

A Major Project Final Report on  
**“Auction System” Android Application**

Submitted in Partial Fulfillment of the Requirements for the Degree of  
**Bachelors of Engineering in Information Technology**

Under Pokhara University

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**INFORMATION TECHNOLOGY**

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## **ABSTRACT**

Auction System is a well-designed platform for auction of some valuable and antique goods. As mobile phone is being so common and has been a good medium to connect with customers. Auction System aims to connect with sellers and buyers where seller will be able to post their products with minimum cost and buyers will bid for the product if they want. Bidding process will be instantaneous and the higher bidder will get the product. The whole concept of our Auction System is based on “Pay if you want” which indicates that user will be able to get product by bidding higher price within the limited time. This platform will make seller satisfied as their product will get price which it deserve. Seller will be provided with a web portal for their content control and report observation. Users will be notified about any new bidding and the bided products.

**Keywords:** Bid, Web portal, Android, Pay, Notification, Buyer, Seller, Limited.

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# **1. INTRODUCTION**

“Auction System” is a well-designed platform for connecting buyers and sellers where buyers will pay for item by bidding and seller will get deserving price for their item. This project aims to bid for some valuable items like antique items and other important items. The item are well categorized and users will find easy to find items. Within a limited time i.e. bidding period user will be able bid for product. So user will be able to pay higher if they like the product or leave the product if they feel the price tag is higher. This system have refund policy if the user’s lose in the bidding process.

## **1.1. PROJECT OVERVIEW**

The main aim of this project is to provide user with a reliable platform where they can buy valuable items by bidding. Here user will pay for item as much they think it deserve. If they feel like cancelling the bidding they will be refunded. Our project aims to support the sellers too. As the process of buying is totally based on bidding, sellers will post their products with minimum cost and bidding period. So seller will get deserving price for their items. This product will categorize items for easiness of users. Sellers will have to register to our web portal and after reviewing their portfolio they will be selected or rejected to add items on the app through their web panel.

## **1.2. PROBLEM STATEMENT**

The problem that gave us hint for this project is unavailability of user willingness while shopping on e-commerce. There is no option for user to buy an item on less price or higher if he/she want it in case of limited stock. There is biasness to seller where they can’t get more money for a valuable item which it deserve. There is no way or platform for user to decide the price for a product after the seller post for it with a minimal price. Like a traditional way of bidding which involve a lots of paper works and having to wait for hours despite the weather condition. There is no platform for the user to get instant notification for their bidding and can bid more for a particular items if they think that the item deserve more money than bided by other users.



### **1.3. PROJECT OBJECTIVES**

The main idea of this project is to develop a platform which enables user to bid for items and sellers will be able to post their items for auctions to get a deserving price to their items.

The final goals of this project are as follows:-

- To increase efficiency and improve services provided to the customers through better application of technology in daily operations.
- To eliminate manual/paper work and increase level of accuracy.
- To increase speed of service and customer satisfaction.
- To make user friendly system so that user can easily view and bid for items.
- To make system more Secure and Integral.
- Provide login based system to enter into personal profile.
- The system makes use of API for fetching the details of users and items.
- The usage of this application reduces the time required for long paper works.
- Since this system is instantaneous so user will get notified instantly and can increase their bidding price.
- Provide the interface for push notification on start and ending of related bidding process.

### **1.4. SIGNIFICANCE OF STUDY**

This project on “Auction System” is aimed to make the whole auction system easy for all peoples. The people refers to both the seller and buyers where a common platform is created. The contents on the system is maintain by the end user of the system. Here the items will be added by the seller through a web portal whose profile will be verified. This project aims to overcome the late and long paper work involve on auction of any kind of items. There will be one time verification of user documents and profile details. Then user will be able to participate on the auction system. However user will be able to view the items and its details on the app even if their profile is unverified.

## **1.5.SCOPE AND LIMITATIONS**

The scope of this project is to provide user with all the facilities of bidding for valuable items through android based applications. Scope of our projects are:

- Integrating payment gateways for buying bided items.
- Recommendation of items through app for user interest.
- Addition of product through web portal is available so variety of items is added after the verification of sellers account.
- Efficient use and integration of digital currencies to make whole process a lot easier.
- We might go for online support system.

Despite working on the problems of customers our project seems to have some limitations. Some of the limitations of our projects are:

- It required a smartphone for android application which should have installed android OS.
- As we don't have our own items for auction so process may lag through a verification and other securities.
- Internet, as our system is totally online based.

## **2. LITERATURE REVIEW**

This section consists of literature review which defines all possible services of application. The survey had been carried out to find out best algorithm strategy available. We had referred research journals, existing system and analyze the results of same, also take the experts opinion. Literature review is focused on a research questions, trying to identify, appraise, select any synthesize all high quality research evidence and argument relevant to that question. This paper assumes that the application described would be a prototype that would shape the future & amp; there still remains much to do in terms of development and improvement of the existing models. Applications created with ease of understanding and the design can be created and tailored to the travel process to make it more effective and user friendly, thus making it easier and convenient for the users to do the entire bidding process with the use of this application along with the seller to have easy and reliable platform to put their items on auction.

### **2.1. REVIEW**

There has been vast improvement and development in technology, mobile application has been very essential in our day to day life. Even this kind of service has advanced; it still requires more areas for improvement. Our project aims to solve all the problems coped during the bidding process.

### **2.2. EXISTING DEVELOPMENT**

As we have reviewed many apps, software's, websites and many software technologies related to auction system. We have a found rough picture of present development and scenario of related field in technology advancement. There has been vast improvement and development in technology, mobile application has been very essential in our day to day life. Even this kind of service has advanced; it still requires more areas for improvement. Our project defines all possible services application. With growth of internet and internet based devices, most of the people are fond of things available over the internet. Facebook and online media have grown their popularity very much these days. We found such project existed outside our country.

Some of the popular products that we have research are follows:

- **Online Auction**

Online Auction is an android app developed by Ama Information System[1]. It is based on Dubai, UAE. Some of its pros and cons[2] are:

- **Pros**

- Online auction allows to browse through different category on auction
- Review auction results and higher bid update
- View location of items on auction.
- View Information details of each items on auctions along with its picture.

- **Cons**

- Need to improve highly on UI/UX
- Dissatisfied user due to crash on app
- Only available in Dubai

- **SellAnyCar.com:**

SellAnyCar.com[3] is a travel planner app supports Android, IOS and website that has amazing feature of selling any car within 30 minutes inside Dubai. They buy car after reviewing all the condition and buy it within 30 minutes.

Some of its pros and cons[4] are:

- **Pros**

- Instant evaluation of your property
- Multiplatform (Android and IOS)
- Well organization of data and input/output system
- No haggling and no hassle as money is directly deposited on your bank account

- **Cons**

- Delay payment.
- Seller complain of getting much lesser price than expected.

### 3. METHODOLOGY

We have planned to work following these methodologies for application of knowledge, skills, tools and techniques to a wide range of activities and design in order to meet the requirements of our project.

#### 3.1. SOFTWARE DEVELOPMENT LIFE CYCLE: INCREMENTAL MODEL

The framework we will be using for the developing this project is Incremental model. This is an umbrella term for several iterative and incremental software development methodologies. Each of the method is unique and share common core values. This method suits for this project as there are three increments that needs to be done separately( we development, API Development, android development, system integration).The requirements of system can be clearly understand and well defined and backed system also needs to be integrated and implemented. In this development first we decide or plan by gathering and analyzing useful requirements of the user and also the suitable system specification to make sure it matches. After the plan we go ahead to designing system followed by component design and when design is done then we do the coding then finally check if our project meets the requirements. We follow the same process several steps until all the requirements are fulfilled.

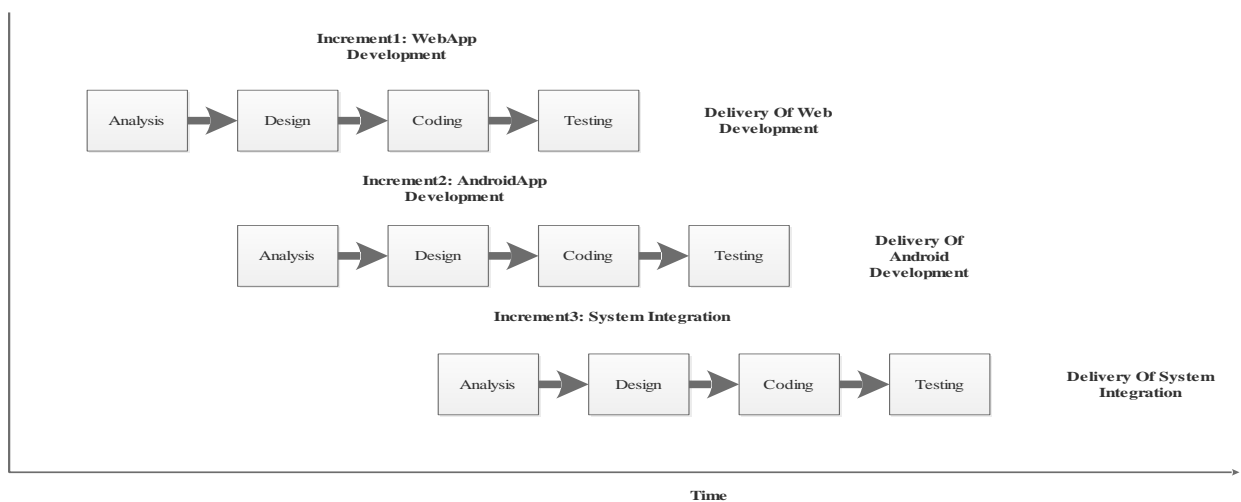


Fig 1: Incremental Model

The different phases in incremental model are:

- Analysis phase  
In this phase, analysis was performed in order to find out the requirements of the system. The outcome of this phase was SRS which is an acronym for “System Requirement Specifications”. First we planned to collect the requirements and analyzed the system for designing the system.
- Design phase:  
In this phase the SRS was translated into the system’s design. Context Diagram, DFD, ER – Diagram, Use Case Diagram and Class Diagram was developed. After analysis we design the system for different app modules development.
- Coding phase:  
In this phase, coding was done according to the design and a working system was developed by the end of this process.
- Testing phase:  
In this phase, the system was tested. With each testing a list of changes to the system developed, is suggested and the changes was applied to the software and the software was delivered as a successive increment until a satisfying system was achieved.

The different increments in our incremental model are:

- INCREMENT 1: Develop Web App and Admin Panel Modules  
With the help of the objective of our project we focused on analysis, design, coding and testing phase of the web app modules of the system which helped us to figure out every aspects of the project and we took them in consideration. In this phase we developed Full-fledged Web Application. In this phase several artifacts were produced and they are as follows:
  - Use Case
  - Project Boundary
  - System Modules (Web App Modules)
  - Initial System Architecture
  - Feasibility Study

- Risk Assessment
- Domain model
- ER Diagram
- Context Diagram
- Data Flow Diagram
- Software Architecture Document
- Cost and Schedule Estimates
- Activity Diagram

In this phase we worked on integrating API to our system as we have to create a three-tier architecture for our system. The above artifacts are produced in both web and android development phases. In this increment phase we developed full web modules as well as admin panel modules.

- **INCREMENT 2: Develop Android App System**

In this increment phase we performed analysis, design, coding and testing of the system for the android platform. After the web and admin panel module development, we developed the android modules for this application. The artifacts are produced in this phase which is same as the web development.

Some of the modules that we was made in the android application are follows:

- Login/Signup Activity
- Main Activity
- Push Notification Modules
- User Profile Modules
- Bidding System Modules
- Different Categories of items etc.

- **INCREMENT 3: Develop full Integrated System**

In this phase we worked on integration of the frontend system and backend system of the web and android application of the system. At initial part of this phase we analyzed the frontend design and overall frontend system and as well as we did same to backend system

like database system. We also focused on overall performance of the project and its architecture. The artifacts produced in this phase are:

- Integrated module of system
- Class diagram

### **3.1.1. INCREMENTAL MODEL ADVANTAGES**

- During early SDLC it helps to create working software quickly.
- It is more flexible i.e. require less cost to change scope and requirements
- It is easier to test and debug the software.
- Easy for risk analysis at early phase.
- Each iteration can be managed easily.
- During iteration process it will be easy to handle functionality.

### **3.1.2. REASONS FOR CHOOSING INCREMENTAL MODEL**

- Requirements will be defined clearly and understood.
- Easy to design and develop software.
- Easy to integrate front-end and back-end system.



## 4. PROCESS, MODEL AND TOOLS

### 4.1. Team Members

The role and designation of each member are explained in table below

Work	Name
Android Developer	Dinesh Aryal, Sudeep Banjade
XML	Sudeep Banjade
API	Dinesh Aryal
UI/UX Design	Anil Gurau
UML designer	Anil Gurau, Sudeep Banjade, Dinesh Aryal, Puspa poudel
Database Design	Puspa Poudel
Documentation	Anil Gurau, Sudeep Banjade, Dinesh Aryal, Puspa Poudel
Presentation	Anil Gurau, Sudeep Banjade, Dinesh Aryal, Puspa Poudel

Table 1: Team member work division

## 4.2. Tools and Technology

The tools used for documentation, designing and developing UI/UX, testing are listed below in the table.

Tools	Purpose
Adobe XD, Adobe Illustrator, Adobe Photoshop	Designing UI/UX,
Android Studio	Development of Android Application
PHP my admin	Designing Database
Draw.io	Designing UML Diagram
Android Smart Phone	Android Application Testing

Table 2: Used tools and purpose

## 5. ANALYSIS AND UML DESIGN PHASE

UML combines best techniques from data modelling (Entity Relationship Diagrams), objects modeling and component modeling. It can be used with all processes, throughout the software development life cycle, and across different implementation technologies.

### 5.1. Architectural skeleton

The system architecture of our project is a Three-Tier Architecture System which includes a Presentation Tier, an Application Tier and Data Tier. The Architecture skeleton of the project is shown in the figure below[5].

- **Presentation Tier**

It is user friendly GUI through which users are allowed to interact with our system. Sign-In/ Sign-Up pages restrict unauthorized users to use the application and GUI for display for the Events and Google Map for the location of the organized events.

- **Architecture Tier**

It consists of logical operations and data access. In the project application users command processing, making enquiry of the events, make decision for the network group. With Android background services and Asynchronous Tasks, the application notifies users for the upcoming Events. Use of APIs such as Google Map, Facebook and Google and Use of libraries such as Retrofit and other material Design libraries are included in Application Tier of the project.

- **Data Tier**

It is our Database where information are stored and retrieved upon user and system request. Data tier of the project also includes other third party databases which are accessed with the call of provided API function calls.

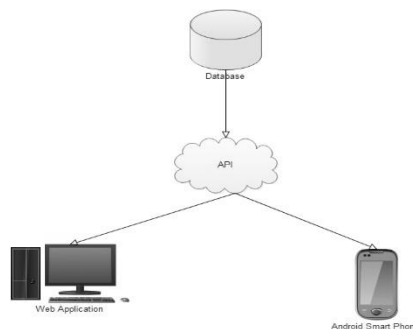


Fig 2: Application Architecture

## 5.2. Use Case Diagram

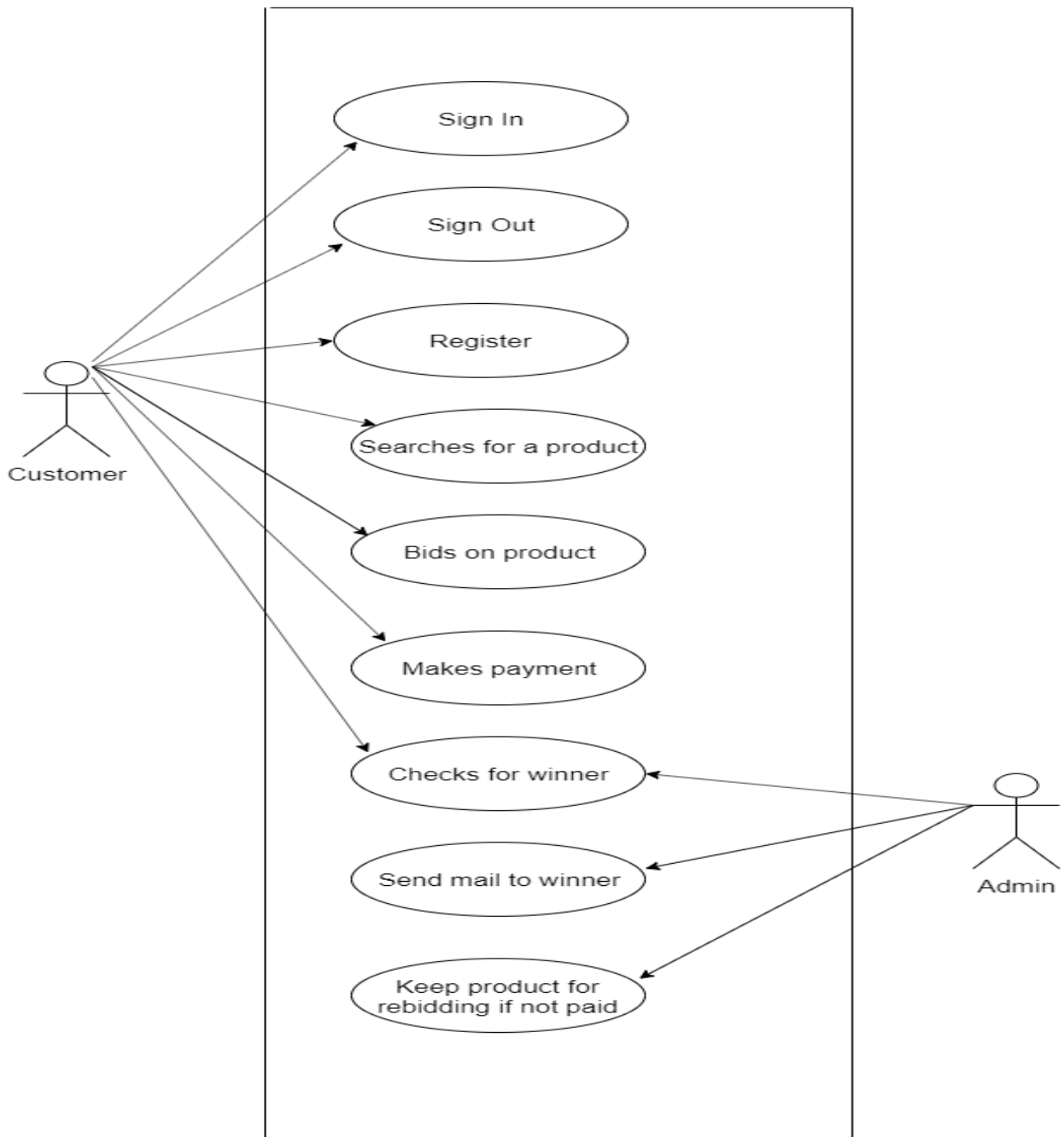


Fig 3: Use Case Diagram

### 5.2.1. Actor

#### 5.2.1.1. Primary Actor

The Primary actor are the system user. Primary actor can register into application and manages and uses the available features of application such as manages users account, register, search for categories and make payment.

#### 5.2.1.2. Secondary Actor

The secondary actor is the admin. The secondary actor is responsible for sending mail to system users, check auction user and keep product for bidding if not paid.

### 5.2.2. Use Cases

#### Use Case 1: Sign In

<b>Name</b>	Sign In
<b>Actor</b>	Primary User, Secondary User, System
<b>Precondition</b>	Application users are not signed in.
<b>Description</b>	<ol style="list-style-type: none"><li>1. Application users type his/her username and password.</li><li>2. Application users click Sign In button.</li><li>3. Application users are signed in.</li></ol> <p>If application users enter invalid username and password then they are restricted to bid in the application.</p>
<b>Post condition</b>	Application users are now signed in and can bid in Application.

Table 3: Use Case (Sign In)

### Use Case 2: Sign Out

<b>Name</b>	Sign Out
<b>Actor</b>	Primary User, Secondary User, System
<b>Precondition</b>	Application users are signed in.
<b>Description</b>	1. Application users click sign out button. 2. Application users are sign out from the application.
<b>Post condition</b>	Application users are now sign out and are restricted to use event subscribed packages.

Table 4: Use Case (Sign Out)

### Use Case 3: User Register

<b>Name</b>	Register
<b>Actor</b>	Primary User, Secondary User, System.
<b>Precondition</b>	User is not Registered in the system.
<b>Description</b>	1. Users click Register button. 2. Users Input the required information and click confirm.
<b>Post Condition</b>	Application users are now registered in the system and are able to sign in now.

Table 5: Use Case (Register)

### 5.3. Class Diagram

The class diagram is the main building block in object oriented modeling. The classes in a class diagram represent both the main objects and/or interactions in the application and the objects to be programmed.

The Auction system consist of 7 classes, which are as follows:

- User
- Payment
- Auction
- Buyer
- Seller
- Bid
- Admin

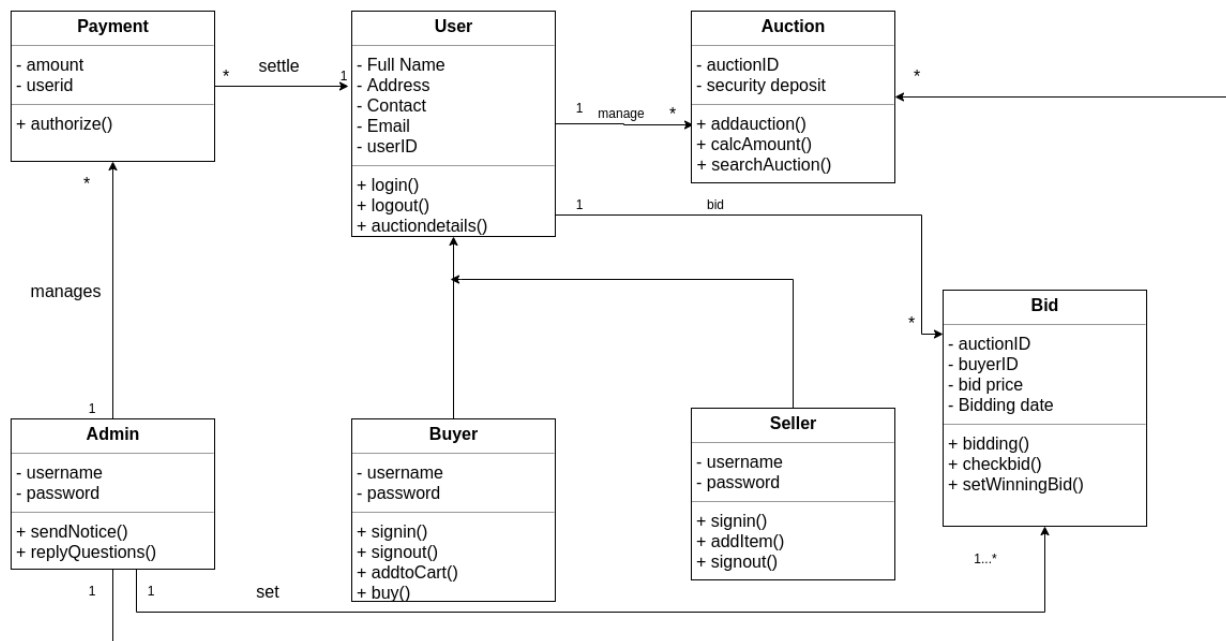


Fig 4: Class Diagram

#### 5.4. Data flow Diagram

A data-flow diagram (DFD)[6] is a way of representing a flow of a data of a process or a system. The DFD also provides information about the outputs and inputs of each entity and the process itself. A data-flow diagram has no control flow, there are no decision rules and no loops

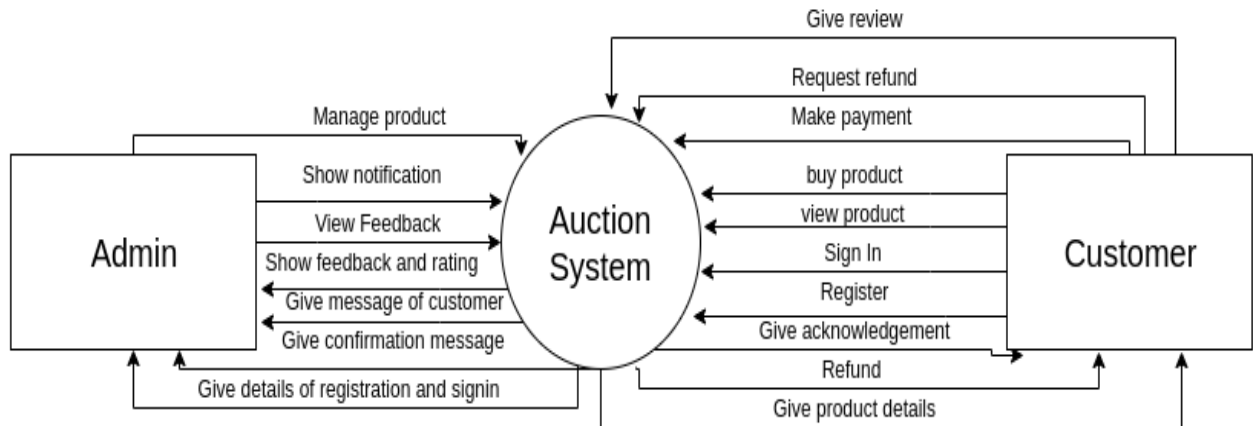


Fig 5: Data Flow Diagram of the system.



### 5.5. Entity-Relationship Diagram(E-R)

The ER diagram[7] is the pictorial representation of the overall logical structure of the system's database. The ER diagram of our system is given below. It shows the relationship among the six entities of the system. The entities are represented in the rectangle, their attributes are presented in the oval and the attributes that are underlined are the primary key.

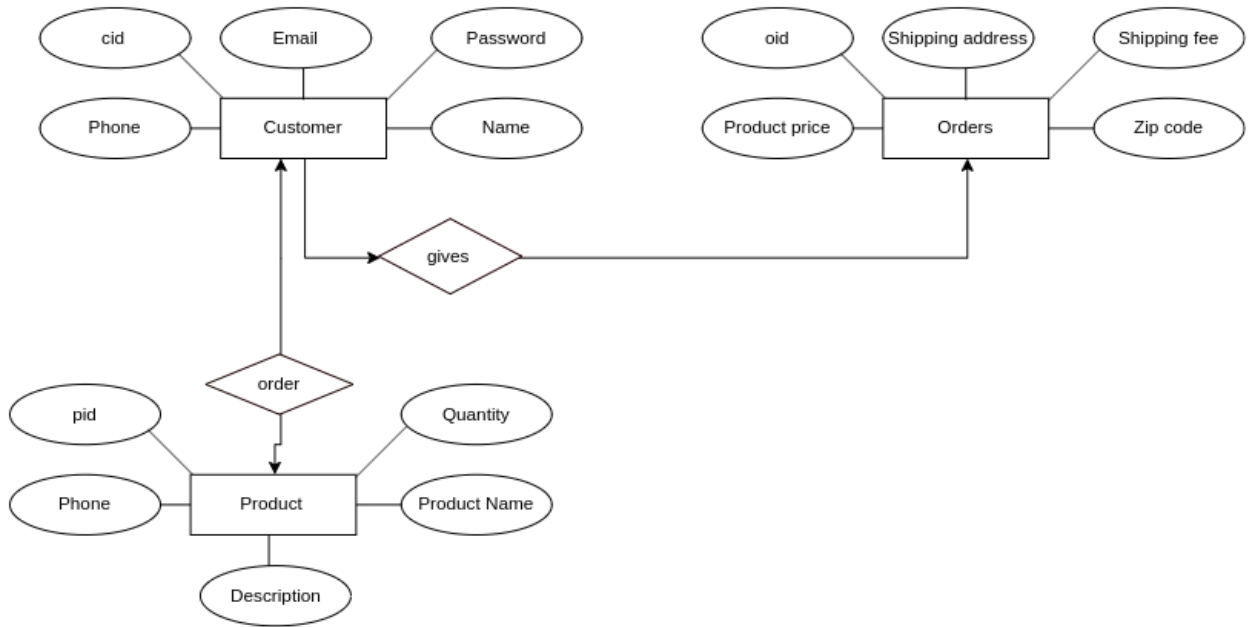


Fig 6 : E-R Diagram

## 5.6. Sequence Diagram

Sequence Diagram is the logical interaction diagram between object to perform specific task. It show how the events occurs and in what order. Following are the sequence diagram of our system.

To use the system functionalities users have to login and login sequence diagram is shown in the figure below. Here in login sequence diagram there are five objects in the system. Users provide username and password and are validated and are verified for the right users to login.

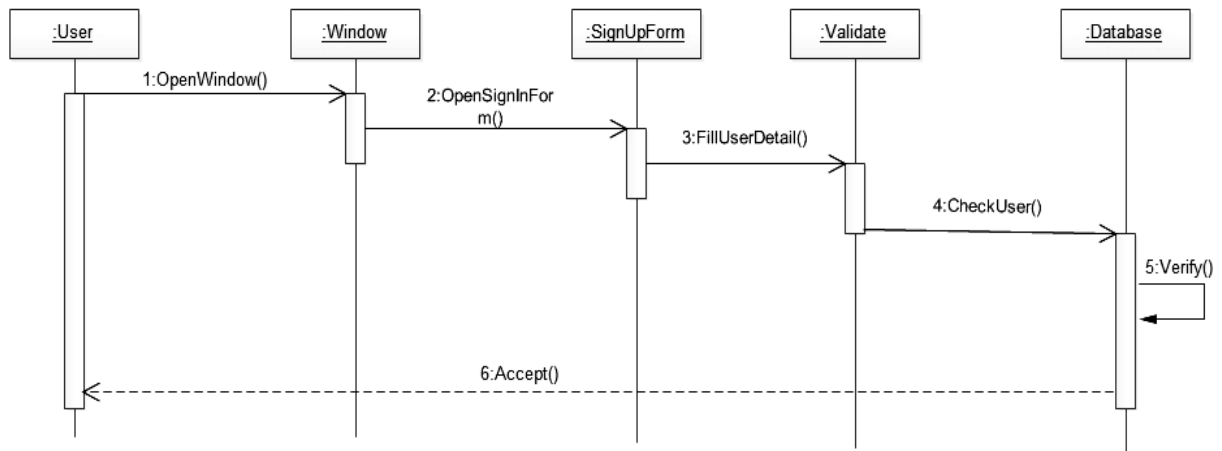


Fig 7: Sequence Diagram (Login)

For the system functionalities to exit from the system users have to logout with the change in the status of the users and the sequence diagram of logout is shown in the figure below.

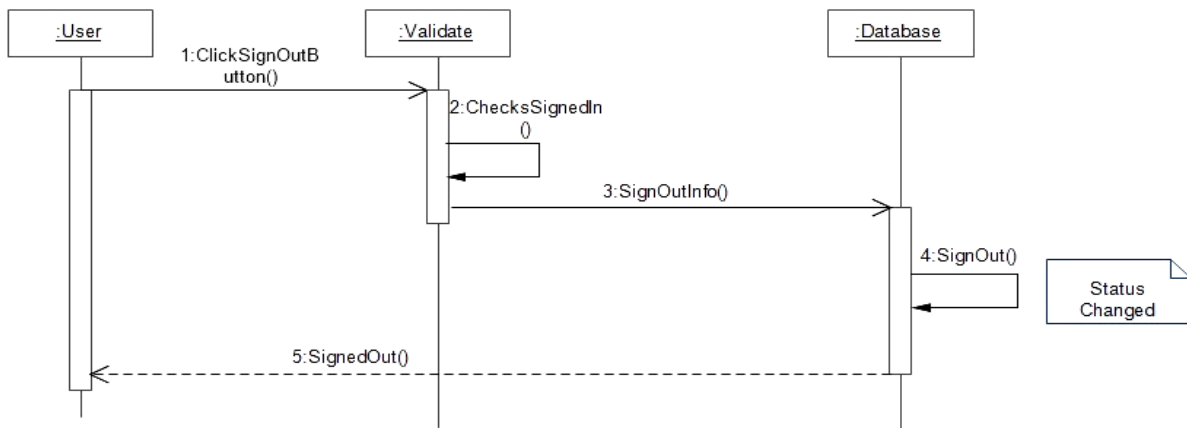


Fig 8: Sequence Diagram (Logout)

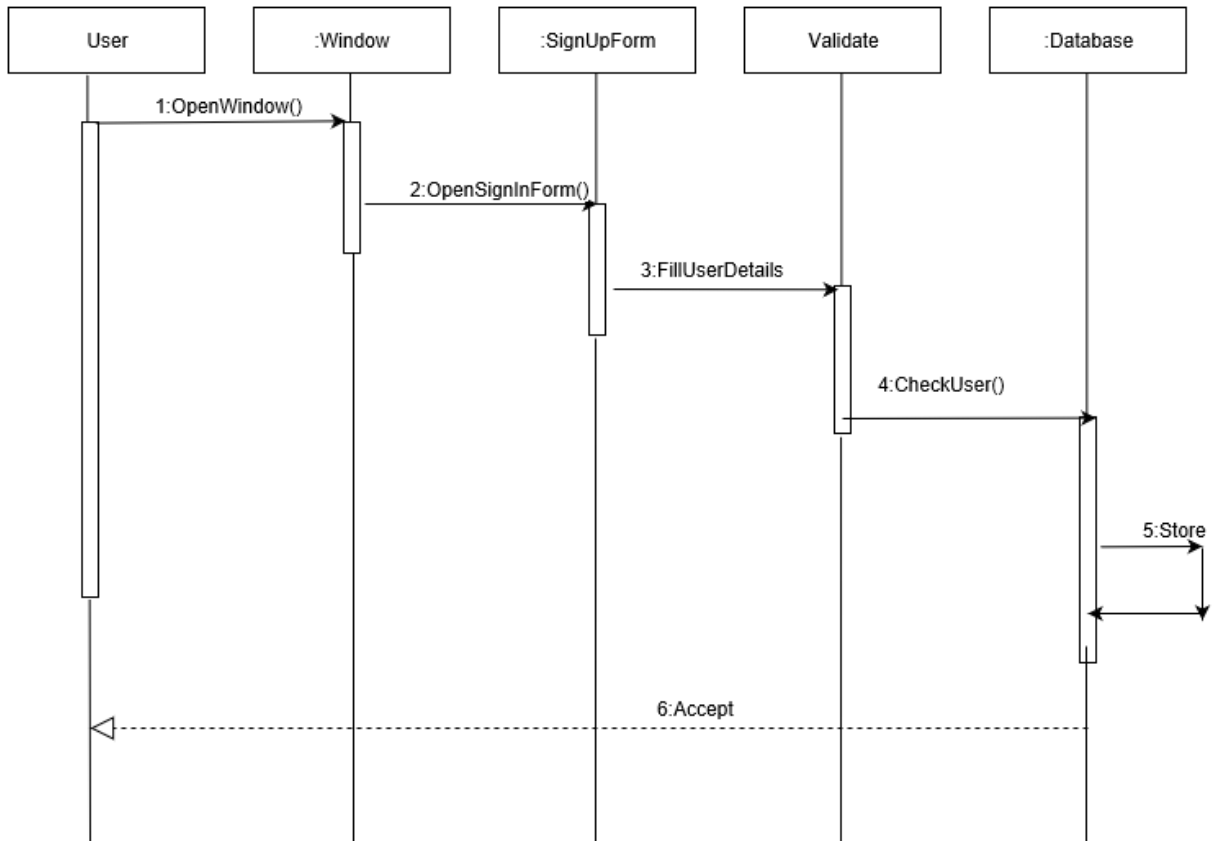


Fig 9: Sequence Diagram (Register)

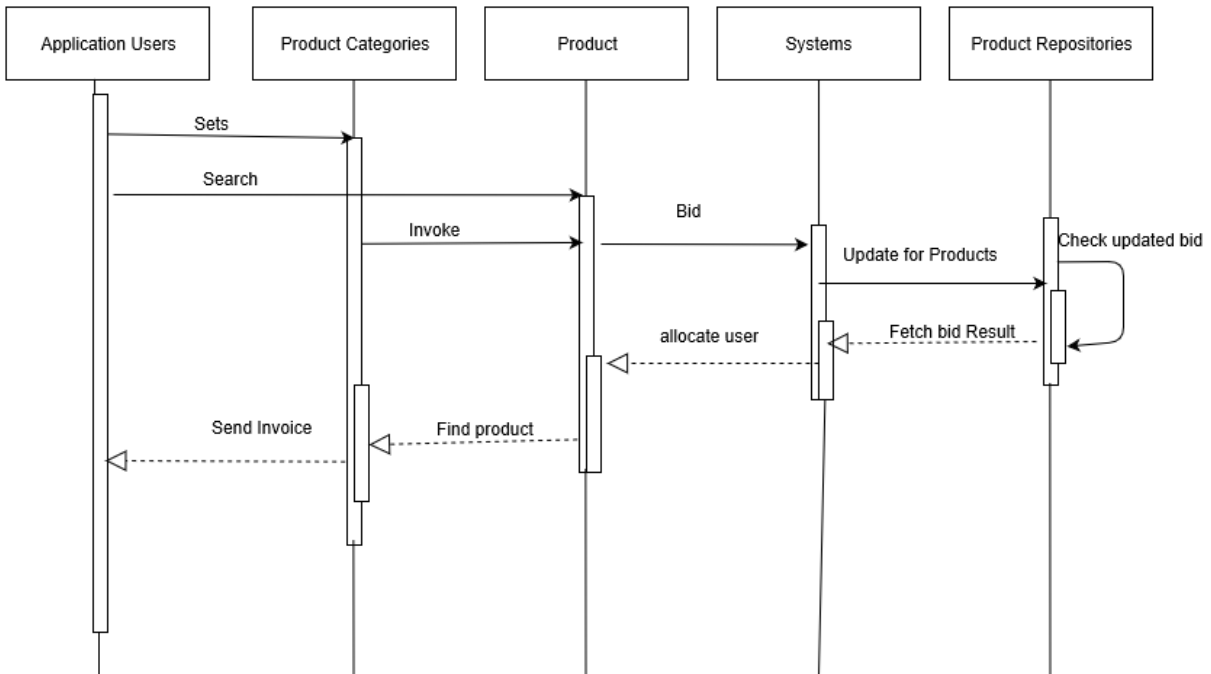


Fig 10: Sequence Diagram (bidding system)

## 6. REQUIREMENTS

This section deals with the functional and non-functional requirements of the project.

### 6.1. Functional Requirements

S.N	Requirement	Priority
1.	Sign In to the application.	Essential
2.	Sign Out from the application.	Essential
3.	User Register to the application.	Essential
4.	Search and View different item categories	Essential
5.	Bid any valid item.	Essential
6.	Management of user Profile by user him/herself.	Essential
7.	Seller can showcase their item for auction	Essential

Table 6: Functional Requirement

### 6.2. Non-Functional Requirement

S.N	Requirement	Priority
1.	The system works on Android Phone ( Kitkat 4.4 and above).	Essential
2.	The user interface should be user friendly.	Essential
3.	The system is implemented using tools specified(Android Studio, php myadmin, E-draw, Adobe XD, Adobe Illustrator, Adobe Photoshop)	Essential
4.	The system must be able to operate in only Android operating system.	Desirable

Table 7: Non-Functional Requirement

## 7. TASK AND TIME SCHEDULE

The project schedule has been designed as per requirements and constraints involved. This project was scheduled to be completed in about 2 months. Analysis, design and documentation had been given more emphasis. Debugging and testing was done prior to the completion of the project.

<b>TASK</b>	<b>1<sup>st</sup> Increment Period</b>	<b>2<sup>nd</sup> Increment Period</b>	<b>3<sup>rd</sup> Increment Period</b>	<b>APPROX. DURATION(Days)</b>
Requirement Analysis and Specification	3	3	3	9
Undertake Analysis of The System	4	4	2	10
Design System	4	6	3	13
Develop Application Modules	15	21	5	41
Overall System Testing	3	5	4	12
Develop Documentation	23	31	11	65

Table 8: Project Task and Time Schedule

## 7.1. INCREMENT 1: DEVELOP WEB APP SYSTEM

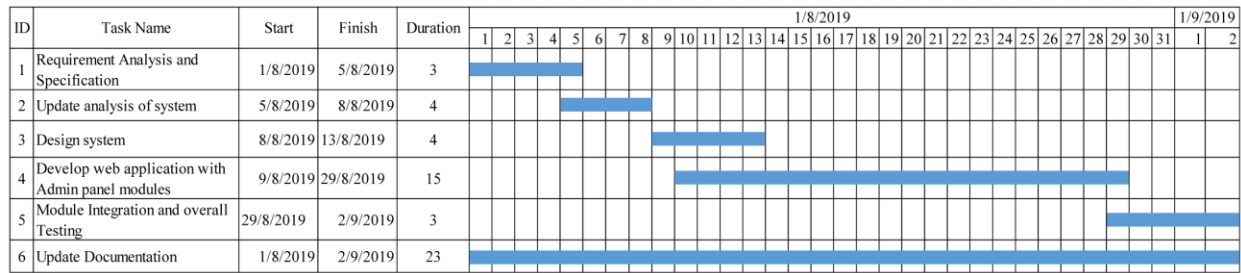


Fig 11: Gantt-Chart for Increment 1

## 7.2. INCREMENT 2: DEVELOP ANDROID APP SYSTEM

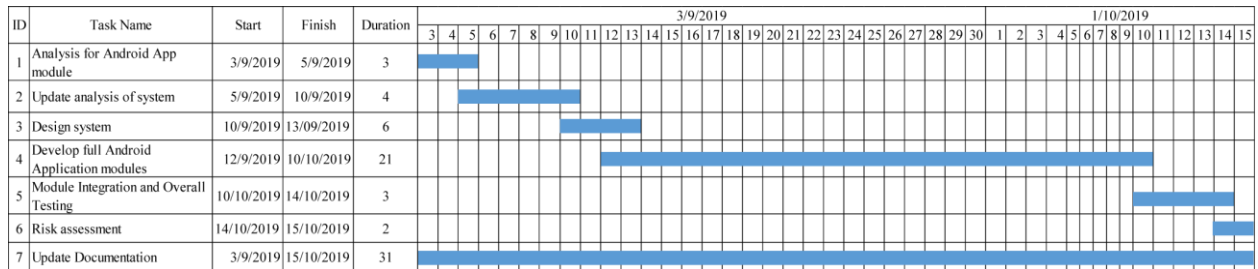


Fig 12: Gantt-Chart for Increment 2

### 7.3.INCREMENT 3: SYSTEM INTEGRATION

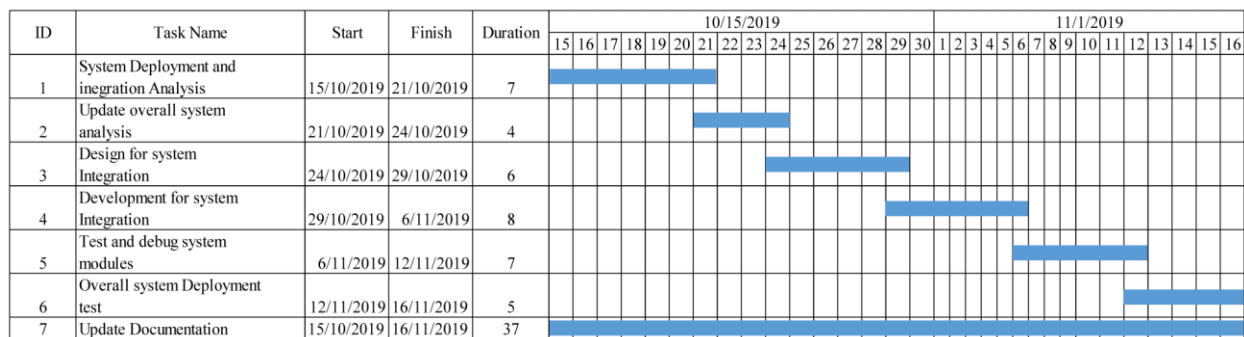


Fig 13: Gantt-Chart for Increment 3

## **8. TESTING**

### **8.1. Test plan**

The purpose of the test plan is to communicate the intent of the testing activities with end user representatives, stakeholders, system integrator, implementer and tester. Test cases are conducted with the last version. Functional and non-functional requirements are tested with test cases. All the requirements are listed and tested according to the priority. For instance, “Essential” requirement have higher priority than “Desired” requirements and “optional” requirement .Higher Priority requirements are tested before lower priority requirements.

### **8.2. Test strategy**

The test strategy[8] presents the recommended approach for testing a part of a system of system as a whole.

#### **8.2.1. Unit Testing**

Unit testing ensures that the part of the program works well. It is performed by implementer at the time of implementation. The implementer checks values for the return types. They will also validate the different tools boxes used like Text View, Edit Text etc.

#### **8.2.2. Integration Testing**

The components in the implementation model are integrated and tested to ensure proper operation. One bigger working package will be integrated to other smaller working packages in incremental manner.

#### **8.2.3. System Testing**

System testing will be conducted by tester after the completion of construction phase. After well-formed subset of the use case behavior is implemented, all the functional and non-functional requirements are tested.



### 8.3. Test Cases

Step	Action	Expected System Response	Pass/Fail
1	Click Sign In	The system displays a form asking the user to enter the username and password.	pass
2	Enter username : 'user_123' Password:12345	The system displays a message of successful login	pass
3	Re-enter 'user_321' Password :52355	Password entered is incorrect.	fail
4	Click Register button	The system displays a form asking the user details.	pass
5	Enter user details, and Email="xyz@gmail.com"	The system displays a message of invalid email	fail
6	Reenter user detail and email="zyx@gmail.com"	The system displays a message of successful register.	pass
7	Click sign out button	The system displays a message of successful log out	pass
8	Bid Test	System proceeds the payment process.	pass
9	Proceed payment	System displays insufficient balance.	fail
10	Re-proceed payment	System displays successful payment.	pass

Table 9: Test Case

#### 8.4. Test Results

The test coverage results are as follows:

Total Test Case	Successful Test Case	Failed test case
10	7	3

Table 10: Test Results

Out of 10 test cases, 7 test cases passed and remaining 3 test cases failed which were sent for repair. Failure is found to be related to layout and design.

## **9. BUDGET**

### **9.1. Functional Point**

The value of the count and the count multipliers is average.[9]

#### **Number of users**

Each user input that provides distinct application oriented data to the software is counted.

#### **Number of user outputs**

Each user output that provides application oriented information to the user is counted. In this context “output” refers to reports, screens, error messages, etc. Individual data items within a report are not counted separately.

#### **Number of user inquiries**

An inquiry is defined as an on-line input that results in the generation of some immediate software response in the form of an on-line output. Each distinct inquiry is counted.

#### **Number of files**

Each logical master file is counted.

#### **Number of external interfaces**

All machine-readable interfaces that are used to transmit information to another system are counted.

Information Domain Values	Weight	Count	Total count[Weight * Count]
No of User Inputs	12	4	48
No of User Outputs	5	5	25
No of User Inquiries	5	4	20
No of Logical Files	21	10	210
No of External Interfaces	14	7	98
Count Total			401

Function Point (FP) = Count Total \* Complexity Multiplier

$$= 401 * [.06 + .001 * \sum_{i=1}^{12} F_i]$$

$$= 401 * 1.01$$

$$= 405.01$$

$$\cong 405$$

Average Productivity = 10 FP/pm

Labor Rate = Rs.25000 per month

$$\text{Effort} = \frac{FP}{\text{Average Productivity}} = \frac{405}{10} = 40.5 \cong 41$$

$$\text{Total Project Cost} = FP * \frac{\text{Labor Rate}}{\text{Average Productivity}} = 405 * \frac{25000}{10} = \text{Rs } 1012500$$

## 9.2. LINE OF CODE

Using Lines of Code metric, the project size is estimated by counting the number of source instructions in the developed program.

Estimated LOC = 4258

Average Productivity = 100 LOC/PM

Labor Rate = Rs.25000

Now,

Estimated Project Cost = Estimated LOC \* Cost/LOC

$$= 4258 * \frac{25000}{100} = 1064500$$

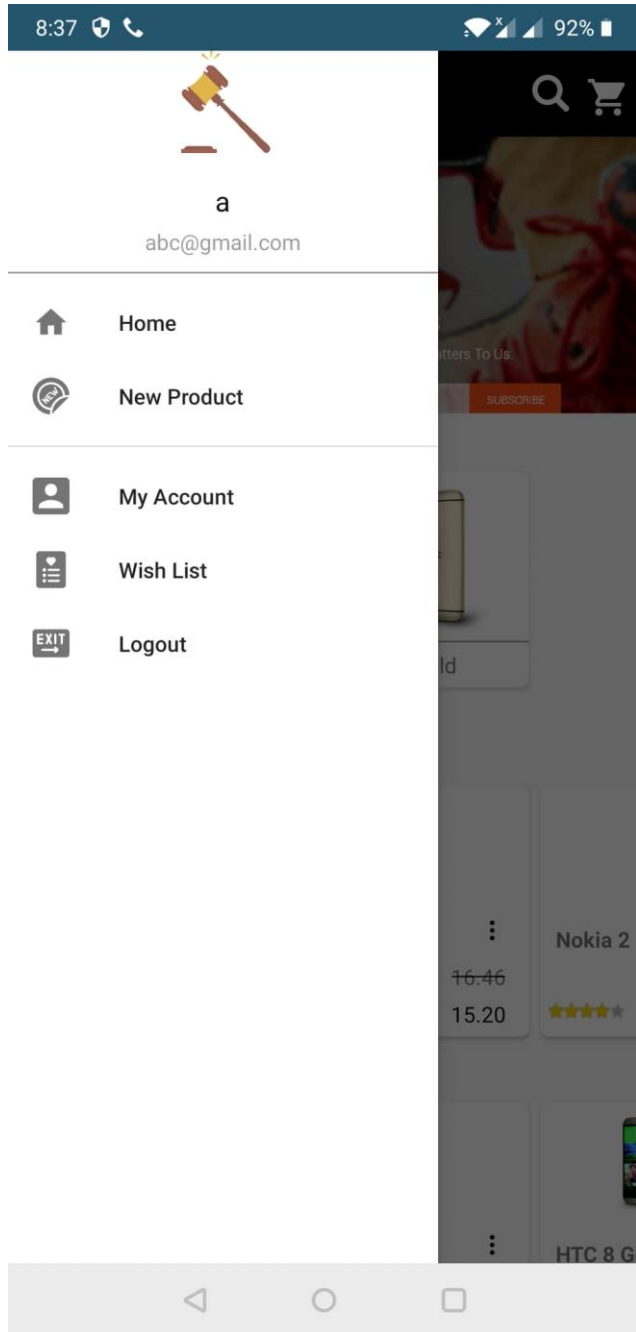
$$\text{Estimated Efforts} = \frac{KLOC}{Average Productivity} = \frac{4258}{100} = 42.58 \approx 43$$

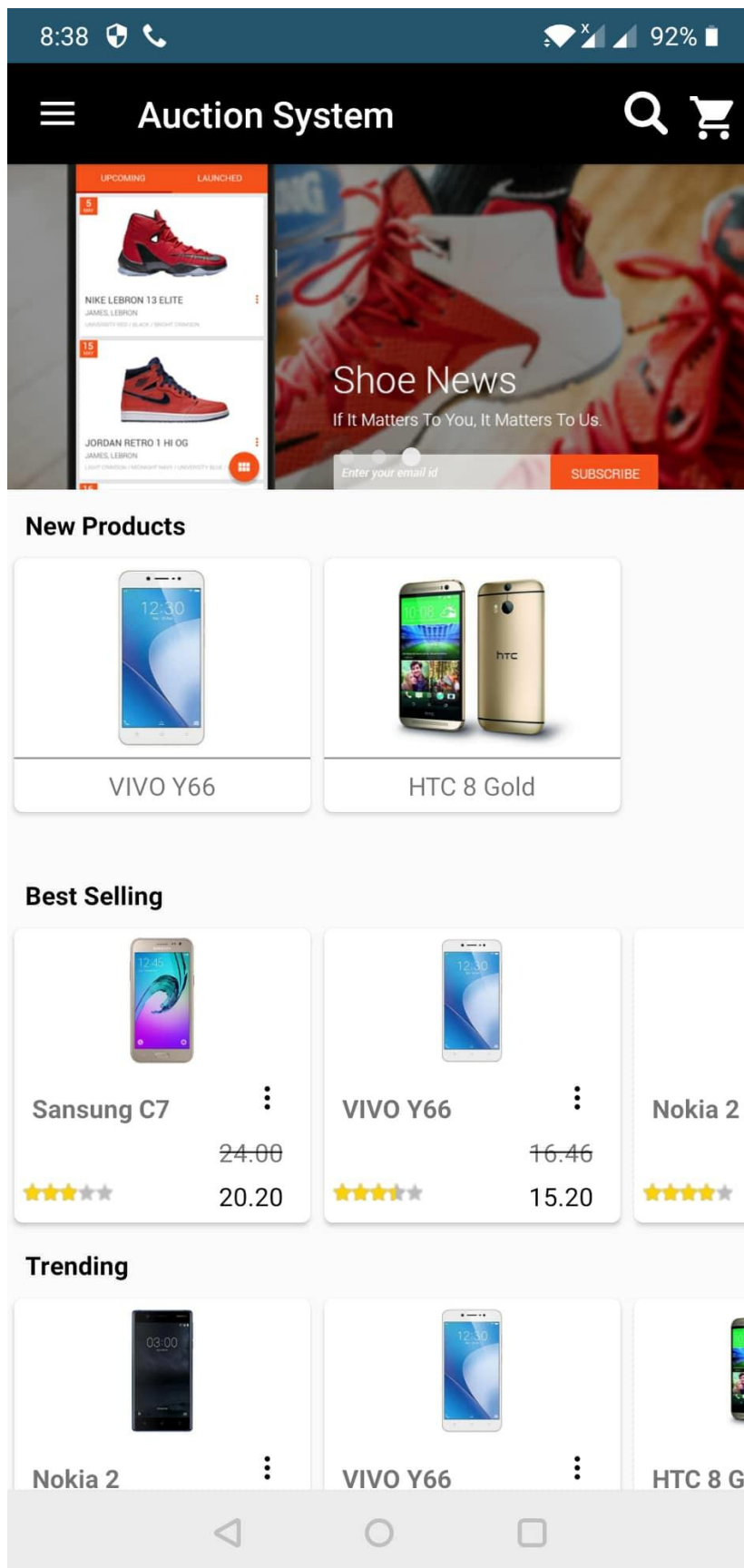
## **10.CONCLUSION AND FUTURE EXTENSIONS**

The Auction System is now at initial phase with it's simple version having most of the basic functionalities as mentioned in objectives. All the modules have been working after integrating and are ready for the demo. As the features adding up the level of complexity have been increasing as well. However, it is not complete with the ideas we have put through and might need more improvisation in coming days as well. This makes us think about the future extensions that we are going to implement in the auction system. Some of the extensions we have planned are as follows:

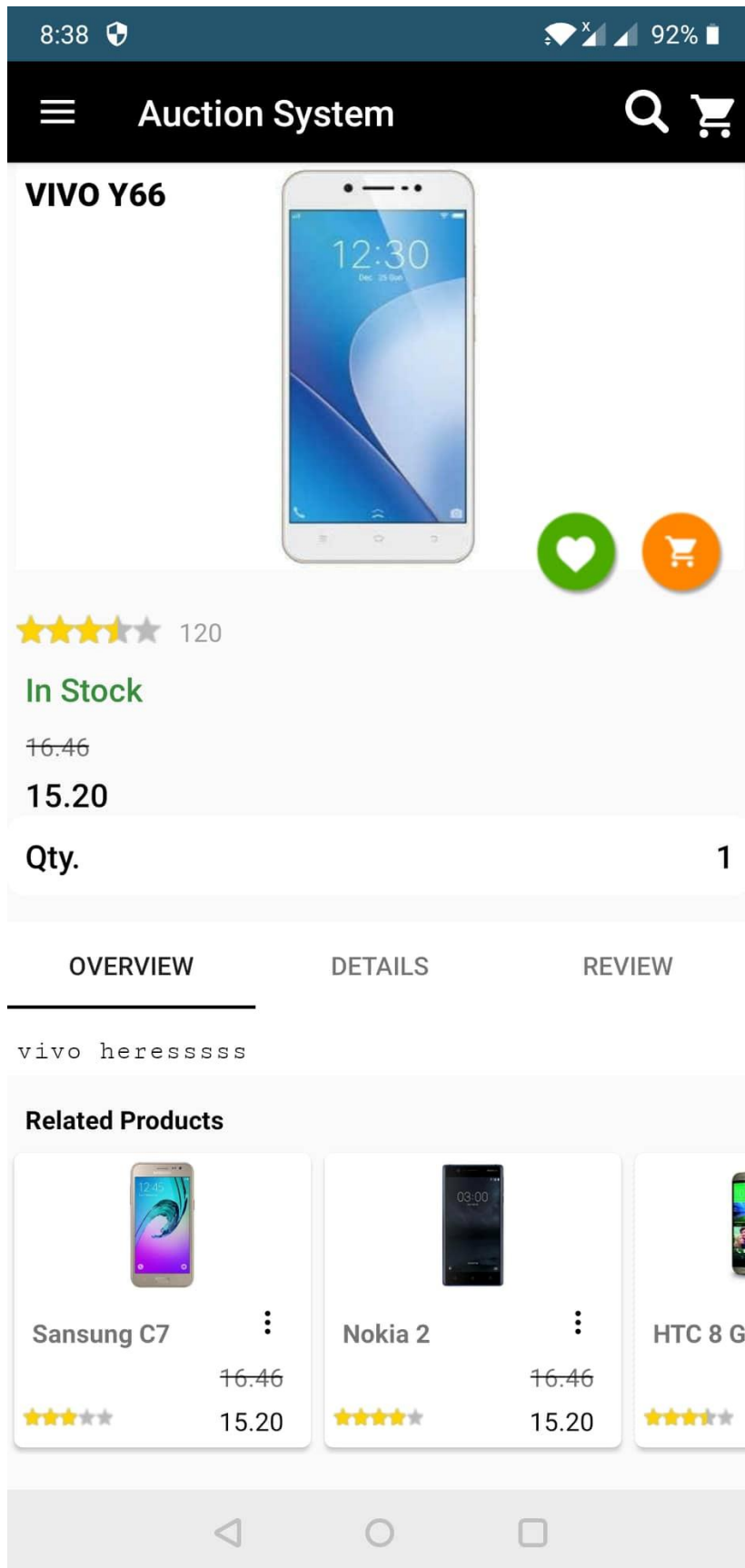
- More category of products will be sold in future.
- More security features will be added.
- System will be more reliable.
- Enhanced UI.
- Local payment system will be added for future.

## 11. APPENDIX









## Auction System

Product Name	Qty.	Price
VIVO Y66	1	15.20

Cart Subtotal 15.20

Shipping Fee \$12

**Order Total 27.20**

### Order Information

Shipping Address

bshsj jzjs nsnsn bsnsn 997979 9844776063

Billing Address

bshsj jzjs nsnsn bsnsn 997979 9844776063



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## Create an Account!

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# Forgot Your Password?

We get it, stuff happens. Just enter your email address below and we'll send you a link to reset your password!

Reset Password

---

[Create an Account!](#)

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