Auction Up

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The work inside the file **Auction Up** is written by **Ibn E Abbas** and **Umair Ilyas** as a confirmation to the specified general for the partial achievement of the degree of bachelor's in computer science.

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Chapter 1

Introduction

This Chapter includes the project introduction basically what is the purpose of the proposed project, what is this project about, what type of methodology is used for the proposed project, what is the main objective and what are the tools and technologies used for the proposed project.

1.1 Project Introduction

This project is about an online bidding system named Auction Up. An auction is an income occasion in which potential buyers place competitive bids on products or an item. This project is a web-application [2] to assist users to buy or promote product and allow user to put up their product/item for public sale in which bidder can check in and might bid for any available product.

1.1.1 Perspectives

The system primarily has three (3) types of users with different perspectives these perspectives are listed below:

1.1.2 Admin's perspective

The main goal of the admin in proposed system is to manage the whole auction or bidding process and can manipulate the users. Admin should be able to add, delete or manage items provided by means of seller. Admin have to update user's progress via emails or cell number provided by the consumer. Admin should maintain the begin and expiry time of every bid and if the product become offered or reached its ending time it will likely be eliminated from the database.
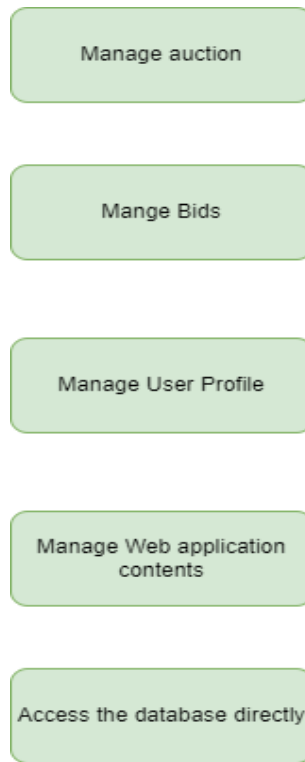
Figure 1.1: Admin's perspective

1.1.3 Seller's perspective

The seller wishes to know who got the item/product and need to act accordingly. Sellers need to be furnished with the right login and registration system to place their product.
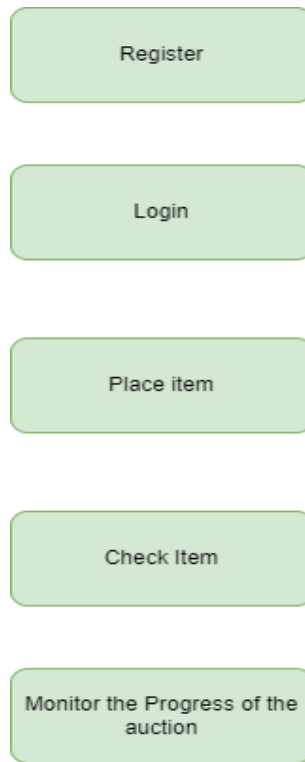
Figure 1.2: Seller's Perspective

1.1.4   Bidder's perspective

The main objective of the bidder is what is presented or posted at the app that is to be auctioned in conjunction with all of the desired information about it. If bidder is interested to bid for the product it must be mandatory for bidder to register for the auctioning and bid the amount.After winning of an auction the information on the winning bid portion of the dashboard are updated and information of seller are updated on that section.
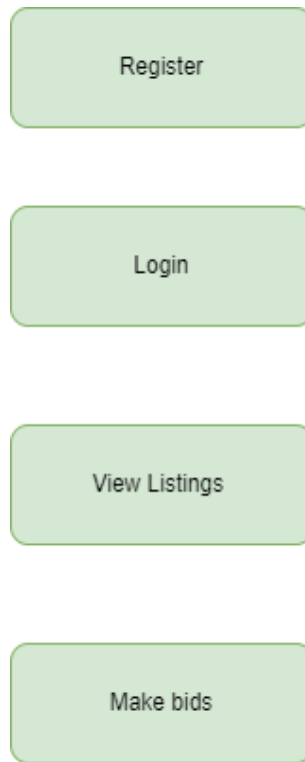
Figure 1.3: Bidder's Perspective

1.2 Problem Description

Artcurial [4] is a famous French auction house in which bidders and dealers from everywhere in the worldwide gather to interact in exchange but due to ongoing pandemic many of bidders and sellers are not able to meetup with each other for buying and selling activities. This project will assist such bidders and sellers by means of offering an online auction system.

1.3 Methodology

The proposed project is especially based at the incremental method that is because of the fact incremental model [13] is a system of software development wherein requirements divided into more than one standalone modules of the software program development cycle. In this method every module is going via the requirements, design, implementation, and testing tiers because of which each successive launch of

the module adds characteristic to the preceding release. Hence the way maintains until the entire system accomplished. Incremental model has many advantages like:

- Errors are easy to be identified.
- Easier to test and debug.
- More bendy(flexible).
- Simple to control threat as it dealt with throughout its era.

1.4 Objective of the Project

The objective of proposed system is to develop a web application so as to provide sellers to interact with their potential customers (bidder) and promote their products in bidding. The products will be authenticated, and the website online offers secure surroundings for on line users.

1.5 Scope Of the Project

This project is a web application in which a person will be able to post items/products online for auction. The items/products will accompany items/products name, selling price, and a photo presentation for the bidder to look. The bidder, if eager about the item/product, will bid for the product.

This system is generally designed to be accessed on any tool i.e. Mobile phone, tablet, pc. This project targeted on the whole for two set of target audience:

1. Auction House
2. General public

The main target of web application is of general public.

1.6 Solution Application Area

This project holds value in the industry especially because of the ongoing pandemic. Auction is not only held by auction houses but also by government department to assign a tender issue, property, and manufacturing equipment. Target domain will benefit:

- More sellers and bidders will take part in auctioning process.
- Sellers will have a much bigger customer base at the same time the bidders will have a wider range of items and sellers to buy from.
- Premium auction houses who are only situated in certain location can now be available for a much larger seller and bidder space.
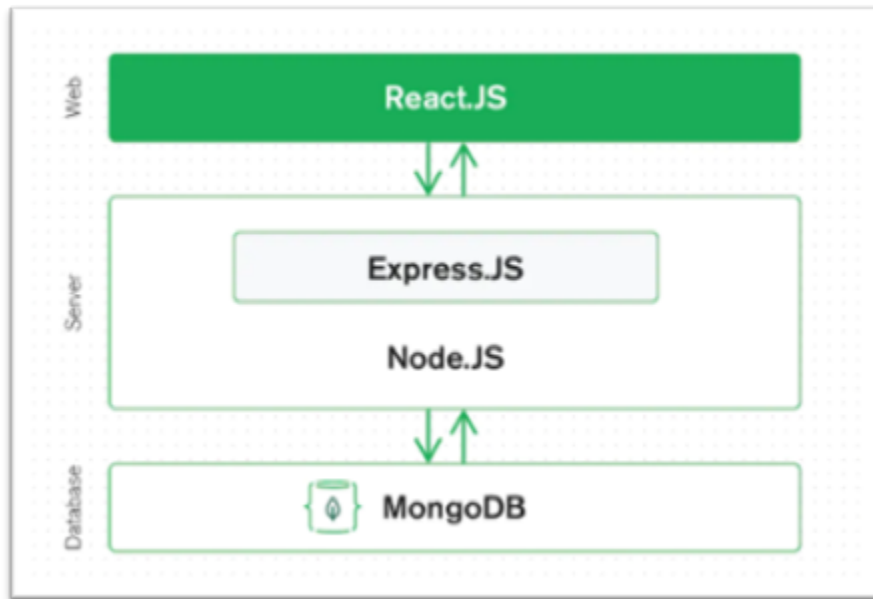
Figure 1.4: MERN stack 3-tier Architecture

1.7 Technology stack used in Project

Technology stack used on this challenge is MERN stack [12]. MERN is abbreviated as MongoDB, Express, React and Node. These all four generation make up the stack.

- MongoDB – record database or database solution
- Express(.js) – Node.js web framework
- React(.js) – a client-side JavaScript or Browser-Side JavaScript Framework
- Node(.Js) – the top-quality JavaScript internet server or Server-Side JS Runtime

1.8 MERN stack working

The structure of a MERN stack permit us to with out any problems collect a 3-tier architecture totally the use of JavaScript and JSON (JavaScript Object Notation). The three-tier architecture consists of:

- Frontend
- Backend
- Database

Chapter 2

Literature Review

In this chapter, we can discuss on any kind of existing project associated with proposed project and evaluate that system with project. This will help us to give a course to reach our destination. The modules of the project tasks are unique and preserve plenty of importance. We are running on a brand-new idea. In this chapter we can talk approximately exceptional modules and functions to discover that the proposed idea is precise.

2.1 Related Work

Online auctions have come to be very famous. One of the maximum popular auctioning sites, eBay (www.ebay.com) suggests that the extensive style of energetic customers global. Regarding the primary trouble many auction websites describe themselves merely as gathering locations for sellers and bidders. They without any doubt permit sellers to list products presented for alternate and do no longer verify that the product exists or is accurately described.

2.2 Major Problems

Most auctions are open to the general public. Whatever you need, you could discover. Although on-line auctions were growing for many years, there are though some vital problems like:

- **Steady/Prolonged time**
  In ordinary auction sale the time for auction is already determined and it's going to now not be changed. But in the case of online auction, the timer is reset with 20 or 30 seconds even as a bidder region a bid which makes the auction time to be prolonged inflicting time postpone in very last the auction sale.

- **Unidentified/Anonymous bidder**
  The online auction sale does not take region head to head which creates anonymous bidders. The auctioneers can not have a hold on who is participating in the bidding. This can motive anonymity in identifying the bidders.

- **Product validness**
  User can view best the product image on the auction site. User cannot inspect the product approximately its situation and usability physically which may additionally lead to loss of product genuineness.

- **Fake website**
  The online auction sites can be occasionally fraudulent which sells fake products to in no way be delivered. The product description and real product may fluctuate. Sometimes the product brought won't be the product that changed into placed for auction leading to confusion.

Chapter 3

Requirement Specifications

3.1 Existing System

The current "Open House Auction" will be operated under hand control. Prior to every auction the day of auction sale, the venue and the items on auction sales are announced via information media. Those who desire to participate within the auction must arrive on the venue on that day on time. This conventional method maximum of the instances saves you aspiring bidders from participating inside the bidding method.

Another headache of the old system is to track every bidding process and to make it finish in economic agreement. So, the system must preserve data of both bidders and sellers till the quilt of agreement.

3.2 Proposed System

The improvement of this new system incorporates the following activities, which try to increase the web application complete process keeping the view of database integration approach:

- This system will provide secure registration and profile management of the user.
- Admin may want to authorize the product to auction sale and set auction dates for that product.
- Users can select their interested fields for bidding.

3.3 Advantages of Proposed System

There are many advantages that proposed project idea provides some of them are:

1. **No bodily location**
   The seller for auction does not need any bodily place in case of online auction. The stock can be managed on-line and upon sale the product may be dispatched bodily. This makes it bendy to maintain an auction sale on line internet web site.

2. **Favorable**
   The bidder can participate in an auction from anywhere at any time through an internet. There is not any issue regarding the time, location, or person to conduct an online auction sale. Bidders can participate in the auction from domestic or workplace through the computer terminal.

3. **Flourishing Records**
   The associated records approximately every auction product is well furnished on the website. Bidders can peruse all the documents associated with the products in advance than taking part in the auction process.

4. **Time and cash saving**
   Online auction saves money and time. There is not any committed time required to tour and attain an auction place. Just logging into the website on line makes it viable for the man or woman to take part in auction which additionally saves money spent for achieving the auction spot.

5. **Compare expenses**
   The most vital benefit of bidding through on-line is that it offers the possibility to look at the price on line. The bidder can do small research regarding the product rate and fine with special on-line auction websites earlier than collaborating in the bidding.

6. **No discourteous bidders**
   Some bidders can grow to be very aggressive of their try and win an item. Name calling, inappropriate hand gestures and in a few rare instances even turning into physical violent toward their competition. Online auctions do no longer provide bidders the risk to get aggravated with one another.

7. **No schedule constraints**
   When going to a public sale bodily, bidders are certain to the auction residence/auctioneer's scheduled business employer hours. Auctions are scheduled from time A and given up at time B. Online auctions are open twenty-four seven till the distinct stop date. This is available for the people who have jobs/school. They can bid at 2 am if they need to.

3.4 Requirement Specification

In requirement specification, we ought to specify functional and non-functional requirements of proposed system. Requirement specs encompass both functional and non-functional requirements.

3.4.1 Functional Requirements

Functional requirements specify what inputs are given to the system and what corresponding output is produced and the manner it behaves on input. Functional requirements specify the inputs given to the system and their corresponding outputs. It will also show how it'll behave on the one's inputs. The functionality to be made available to the users of the proposed system are discussed below.

1. **Requirement 1:** Login
   Description: System will:

   - Permit the user to login.
   - Authenticate the email/username and password.
   - Not permit users to login with wrong username or password.
   - Be capable of keep in mind username, e-mail, and password.

   Output: User will be entered into the system and allowed to place an item for bid and bid an item too.

2. **Requirement 2:** Registration or create account
   Description: System will permit users to create account.
   Output: All information provided by user is stored in database and user for login purpose and used for authentication purpose.

3. **Requirement 3:** Forget Password
   Description: By mail services password will be reset for the account.
   Input: Email id
   Processing: Reset option is providing the option to change user's username and password.
   Output: Reset link sent to email id.

4. **Requirement 4:** Browsing
   Description: System will be capable of:

   - View items to be had and asked to be made available.
   - View the overview of a buyer or seller as posted through other users.

Output: The interface will consist of commands and contextual activates for appearing the duties of logging in, selling, buying, bidding, and browsing products/items.

5. **Requirement 5:** Sell
   Description: The user should be capable of:

   - Place an product/item for sale.
   - Set the initial bidding price.
   - Close or delete the auction straight away if no one has a bid upon the product/item.
   - Set the default duration of the auction at any point among 3 and 30 days.
   - Post a text description of the product/item.
   - Post images of the product/item.

   Result: User will be able to post item for bidding purpose.

6. **Requirement 6:** Bidding on Items
   Description: The user should be able to bid on items available for sale or placed by seller. The system will automatically increment their bid according to their bid placed by the bidder.
   Result: User will bid on items of their own interest.

7. **Requirement 7:** Searching the Database
   Description: The user should be capable to search available items according to:

   - Category
   - Title
   - Seller

   Result: Search result available for the user.

8. **Requirement 8:** Logout
   Description: This option will help user to log out from account, securing it from other to use.
   Input: Selecting the logout option. **Output:** Logged out from the system

3.4.2 Non-Functional Requirements

Non-functional requirements are the quality attributes which are added to proposed system. These requirements specify the system overall performance. These are the critical parameters to improve systems overall performance. The proposed system consists of many non-functional requirements which are given below.

- **Efficient**

  The system ought to be interactive, and the delays worried must be much less. So, in each movement reaction of the system, there are not immediately delays.

- **Security**

  Information transmission should be securely transmitted to server with none modifications in information.

- **Accuracy**

  As the system provide the proper stuff for discussion, trouble solving it should be made sure that the machine is reliable in its operations and for securing the sensitive information.

- **Availability**

  If the internet service gets disrupted at the equal time as sending information to the server and the information can be dispatched again for verification.

- **Usability**

  As the system is straightforward to address and navigates in the maximum expected way without a delay. In that case the system program reacts accordingly and transverses fast between its states.

3.5 System Requirements

We do not require any special computing or hardware technology, in testing we will have to make sure that proposed web application works along with all types of devices which can be easily done.

3.6 Use Case Diagram

A use case [7] is diverse movements or activities which define the interaction among the system and actors to benefit the preferred purpose. Use case Diagrams to represent the functionality of the system from a user's point of view. Use cases are used in the course of requirement elicitation and analysis to represent the functionality of the system.

Actors are out of doors entities that interact with the system. Examples of actors consist of customers like admin, Seller, Bidder...and so on., or any other device like a relevant database. The system proper right here refers back to the Online Auctioning system and the actors which can be the use of the system are Admin and users. Admin can view all of the users and view the bid items with details.

3.6.1 Use case diagram for proposed system
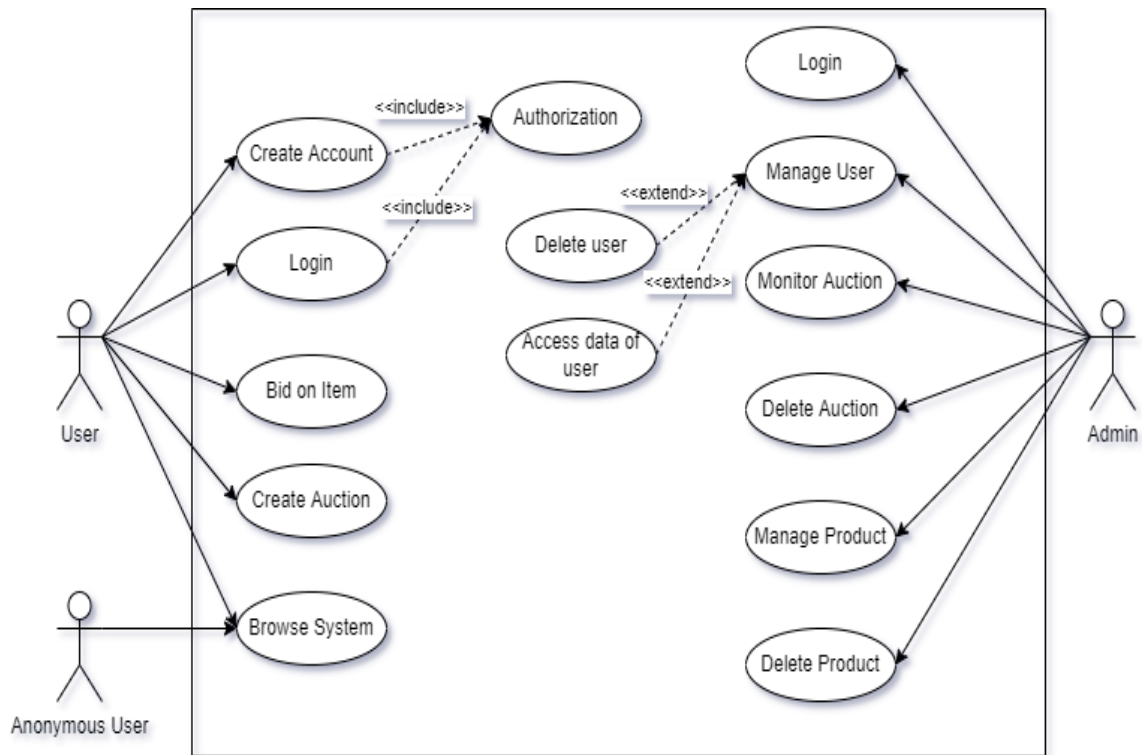
Figure 3.1: Use Case Diagram of system

3.6.2   Use Case Description table

Table 3.1: Login Table

Use case name	Login process
Use case ID	AU-BU01
Priority	High
Primary actor	Admin, User (Seller, Bidder)
Description	This use case describes the registration of any member requesting to use this application. The member's demographic information, as well as his or her account standing, is validated. They will be allowed to use this application when they successfully register themselves.
Basic Flow:	The user finds the "Sign in" page. The user enters the required details on the "Sign in" form. The system validates the details and then gives access on the sign in page of that user.
Alternative flow	**Invalid password:** The user finds the "Sign in" page. The user enters the required details on the "Sign in" form. The system validates the details, and the record of that customer is not found.
	Forget password: User forgets his password and wants to recover his account. He clicks on to the Forget password option. He will provide all his details in that section. An email code will be sent on his email which he will use to enter new username and password.
Pre-condition	No users are registered to this application.
Trigger	The use case is initiated when a new user tries to use this application.
Course Event	**Actor Action and System Response**
	Step 1: The user gives all the required information on the page. Step 2: The information submitted is checked. Step 3: The system verifies the details provided. Step 4: Availability of the previous record of the same information is checked and no duplication of records are checked. Step 5: If no such records are found the new account creates. Step 6: Notification is sent to the user that his account is created.
Post-condition	The account has been created and the user starts using this application.

Table 3.2: Create new Account

Use case name	Create new account
Use case ID	AU-BU02
Priority	High
Primary actor	Admin, User (Seller, Bidder)
Other Interested stakeholders	**Application:**Wants to fulfill user hobbies and validate user information.
Pre-condition:	The main page is loaded.
Basic flow	Step 1: The new user clicks on new 'create new Account link'. Step 2: The Account creates screen is displayed or registration page will be opened. Step 3: The information is submitted, and the new account is created by clicking on the submit button. Create new account include: First Name Last Name Email Address Password Confirm Password Mobile Number Username CNIC Role Image/avatar
Trigger	The user opens the sign-up page of the application.
Post-Condition	The new account has been created successfully.

Table 3.3: Update Account Information

Use case name	Update Account Information
Use case ID	AU-BU03
Priority	High
Primary actor	Admin, User (Seller, Bidder)
Pre-condition	system is up and running
Pre-condition:	The main page is loaded.
Basic flow	Step 1: User clicks on the sign in option. Step 2: Then the user provides password and username. Step 3: Account information page is displayed by the system. Step 4: User modifies the details in the page. Step 5: User exits the page with the useful resource of clicking at the finish. Step 6: System shows the confirmation message "Account Information is updated".
Trigger	The users open the main page of the application.
Post-Condition	The information updated successfully..

Table 3.4: Seller Table

Use case name	User(Seller)
Use case ID	AU-BU04
Priority	High
Primary actor	Seller
Description	This use case describes the "Seller" view whilst the registered user get right of entry to apply this software. The Seller can post the item that he/she wants to be placed for a bid or to sell item. The item has been saved in the specific category so that any Bidder who is interested in the specific item can see the item and bid later.
Pre-condition:	This is a new task and user wants any task to be completed using this application.
Trigger	A user creates bid item or a product and provide information like: Give items a name or a title Category Description of bid item Condition Color Image/Images of an item Start date/time for a bid End date/time for a bid Base price Final price Location information (City, Street, Zip-code)
Course Event/Basic flow	**Actor action and System response**
	Step 1: The user logs in to the application. Step 2: User opens the place item for a bid option on dashboard to place a bid item. Step 3: Seller fills necessary information for an item as mentioned above in trigger. Step 4: Seller posts the item which will be set in the category of the type of item. Step 5: System posts the items that has been placed by the user successfully.
Post-condition	The seller has posted item and the user i.e., Bidder. Or any user can view that item and will be placed on product page.

Table 3.5: Bid

Use case name	Bid
Use case ID	AU-BU05
Priority	High
Primary actor	Bidder
Description	This use case describes the "Bid" model. This model shows what will be required for placing the bid on an item or a product
Pre-condition:	Bidder Should be registered.
Trigger	Bidder gets interested in any specific item and bids. The information will be triggered like: Product id getting from Product model User Id getting from User model Price is entered by user such as registered bidder
Course Event/Basic flow	**Actor action and System response**
	Step 1: The bidder finds any item he is interested in. Step 2: Bidder bids an item. Step3: Bidder is restricted to bid in a specific date as the post will expire soon. Step 4: System will save the largest bid and largest bid will be shown on that item.
Post-condition	The Bidder selects the suitable item.

Table 3.6: Select Bid

Use case name	Select Bid
Use case ID	AU-BU06
Priority	High
Primary actor	Bidder
Description	This use case describes the "Select bid" procedure. The item is restricted to be bided for a specific amount of time. Expiry date will be described for every item. Bidder will select one of the bids.
Pre-condition:	Bidder Should be registered.
Trigger	Bidder gets interested in any specific item and bids.
Course Event/Basic flow	**Actor action and System response**
	Step 1: The bidder finds any item he is interested in. Step 2: Bidder bids an item. Step3: Bidder is restricted to bid in a specific date as the post will expire soon. Step 4: System will save the largest bid and largest bid will be shown on that item.
Post-condition	The Bidder selects the suitable item.

Table 3.7: Bidding Table

Use case name	Bidding
Use case ID	AU-BU06.01
Priority	High
Primary actor	Bidder
Description	This use case describes the "bidding" when the Bidder is registered and has access to use this application. Bidder can bid on an item.
Pre-condition:	Bidder Should be registered.
Trigger	Bidder opens the post which is posted by the Seller.
Course Event/Basic flow	**Actor action and System response**
	Step 1: Bidder clicks on "Bid on Item" placed on product details page. Step 3: Bidder clicks on 'bid item' link in the Screen. Step 5: Bidder gives the amount greater than the previous or placed amount. Step 2: System displays bid on item portion on product details page. Step 4: System displays the 'bidding item'. Step 6: System sends the details to the i.e., price detail entered by user and update that information in the database.
Post-condition	The bidder can bid on an item. It will be visible to the user i.e., seller and an admin.

Table 3.8: Edit user's profile

Use case name	Edit user's personal information
Use case ID	AU-BU07
Priority	Moderate
Primary actor	Admin, User (Seller, Bidder)
Other Stakeholders	Admin will make sure that the edits are updated.
Description:	This use case describes the "Edit user's personal data" when user changed any personal information. The record will be updated and will replace the previous data. This includes their personal information example: First name, last name, contact number etc.
Pre-condition	User (Seller/ Bidder) should be registered and has entered some data to change by clicking on edit profile.
Trigger	Users open the profile which is to edit.
Course Event/Basic flow	Actor action and System response
	Step 1: User clicks on the "edit profile". Step 3: User writes the new information he wants to replace. Step 4: User clicks the save edits. Step 2: System opens the registered page and displays the previous data. Step 5: System replaces the previous data and displays the new data on user's profile page.
Post-condition	User can edit their information. It will be visible to the user i.e., seller and an admin.

Table 3.9: Delete Account

Use case name	Delete Account
Use case ID	AU-BU08
Priority	Moderate
Primary actor	Admin, User (Seller, Bidder)
Other Participating actors	Admin will make sure the accounts information is completely removed.
Description:	This use case shows how an account can be deleted.
Pre-condition	Delete account page is loaded.
Trigger	User clicks the delete account tab.
Course Event/Basic flow	Actor action and System response
	Step 1: User Clicks on the Signing Link. Step 3: User enters the Username and Password. Step 5: User can click on the "Cancel Account or Delete Account" link. Step 7: If valid user then user clicks the verification link. Step 2: System displays the sign in screen. Step 4: System displays the Account, Information Page. Step 6: System will send verification email to user with a link to confirm either user is valid or not. Step 8: System shows the confirmation message "Account deleted". Step 9: System sends an e-mail to the consumer confirming the cancellation of the account.
Post-condition	All information of the account is deleted permanently.

Table 3.10: Placing an item

Use case name	Placing an item
Use case ID	AU-BU09
Priority	High
Primary actor	User i.e., Seller
Description:	This use case defines the "Seller" view when the registered seller access to use this application. The Seller can post the item that he/she wants to be placed foe a bid or to sell item. The item has been saved in the specific category so that any Bidder who is interested in the specific item can see the item and bid later.
Pre-condition	This is a new task and user wants any task to be completed using this application
Trigger	A user creates bid item or a product and provide information like: Give items a name or a title Category Description of bid item Condition Color Image/Images of an item Start date/time for a bid End date/time for a bid Base price Final price Location information (City, Street, Zip-code)
Course Event/Basic flow	Actor action and System response
	Step 1: The user logs in to the application. Step 2: User opens the place item for a bid option on dashboard to place a bid item. Step 3: Seller fills necessary information for an item as mentioned above in trigger. Step 4: Seller posts the item which will be set in the category of the type of item. Step 5: System posts the items that has been placed by the user successfully.
Post-condition	The seller has posted item and the user i.e., Bidder. Or any user can view that item and will be placed on product page.

Table 3.11: Logout

Use case name	Logout
Use case ID	AU-BU10
Priority	High
Primary actor	Admin, User (Seller, Bidder)
Description:	The user wants to close the application and wants his data to be secure after closing.
Pre-condition	TThe user has been logged in to the application.
Trigger	User clicks the logout button on the window screen.
Course Event/Basic flow	**Actor action and System response**
	Step 1: User selects the "Logout" choice. Step 2: The system activates for saving the facts if there's any unsaved records. Step 3: System asks the user to affirm his sign off. Step 4: The user is correctly logged out. Step 5: The user cannot do some thing with out logging in again.
Post-condition	The user cannot do anything after he has logged out to the application.

Chapter 4

Design

4.1 Design

In this chapter we can elaborate the structure and design of the proposed system.

4.1.1 System Architecture

System architecture represents the system application because it's a high-level logical representation of the system. It shows the components and their relationship. In beneath figure the system structure of proposed system is shown. System architecture consists of:

1. Presentation layer
2. Business Layer
3. Database Layer
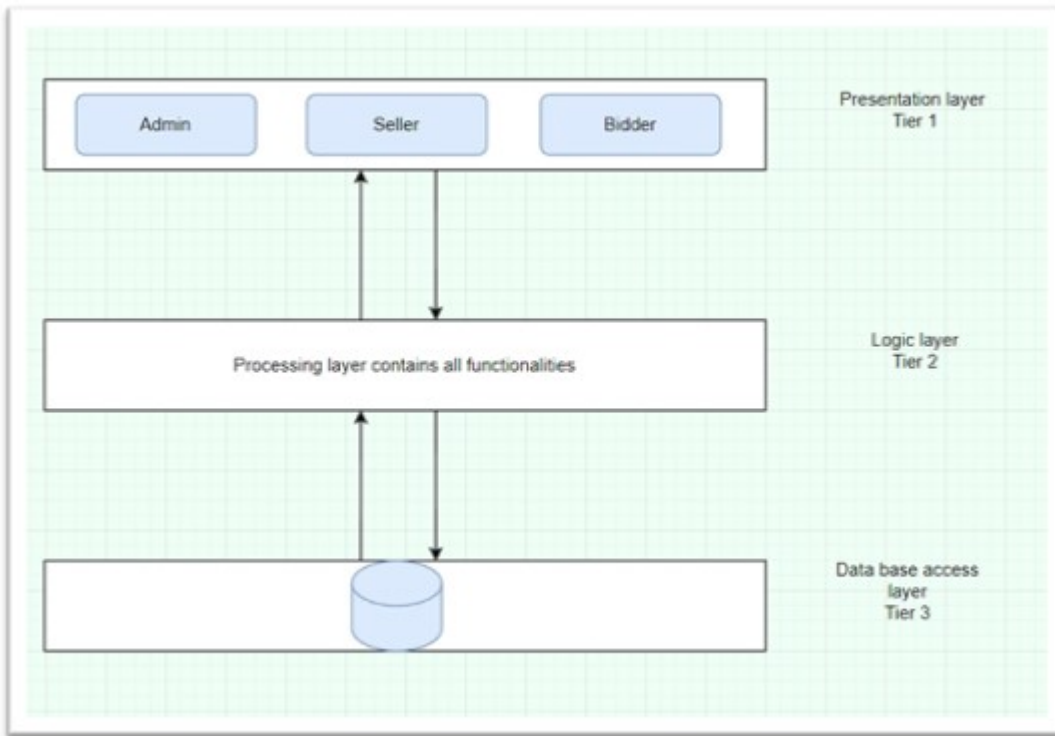
Figure 4.1: System Architecture

4.1.2 Low-Level and High-Level Design

High-level design is the way of modeling the group of system elements in a different number of views. The high-level design of proposed system includes diagrams that illustrate the proposed system. The low-level design includes diagrams associated with the sub parts like pages involved or the modules present in proposed project.

4.1.3 Sequence Diagram

The sequence diagram [10] is the way of describing the different activities of a system in steps and describes the behavior of a system with users including the result of every single activity that has been performed by a user.

4.1.4 Sequence Diagram of Proposed System

Figure 4.2: System Sequence diagram

Below are the sequence diagrams for different processes:

4.1.5 Sequence diagram for Registration

Figure 4.3: Sequence Diagram of registration.

4.1.6 Sequence diagram for Login

Figure 4.4: Sequence Diagram of login.

4.1.7 Sequence Diagram of Seller
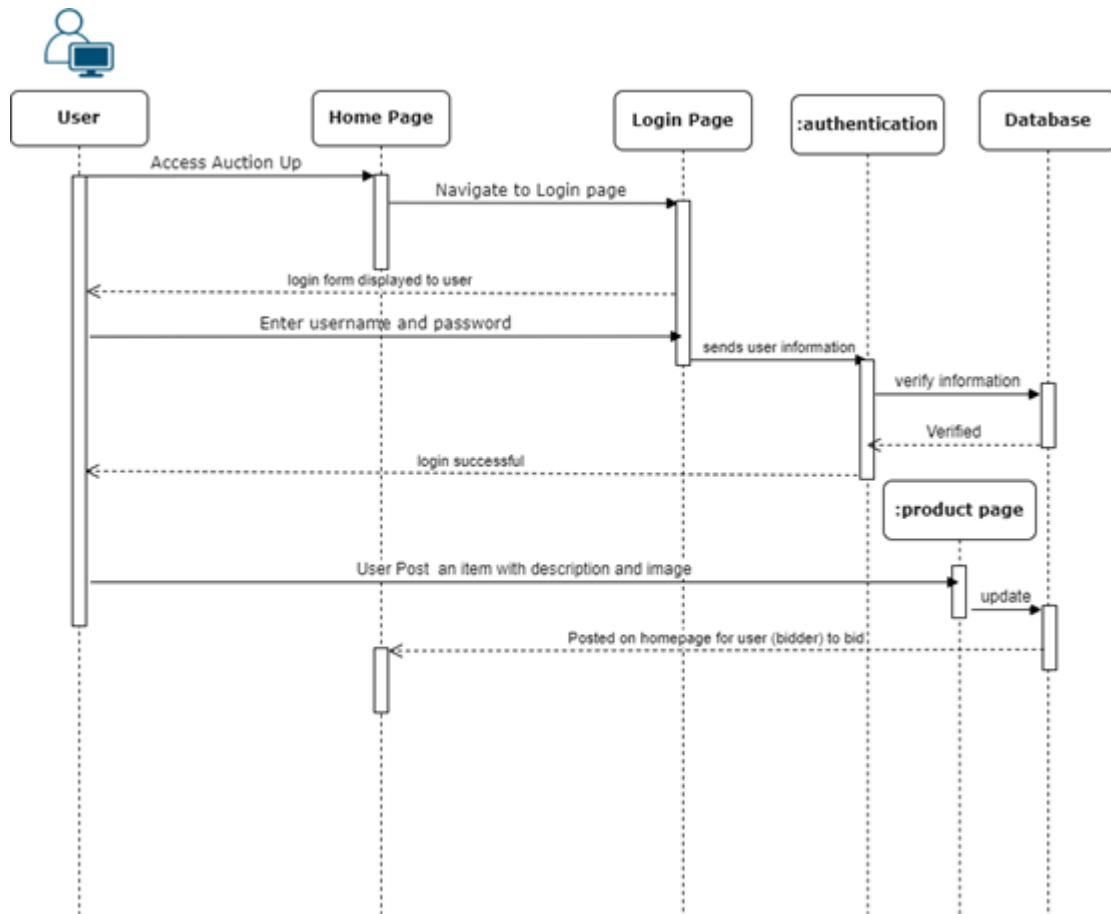
Figure 4.5: Sequence Diagram of Seller
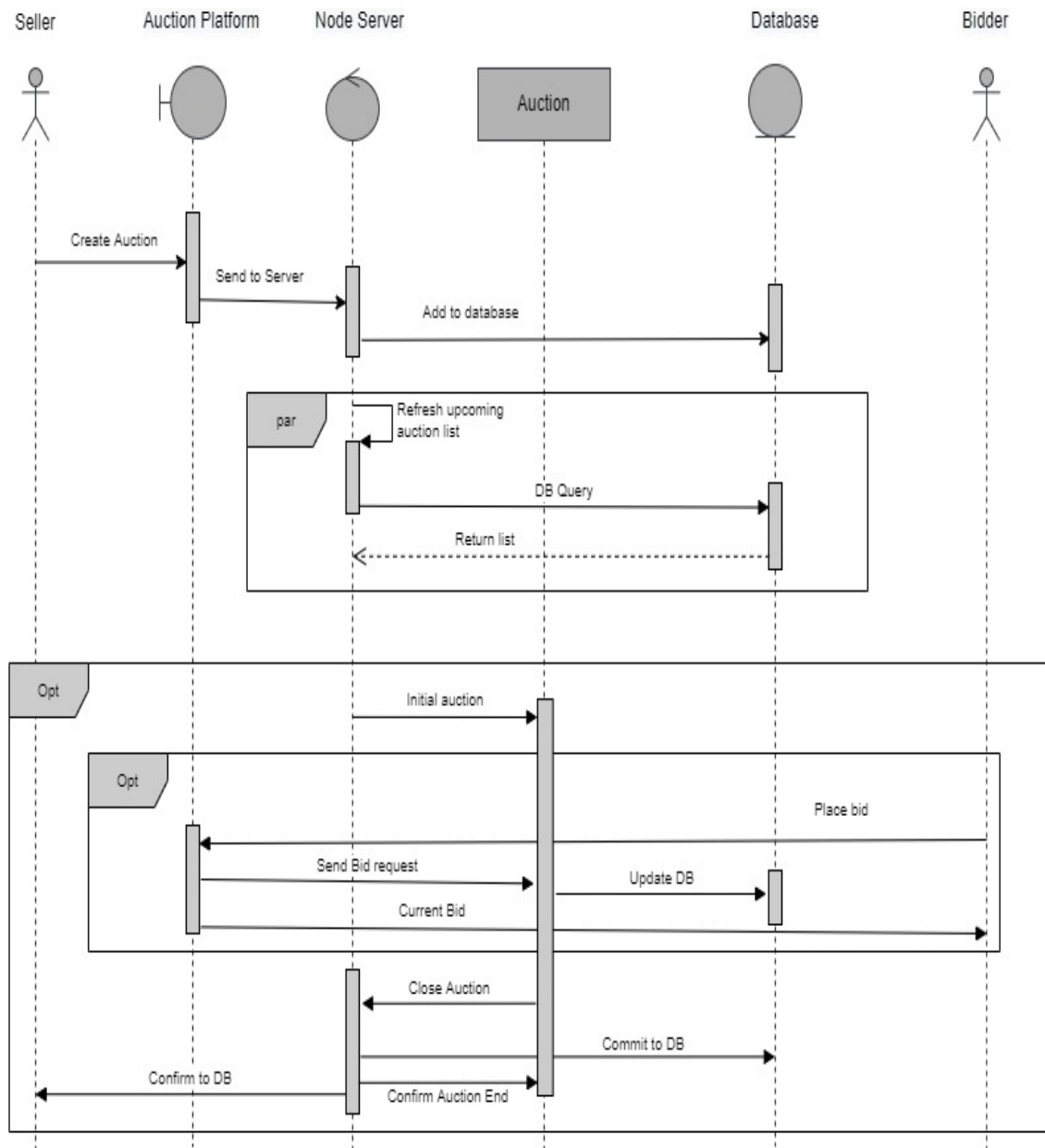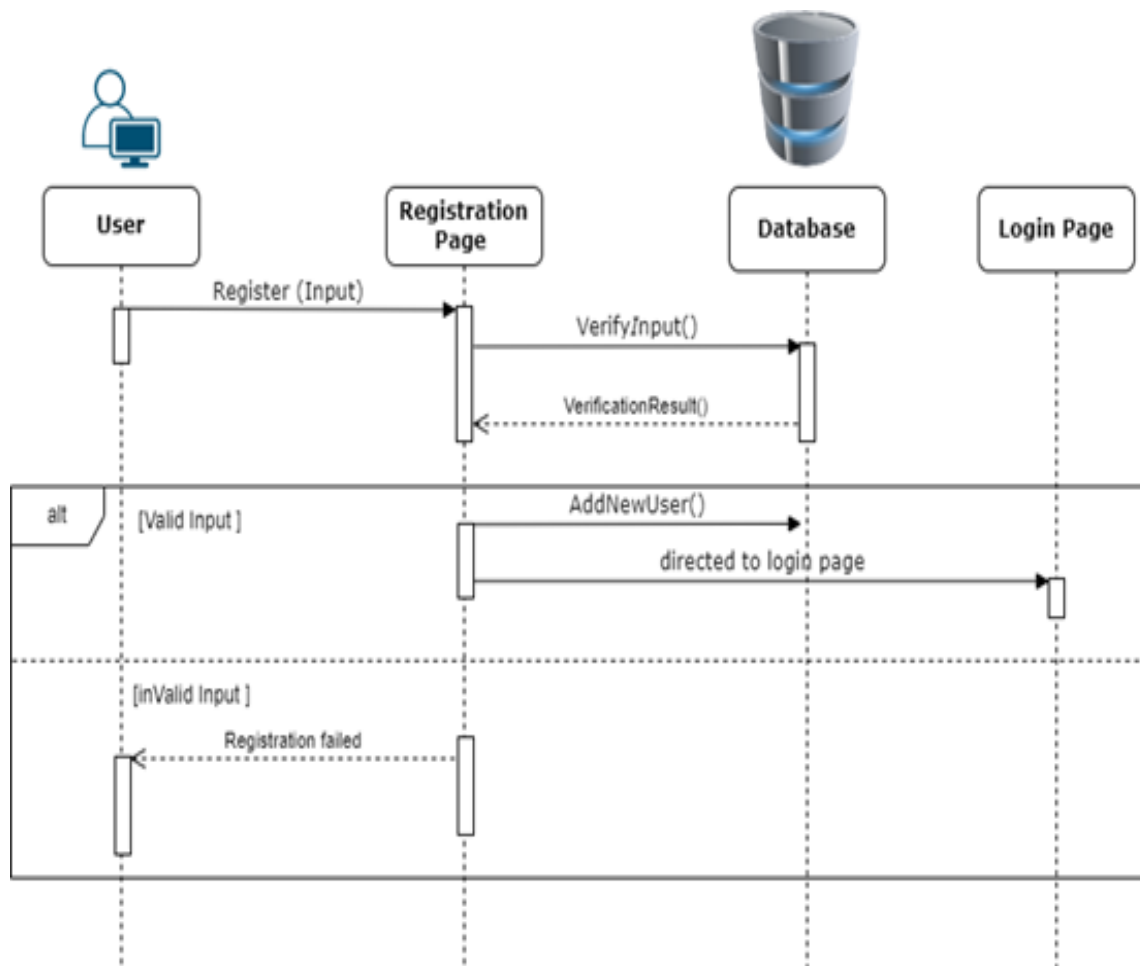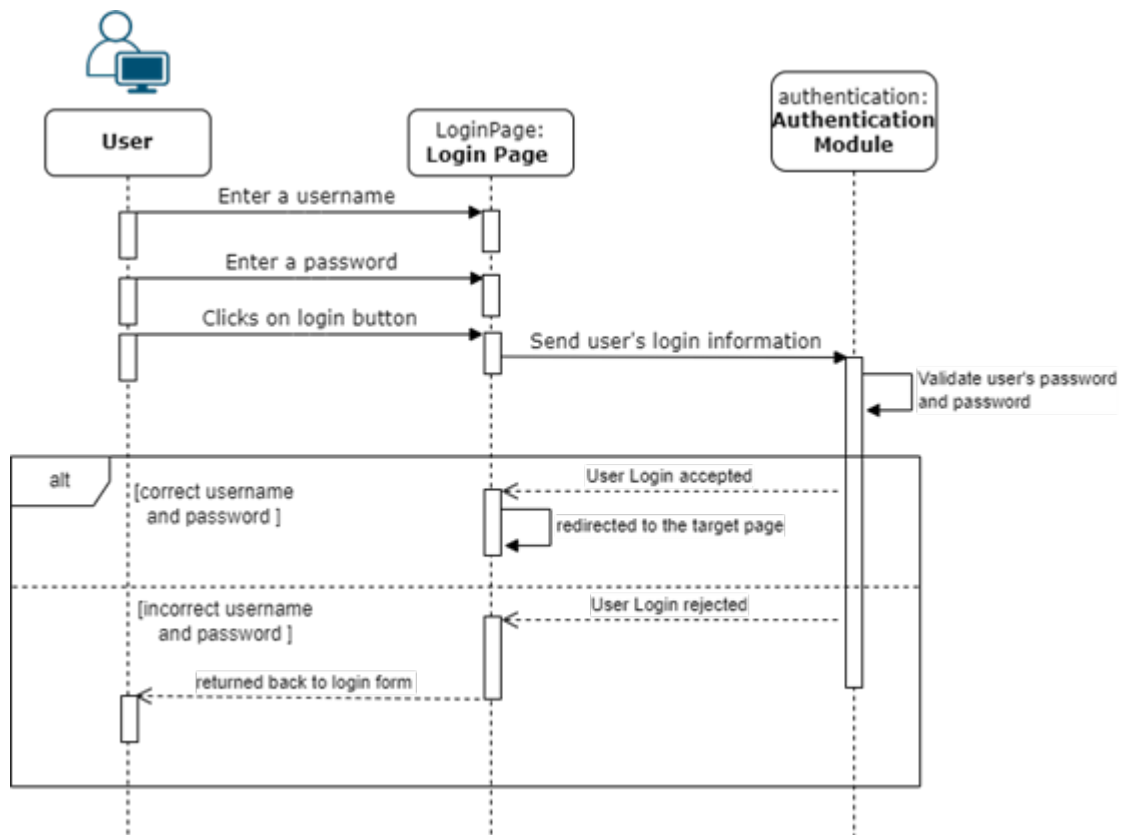
4.1.8   Sequence diagram of adding a product
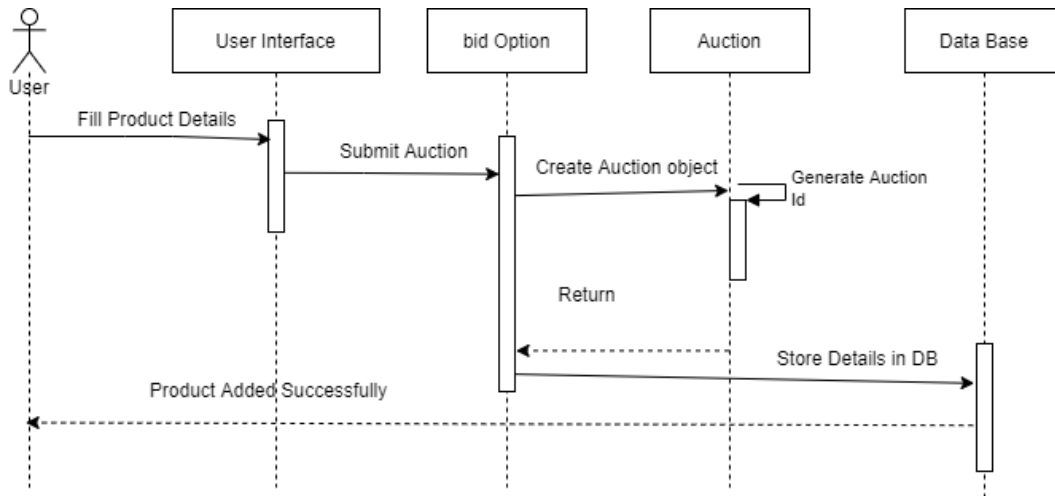
Figure 4.6: Sequence Diagram of add product

4.2   Activity Diagram

Activity diagram is a behavioral diagram used to give an explanation for the go with the flow of control in a system [11]. It essentially illustrates the behavior of a system. It shows the control go with the flow from a begin point to a finish factor showing the specific selection paths at the same time as the activity is being achieved.

4.2.1   Activity Diagram of Proposed system

Below is a figure that describes the complete flow of proposed system as when user login it first checks either login is successful (true) or not. If login successful, then user enters the system in which user sell any item.

Seller can create auction by adding an item, add details of item, fixes auction time means add start time and end time for an auction to be done, also seller will fix the start price for a bid, seller will edit items details too, seller will be able to delete or update an auction.

Bidder will view item that is placed for an auction. Bidder will for an item. If bidder place a bid, then the bid price will be updated.

When bidder place a bid system will receive bid and system will update that bid and checks the closing time if closing time is ended then bidder will move to auction in action if closing time is not ended then system will check the bid price if bid price

is greater than or equal to starting price then system will declare the highest bidder as a winner.

After item delivery the status will be updated to item delivered then the process will be finished.

After process finished the item will be deleted automatically.
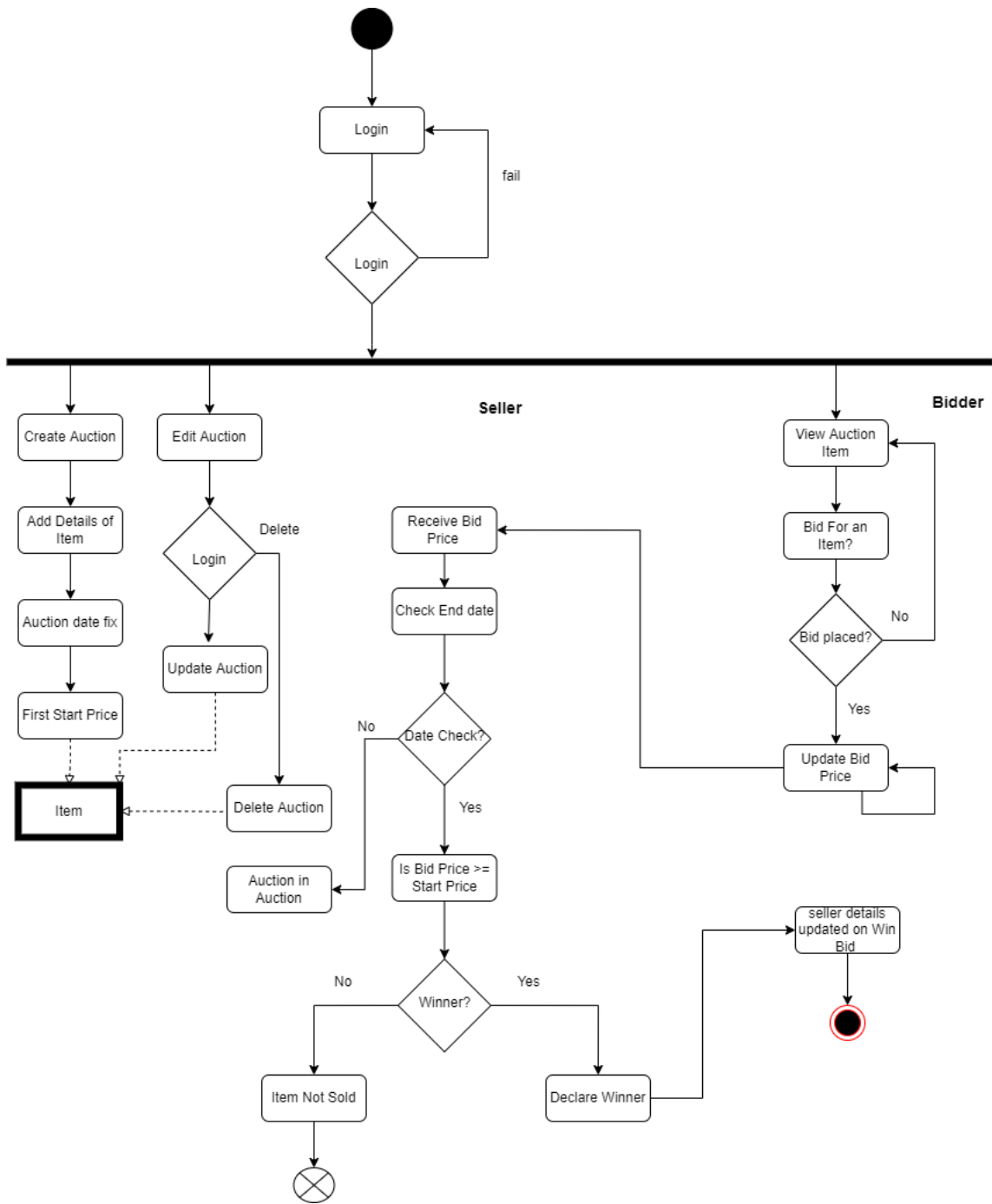
Figure 4.7: Activity Diagram of system

4.3 Database Design

4.3.1 Entity Relation Diagram of System
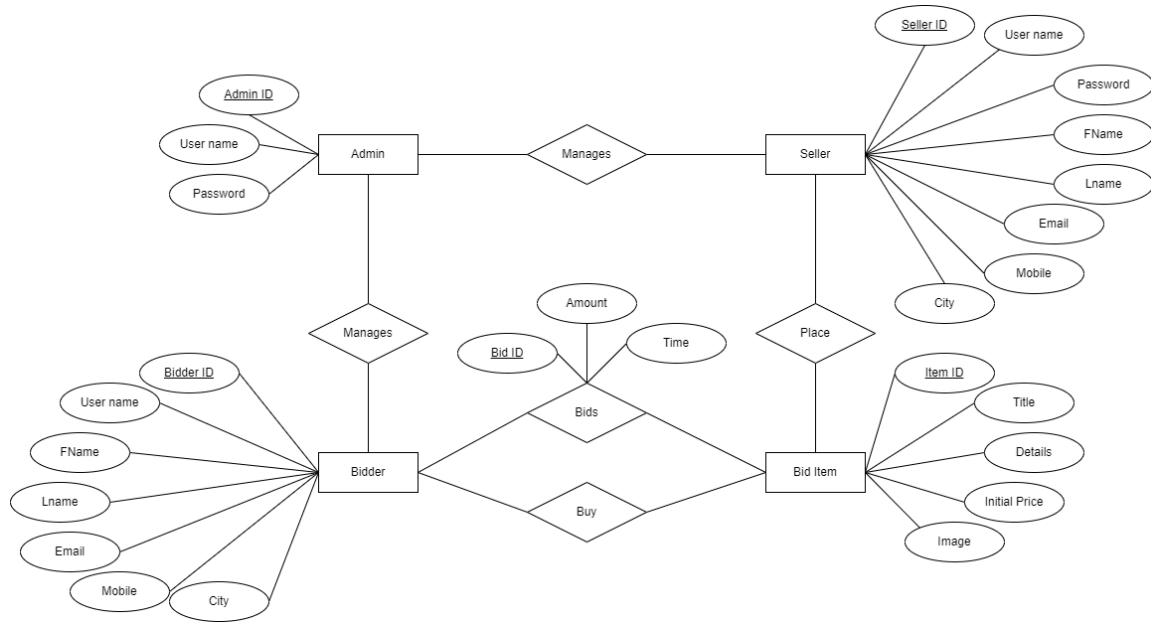
Figure 4.8: ER Diagram of system

4.4 Class Diagram of System

The Class Diagram is the maximum important entity in object-oriented evaluation and format [9]. It describes the forms of item that exist within the system and suggests the static relationships amongst internal training of the system. The Class Diagram can be used to expose the attributes and the operations of a category and the limitations that observe to the way the items are linked.
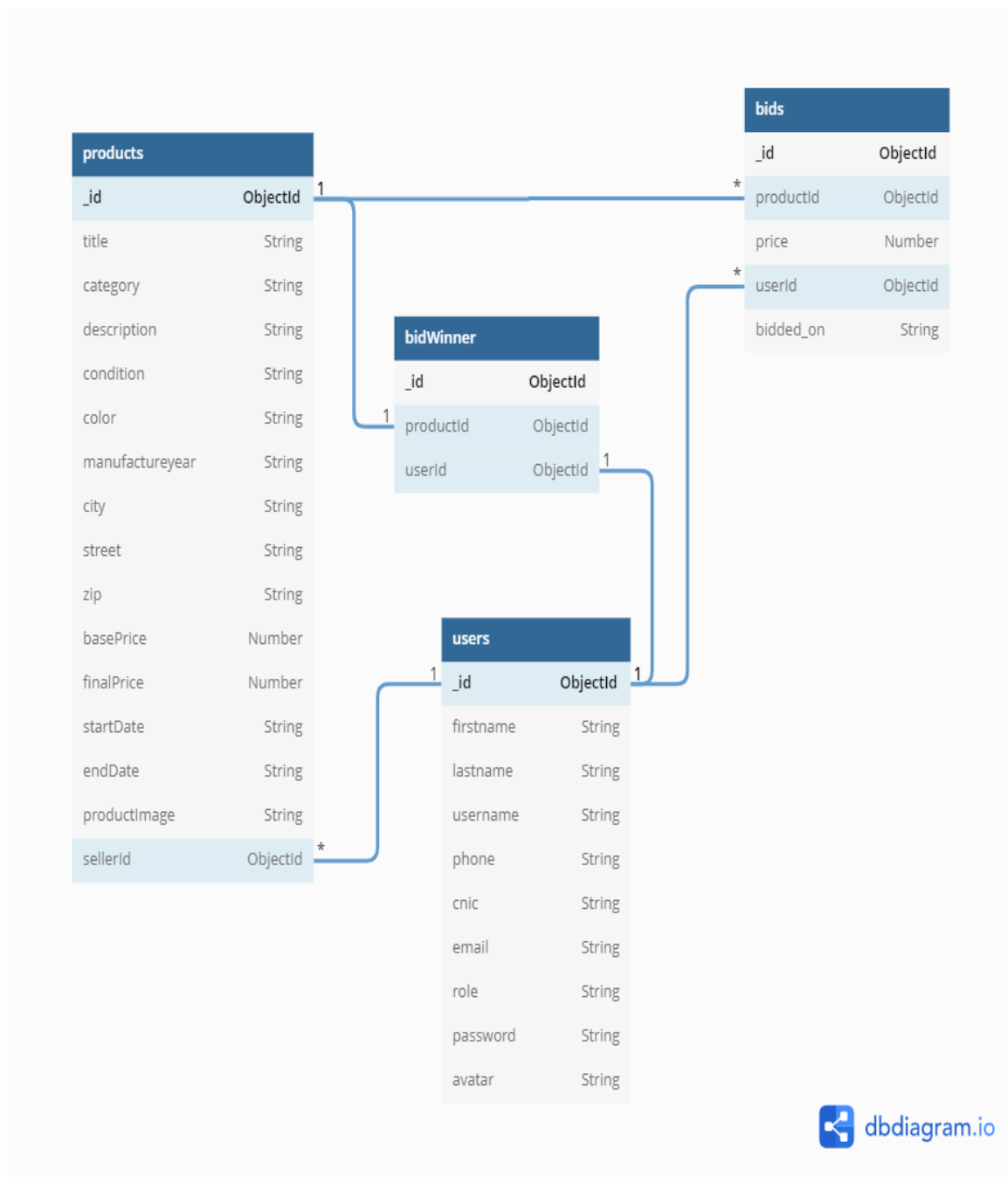
Figure 4.9: Class Diagram of system

4.4.1 Attributes

Table 4.1: Attributes

User	User ID
	First Name
	Last Name
	Username
	Phone
	CNIC
	Email
	Role i.e., user (seller of bidder) or admin
	Password
	Image or avatar
Product	Product Id
	Category
	Description
	Condition
	Color
	Manufacture year
	State
	Zip-Code
	Base Price
	Final Price
	start date
	End date
	Product image/images
	Seller id
Bid	Bid Id
	Product Id ref product
	User Id ref User
	Price
	$\text{Bid}_o n(Time\ and\ date)$

Bid

Table 4.2: Domain Constraint Bid

Domain	Datatype	Is Null
Bid Id	Object Id	No
Product Id	Ref Product	
User id	Ref User	No
Price	String	No

4.5   Data Flow Diagram

A data flow diagram (DFD) maps out the flow of information for any process or system. It uses defined symbols like rectangles, circles and arrows, plus short text labels, to show data inputs, outputs, storage points and the routes between each destination. Data flowcharts can range from simple, even hand-drawn process overviews, to in-depth, multi-level DFDs that dig progressively deeper into how the data is handled. They can be used to analyze an existing system or model a new one. Like all the best diagrams and charts, a DFD can often visually "say" things that would be hard to explain in words.
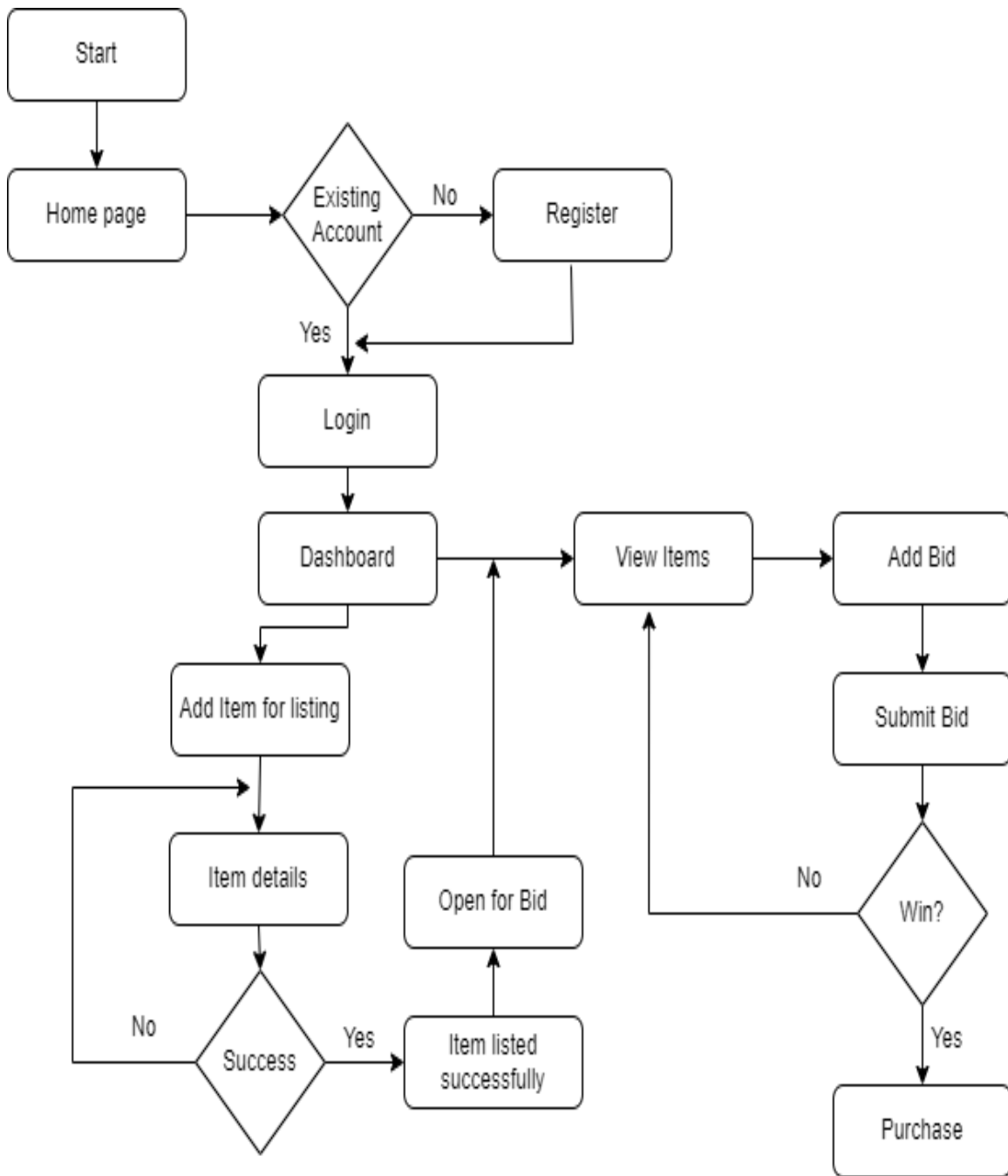
Figure 4.10: DFD

4.6   GUI Design

This section presents the certain design of the system and subsystem inputs and outputs relative to the user. Depending on the character of the assignment, it is able to be suitable to copy those sections at each the subsystem and layout module tiers.

4.6.1   Home Page
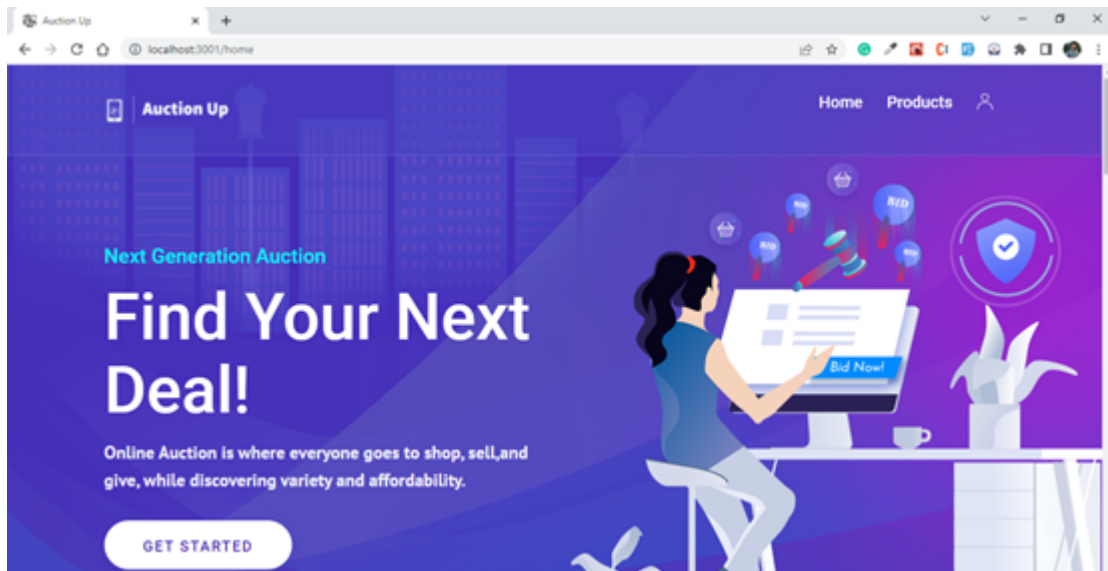
Figure 4.11: Home Page1
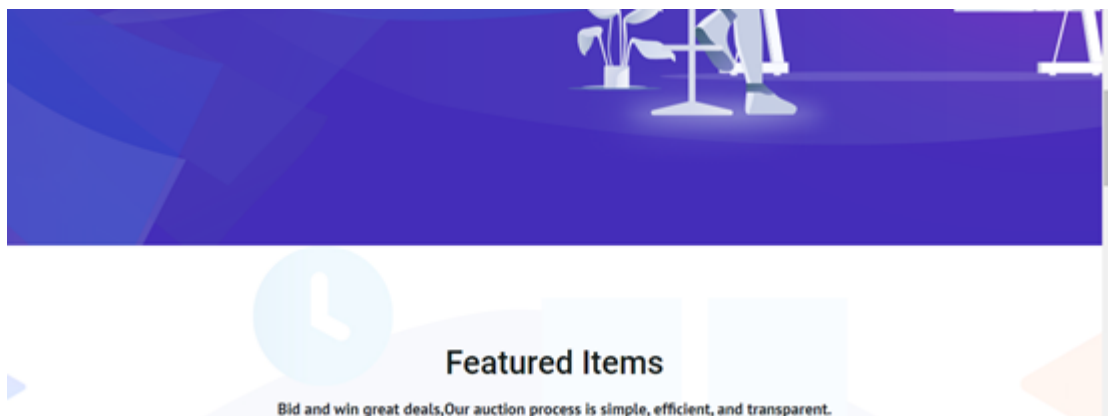
Figure 4.12: Home Page2
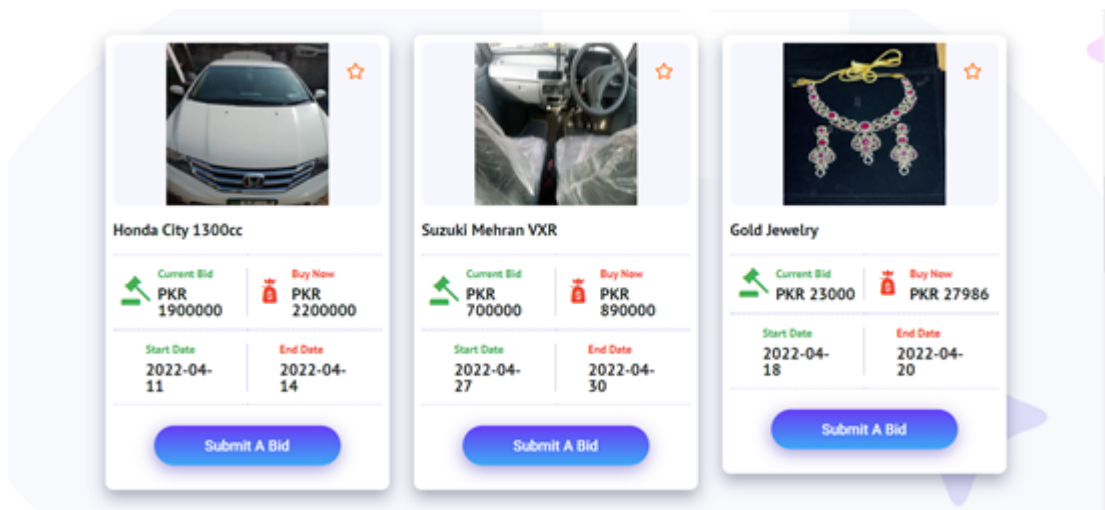
Figure 4.13: Home Page3

Figure 4.14: Home Page4
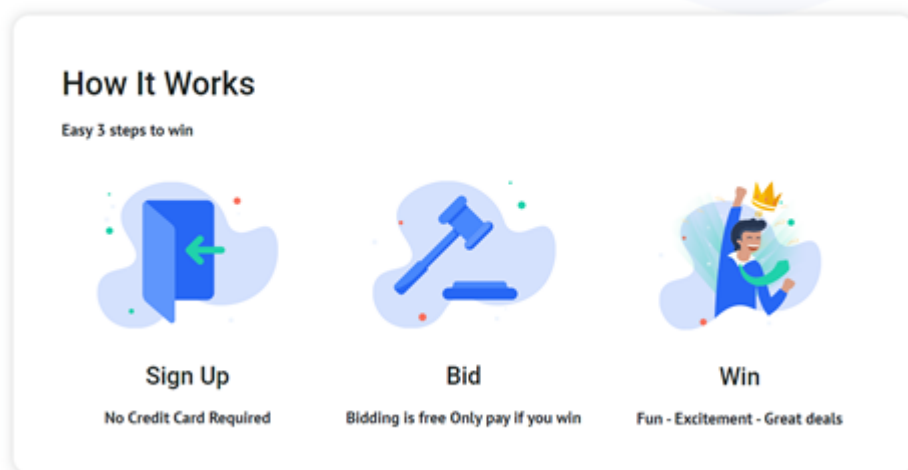
Figure 4.15: Home Page5
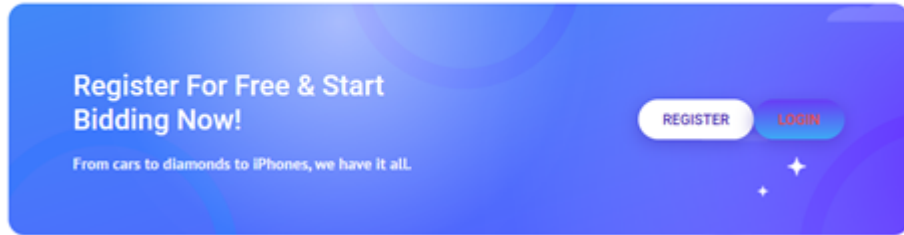
Figure 4.16: Home Page6
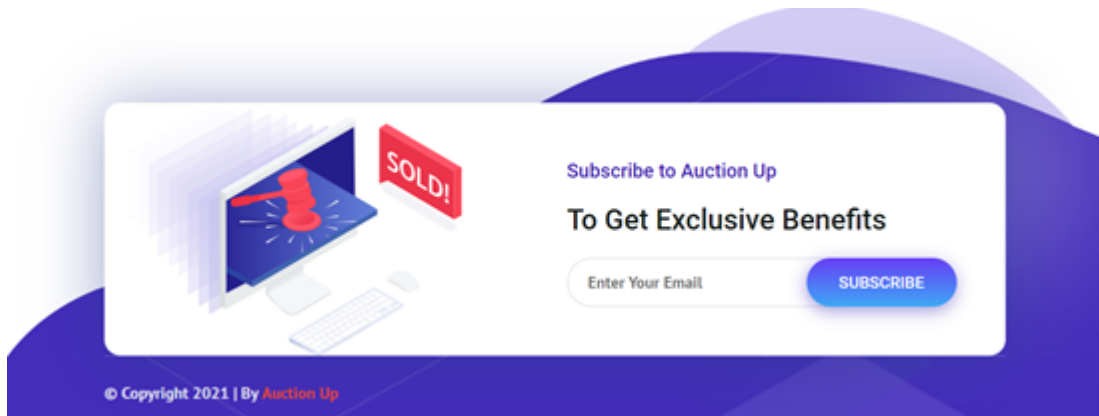
Figure 4.17: Home Page7

4.6.2 Product detail page

In this page logged in user will place bid for a particular product. For example
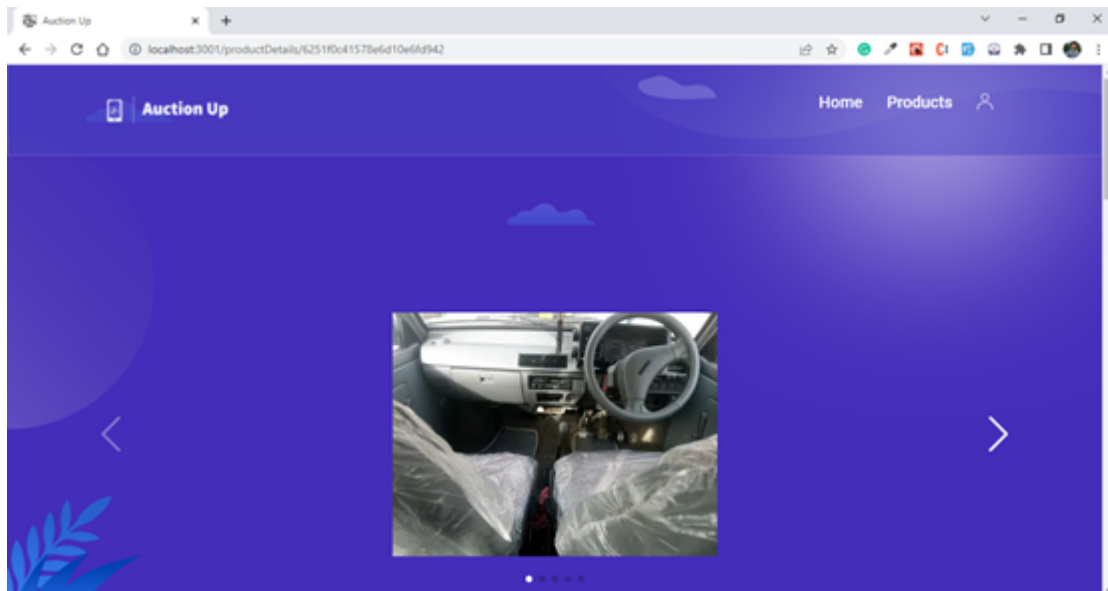
Figure 4.18: Product detail1
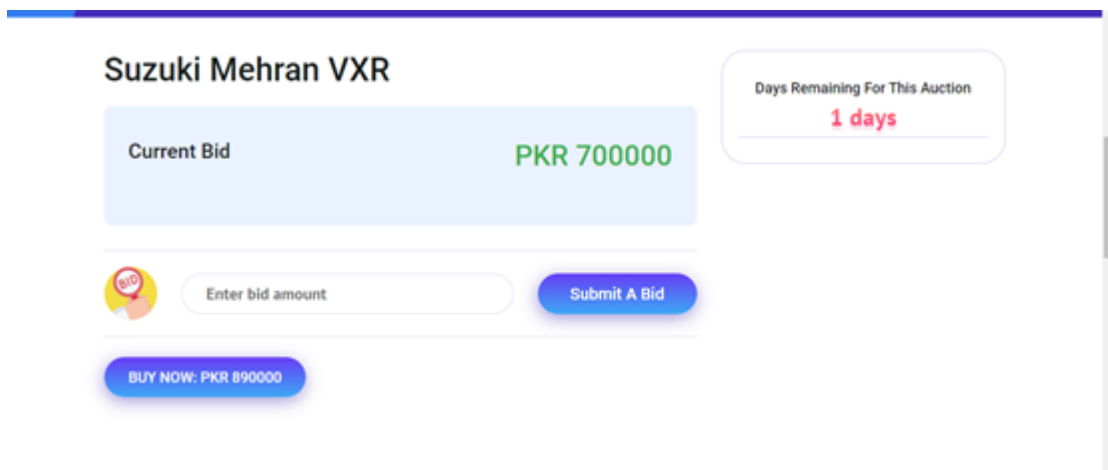
Figure 4.19: Product detail2

Figure 4.20: Product detail3

Figure 4.21: Product detail4
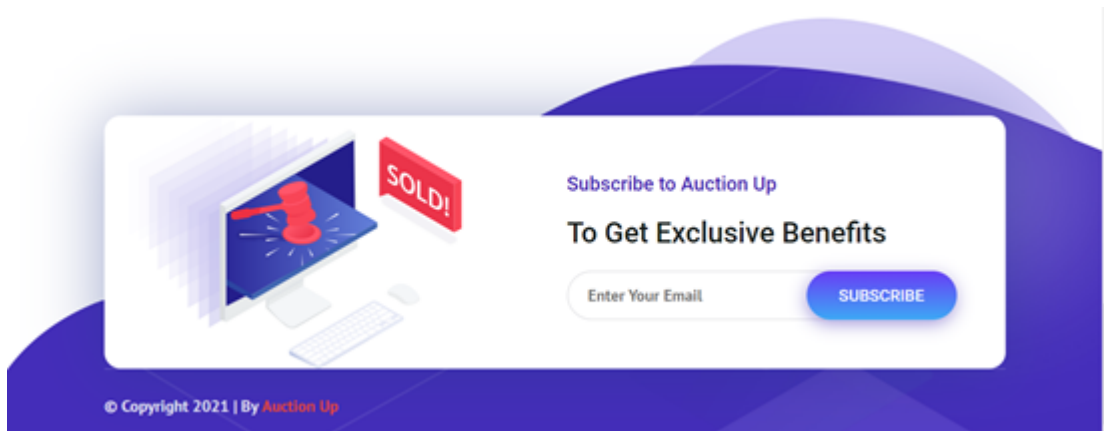
Figure 4.22: Product detail5

Chapter 5

System Implementation

System Implementation tell the technical specification and software components. It is the procedure of defining, how the system must build its design layout. We see the actual execution of our system in this chapter. We have carried out our system on Web-based platform using MERN stack.

5.1 System Architecture

System structure represents the system application because it's a high-stage logical illustration of the system. It includes the inner and outside components of the system. The proposed system includes:

5.1.1 Web Application

Auction Up have three important modules as Seller, Buyer and Admin.

In this module, the seller will submit the product facts in which he/she desires to sell or auction the product via on-line. In this module the Seller can positioned up the picture of the product and all of the crucial information about the product together with the product name, its description and the auction date and time at what the product is going to be auctioned and in the long run the forestall time of the auction.

In this module, the bidder will first see which product is been published on the app that is to be auctioned. The bidder/purchaser will see all the information about the product. If the bidder is involved to shop for that product then he can check in for the auctioning and bid the amount. At remaining, on the prevent of the auctioning the bidder gets to recognize the end result. Last while the range of public sale has been created the bidder will decide the amount which product to be auctioned. The

bidder has to auction inside a time that's set by the Seller even as developing auction this is one hour, twenty-four hours, and so on.

The admin can manipulate the users and take a look at the information about each item on the system. If the item/product became offered or reached its ending time, it'll probable be eliminated from the database.

5.2 System Internal Component

5.2.1 Register

In this system three of the users like Seller, Bidder and Admin gets themselves registered first. Every user will be registered via a completely unique Id. All information provided by user is stored in database and used for login purpose and for authentication purpose.

5.2.2 Login

Seller, Buyer, and Admin gets themselves login through login page in which system will authenticate their Id and password. User will be entered into the system and allowed to place an item for bid and bid an item too.

5.2.3 Forget Password

If any of the users forget about their password, they could recover it by means of forget about password page where they simply had to input Id and password restoration link could be sent to their respective mail. Reset option is providing the option to change user's username and password.

5.2.4 System Functionalities

The functionalities that a Seller can perform after logging in the system:
- Post an item for sale.
- Set the initial bidding price.
- Close or delete the auction right now if no one has a bid upon the item.
- Set the default period of the auction at any factor between three and 30 days.
- Post a text description of the item/product .
- Post images of the item.
- User will be able to post item for bidding purpose.

5.2.5 Buyer Functionalities

The functionalities that a Buyer/Bidder can perform after logging in the system:

- The person ought to be capable of bid on item/products to be had for sale or located by Seller .

- The user can set a top limit bid over which they will not bid.

- The system will routinely increment their bid in keeping with their bid fashion, up to the ceiling bid.

- User will bid on item/products in their own interest.

5.2.6 Admin Functionalities

The functionalities that an Admin can perform after logging in the system:

- The main objective of the admin in proposed system is to control the entire auction or bidding process and can manage the users.

- Admin can add, remove, or manage items presented by seller.

- Admin can update user's progress through emails or mobile number provided by the user.

- Admin will hold the begin and end/expiry time of every bid and if the item/product become bought or reached its finishing time it'll be removed from the database.

5.3 Tools and Technologies

Technology stack used in this task is MERN stack. "MERN is abbreviated as MongoDB, Express, React and Node. The structure of a MERN stack permit us to easily construct a three-tier structure (Front stop, Back cease and Database) totally the usage of JavaScript and JSON (JavaScript item/product Notation)".

5.3.1 Rect Js

In the three-tier structure of a MERN stack there exist a React.Js [1] on the top tier. "React.Js is a Client-Side (Browser) framework that allow us to construct especially reactive user interfaces (UI). React.Js render UI with dynamic records, manage user input and communicate with back end services".

5.3.2 Node Js

"Node.js is a server-side runtime JavaScript on server-side. Node.js [5] listen to the requests and send responses. Node.js executes Server-Side logic. It interacts with databases and files". Remember it is an alternate to PHP (Hypertext Preprocessor).

5.3.3 Express Js

It is a Node.js framework which simplifies writing Server-Side code and logic. Based on Node.js it offers same functionalities. It funnels requests through functions as we call it Middleware-base. Express.js [6] includes routing, view-rendering and furthermore it simplifies the usage of Node.js. Remember Express.js is for Node.js what Laravel would be for PHP.

5.3.4 Mongo DB

On the third and a last tier there exists a MongoDB database Tier. MongoDB [8] is a database engine. It is a NoSQL database which stores documents in collection instead of records in tables as in SQL. MongoDB stores Application data like user's data, product data etc. MongoDB enforces no data schema or relations. It easily connects with Node.js or Express.js but not to React.js for security reasons. MongoDB is a powerful database which can easily be integrated into a Node.js/Express.js environment.

5.3.5 Postman

"A postman is computer software used for API trying out. Postman [14] sends an API request to the net server and receives the reaction. No more work or setting up of framework is required whilst sending and receiving requests in Postman". Extensively used by Testers and Developers for better testing of the application.

5.3.6 GitHub

"GitHub [3] is a provider of Internet hosting for software application improvement and version control the use of Git." It offers the allotted version manage and deliver code management functionality of Git, plus its very own functions. It gives get proper of entry to control and numerous collaboration capabilities inclusive of worm tracking, function requests, venture management and non-stop integration.

5.4 Methodology

The project is in particular based totally at the incremental approach due to the fact in this model requirements are divided into more than one standalone modules of the software program development cycle. In this method, each module goes via the necessities, layout, implementation, and testing stages because of which every successive launch of the module adds function to the preceding launch. Hence the technique continues till the whole system is completed. There are three important performing users to this software (Seller, Buyer, and Admin) and all of them have extraordinary requirements. We have found out short-time making plans and developed this application in a couple of phases.

- **Phase1**
  In the very first stage, we've got amassed information from users by doing survey and priorities those requirements according to the Final Year Project and developed the simple Web Application.

- **Phase2**
  In this section, we've developed a completely useful and interactive Web based application with the updated requirements and designed a proper interface. In this section, the system is prepared for testing.

Chapter 6

System Testing and Evaluation

6.1   Introduction

System Testing is the important thing to a successful system which guarantees the modules of the system working properly and supply anticipated consequences. In System Testing of software and hardware, we check each module of the system separately. The cause of testing our system is to check whether the developed system meets all the requirements and follows the requirements according to requirement specifications. It is the assessment of what we have finished, and this could require qualitative assessment.

6.2   Graphical User Interface Testing

To make sure right running of operations of the system.

6.2.1   Test Case for Login

To check if the login page is working properly or not.

Table 6.1: Test Case for Login

Test Case Id	TC-No 1	
Name	Login	
Use Case Id	AU-BU01	
Description	Test the login system in which Admin and User (Seller or Bidder) have registered themselves.	
Requirement:	Internet Connection	
Initial Condition	Application is online and login page is available, User knows Email and Password which is used while registration of a new account or during sign up process.	
Step:	Procedural steps	
1	Go to Login Page.	
2	Enter Email and Password.	
3	Press Login Button.	
Step:	Task and Expected Result	Status
1	If email and password matches.	Pass
2	If email and Password matches user navigates on dashboard page with details entered while registration	Pass
3	If Email and Password does not match, then show error shown with their error status.	Pass
4	Password is not visible.	Pass

6.2.2 Test Case for Register/Sign Up

To check if the login page is working properly or not.

Table 6.2: Test Case for Sign Up

Test Case Id	TC-No 2	
Name	SignUp	
Use Case Id	AU-BU02	
Description	Test the Sign up system in which Admin and User (Seller or Bidder) register themselves.	
Requirement:	Internet Connection	
Initial Condition	Application is online and sign up page is available. User will enter details mentioned above in user case AU-BU02.	
Step:	**Procedural steps**	
1	Go to Sign up Page.	
2	Enter Details.	
3	Press Register Button.	
Step:	**Task and Expected Result**	**Status**
1	If all information is correctly entered, then user will be registered successfully	**Pass**
2	If user does not enter required field, then error will be displayed to enter details otherwise user will not be registered.	**Pass**
3	Password is not visible	**Pass**

6.2.3 Test Case for Home Page

To check the activities of home page are properly working.

Table 6.3: Test Case for Home Page

Test Case Id	TC-No 3		
Test Case Name	Home Page		
Requirement	Internet Connection		
Steps	**Tasks**	**Expected Outcome**	**Result**
1	Open Home Page	Pass or Fail	Pass
2	Check buttons placed are working.	Pass or Fail	Pass
3	Check Products portion working properly such as products from database are shown on main page.	Pass or Fail	Pass
4	Check all links. i.e., products link or login link placed on navbar	Pass or Fail	Pass

6.2.4 Test case for Product Page

To check the activities of product page are properly working.

Table 6.4: Test Case for Product Page

Test Case Id	TC-No 4		
Test Case Name	Product Page		
Requirement	Internet Connection		
Steps	Tasks	Expected Outcome	Result
1	Open Product Page	Pass or Fail	Pass
2	Check buttons placed are working like clicking on add a bid will navigate user to product details page.	Pass or Fail	Pass
3	Check Products retrieves from database accordingly.	Pass or Fail	Pass
4	Check all links.	Pass or Fail	Pass
5	Check search box working for searching a product according to name of product or according to date etc.	Pass or Fail	Pass

6.2.5 Test case for Product Details Page

To check the activities of product details page are properly working.

Table 6.5: Test Case for Product Details Page

Test Case Id	TC-No 5		
Test Case Name	Product Details Page		
Requirement	Internet Connection		
Steps	Tasks	Expected Outcome	Result
1	Open Product Details Page	Pass or Fail	Pass
2	Check buttons placed are working like submitting a bid on product.	Pass or Fail	Pass
3	Check Products retrieves from database accordingly.	Pass or Fail	Pass
4	Check all links.	Pass or Fail	Pass
5	Check all the data retrieved from database is correct i.e., data for a particular product retrieving from database is correct according to the particular or unique id of a product.	Pass or Fail	Pass

6.3   Usability Testing

To make sure that our system is simple to use we do Usability testing. Here certain users are requested to use the system to ensure that the system is simple to use, and we are able to get feedback from customers to enhance its working.

6.3.1   Test case for Login

To check if the login page is working properly or not.

Table 6.6: Test Case for Login

Test Case Id	TC-No 1	
Name	Login	
Use Case Id	AU-BU01	
Requirement	Internet Connection	
Initial Condition	Application is online and login page is available, User knows Email and Password which is used while registration of a new account or during signup process.	
Step	Procedural Steps	
1	Go to login page	
2	Enter Email and Password	
3	Press Login Button	
Step	Task and Expected Result	Status
1	If email and password matches	Pass
2	If email and Password matches user navigates on dashboard page with details entered while registration	Pass
3	If Email and Password does not match, then show error shown with their error status	Pass
4	Password is not visible	Pass

6.3.2 Test case for SignUp

To check if the login page is working properly or not.

Table 6.7: Test Case for SignUp

Test Case Id	TC-No 2	
Name	SignUp	
Use Case Id	AU-BU02	
Description	Test the Signup system in which Admin and User (Seller or Bidder) register themselves.	
Requirement	Internet Connection	
Initial Condition	Application is online and signup page is available. User will enter details mentioned above in user case AU-BU02	
Steps	**Procedural Steps**	
1	Go to Signup Page	
2	Enter Details	
3	Press Register Button	
Step	**Task and Expected Result**	**Status**
1	If all information is correctly entered, then user will be registered successfully	Pass
2	If user does not enter required field, then error will be displayed to enter details otherwise user will not be registered.	Pass
3	Password is not visible	Pass
4	Password is not visible	Pass

6.3.3 Test case for Update Account Information

To check if the account information update is working properly.

Table 6.8: Test Case for Update Account Information

Test Case Id	TC-No 3	
Name	Update Account Information	
Use Case Id	**AU-BU03**	
Description	Test the update account information system in which Admin and User registered themselves.	
Requirement:	Internet Connection	
Initial Condition	Application is online and my profile page on dashboard for particular user is available. User will enter required details which user want to update.	
Steps	**Procedural Steps**	
1	Go to My profile Page	
2	Enter Details	
3	Press Update Button.	
Step:	**Task and Expected Result**	**Status**
1	If user want to update any of the information field like first name is entered, then user enter update button after successful update user will be shown with that information in My Profile page	**Pass**
2	If user want every field to update user enters every field correctly then press update button on successful update user will get a response in alert that user information updated successfully.	**Pass**

6.3.4 Test case for adding an item or product for an auction

To check if the post an item for auction is working correctly.

Table 6.9: Test Case for adding a product

Test Case Id	TC-No 4	
Name	Add an item for auction	
Use Case Id	AU-BU04	
Description	In the post an item for auction the user will provide details of what he wants to be done. This will include the details mention above in use case number AU-BU04.	
Requirement:	Internet Connection	
Initial Condition	Application is online and add an item for auction on dashboard for particular user is available. User will enter details.	
Step:	**Procedural steps**	
1	Go to post an item for auction page	
2	Enter Details	
3	Press submit Button.	
Step:	**Task and Expected Result**	**Status**
1	If all information is correctly entered, then user will be able to add item successfully for an auction system to begin.	**Pass**
2	If user does not enter required field, then error will be displayed to enter details otherwise user will not be to add item.	**Pass**

6.3.5 Test case for placing a bid on product

To check if the post an item for auction is working correctly.

Table 6.10: Test Case for placing a bid

Test Case Id	TC-No 5	
Name	Place bid on product	
Use Case Id	AU-BU05	
Description	In this test case registered user will be able to add bid on an item or a product.	
Requirement:	Internet Connection	
Initial Condition	Application is online and for adding a bid user must be registered and product end date must not be ended.	
Step:	Procedural steps	
1	Go to product details page by clicking product in product page	
2	Enter Details like user will enter price for bid.	
3	Press submits a bid Button.	
Step:	Task and Expected Result	Status
1	At first user login status is checked if user is not logged in then user will be navigated to login page.	Pass
2	On successful log in user will be able to add price for a bid.	Pass
3	System will check the end date for auction if end date not reached then logged in user will place a bid otherwise if end date passed then user will not have an option to place a bid	Pass

Chapter 7

Conclusion

The typical working of the system is concluded in this chapter with its destiny upgrades.

7.1   Conclusion

In this Project, we have developed a web-based an online bidding system named **Auction Up**. It is an earnings occasion wherein capability users location aggressive bids on products or an item. This project will help users to buy or promote product and permit users to put up their product/object for auction wherein bidder can test in and might bid for any available product.

Auction Up has made users extra effective and efficient in their conduct and has driven groups to a brand-new level, forcing many to make the essential adjustments and changes to attain the new market of informed users. The consequences of this survey underscore the need for companies to take the web marketplace significantly.

Internet has emerged as a cost powerful method of doing business. The businesses can prioritize the consumer implicit and explicit necessities in online auction surroundings. Online websites must pay extra interest to the female segments as consequences show that ladies save more in online auction sale system as compared to men. So, corporations should devise the rules and techniques to draw greater range of people in this segment in future also. With the advances in generation, more business opportunities can be discovered via companies. Electronic trade turns into an essential part of the enterprise in agencies. Better understandings of consumers Auction Up behavior will assist corporations in getting more online purchasers and growing their e-business revenues. At the same time, as realized the blessings from e-auction sale, purchasers are greater inclined to make purchases online. With the popularity of Internet, the wide variety of Internet users will keep growing and greater Internet

users turns into online purchasers, even regular customers. However, the evolvement of e-auction will convey new changes in business operation, business surroundings, and monetary circumstance and many others will influence consumer Auction Up behavior. With the know-how of purchaser at ease online auction system behavior, its miles believed that e-auction will keep growing and it turns into now not handiest and crucial commercial enterprise revenues channel, but additionally part of people's everyday life.

7.2 Future improvement

It isn't possible to expand a system that makes all of the necessities of the consumer. User requirements maintain converting because the system is being used. Some of the destiny upgrades that may be done to this system are:

- As the technology emerges, it is viable to enhance the system and can be adaptable to favored surroundings.
- Because it is based totally on an object-oriented layout, any further modifications can be without problems adaptable.
- Based at the future security troubles, safety may be progressed with the use of growing technology.
- An in-built web browser can be delivered.
- The destiny plan of this task is to improve layout, implementation and documentation in this type of way that anybody can use this challenge for better perform.
- In future we can upload the following module for better development of the project:
- More security inside the system, More consumer-friendly system.
- Payment option might be brought if we were given permission from any of the dependable online payment app.

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