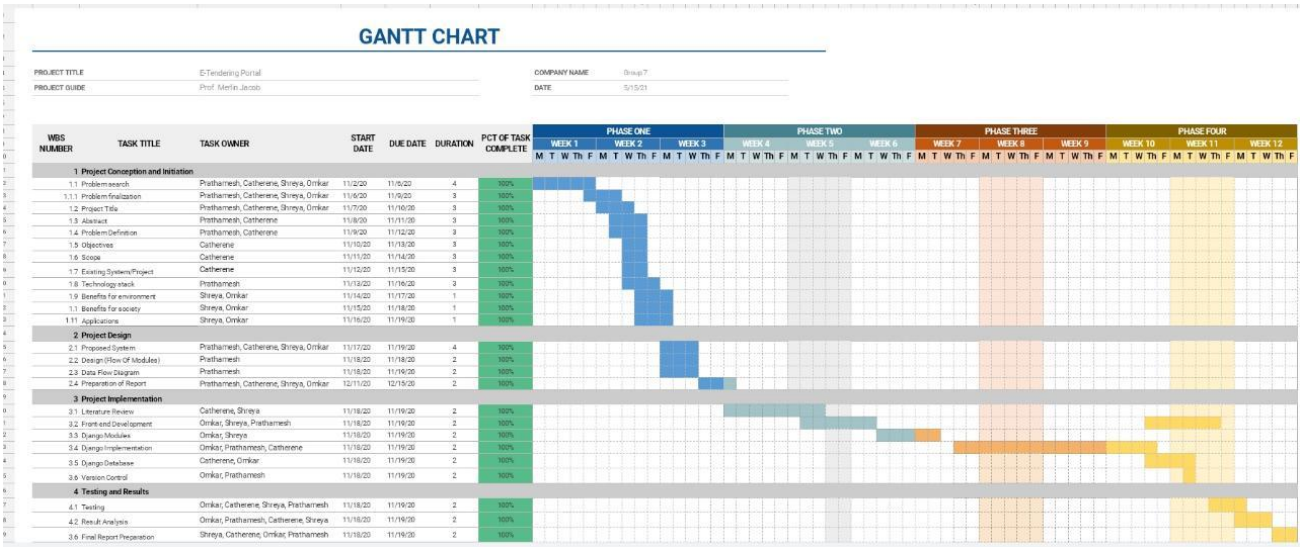
This page shows the list of awarded tenders.

Chapter 9

Annexure A

9.1 Gantt Chart

Gantt Chart is a chart in which a series of horizontal lines shows the amount of work done or production completed in certain periods of time in relation to the amount planned for those periods.



Chapter 10

Future Scope and Conclusion

In the future, we are planning to add an Admin Dashboard where the admin can view all tenders and their respective quotations. Buyer and Seller can view and generate reports as well as take printouts of these reports. If the user leaves the website unattended for more than 5 minutes then the user will get logged out automatically. We will limit login attempts to three. If the user tries to log in 3 times with an incorrect password, the user will be blocked for 24 hrs, and an email to the user will be sent to notify. The User needs to authenticate with a government-issued ID for example Aadhar card, Pan card. If the user has forgotten the password, another way to reset the password is by sending OTP on the user's mobile number. We want to add the payment integration mechanism.

As compared to the current manual tendering systems, e-tendering systems make this whole process smooth and efficient. One can buy or sell products with just a few clicks on the screen. It not only saves time but also is cheaper and requires less person-hours, travel costs, etc for both the buyers as well as the sellers thus making it convenient.

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[3] Django Documentation

https://docs.djangoproject.com/en/3.2/

Acknowledgement

We have great pleasure in presenting the mini project report on **"e-Tendering Portal".** We take this opportunity to express our sincere thanks towards our guide **Prof. Merlin Priya Jacob** Department of Computer Engineering, APSIT thane for providing the technical guidelines and suggestions regarding line of work. We would like to express our gratitude towards his constant encouragement, support and guidance through the development of the project.

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