HIGH LAYER TELECOMMUNICATION PROTOCOL

(ELEC 6861)

A VOICE ENABLED AUCTION SYSTEM

(BASED ON ANDROID APPLICATION)

SUBMITTED TO

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1. Introduction

a. Existing bidding system:

The current bidding system is primarily website based, with an user interface best suited for desktops. Also, we have tonnes of options when it comes to online bidding websites, but there are only a handful of bidding applications exclusively for mobile devices. That is the main reason why we planned of making an android online auction application, unlike the existing desktop or web based system. Also, according to a data it was found that in last three years desktops have been largely replaced by the mobiles, due to it's compact size and ability to perform complex tasks. This was the main reason that encouraged us to further work on it. The figure below depicts the outcome of the study

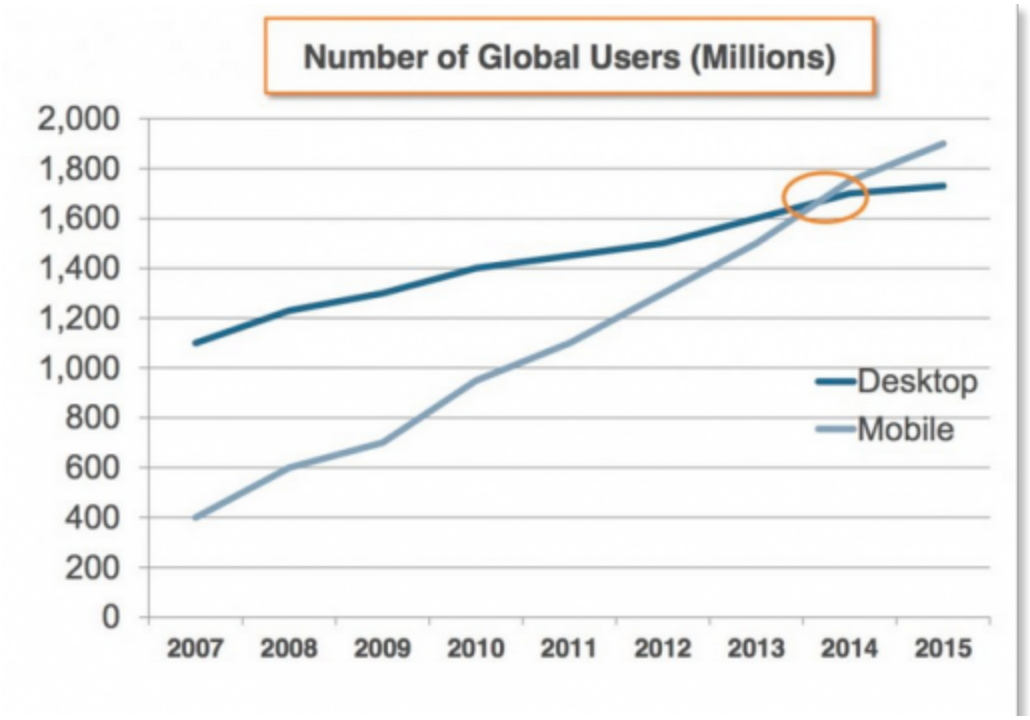


Figure 1. Number of Desktop Users Vs Mobile Users

b. Modification in the existing system:

Like mentioned above this project is based on an online auction system that let the mobile users participate in an auction session. The data provided by the user; be it sellers or bidders, is stored in the database. The user can upload the products that he/she wishes to sell and can also bid on the items posted by the other users. After the bidding session is expired, the highest bidder is announced as a winner. It also has an option of signing up for the voice notifications in the event when a product is sold.

2. Project system breakdown

A. User Specification

The users can participate in the task of choice in an auction session. According to their roles we have divided the users into two categories, Seller and Bidder. A bidder will bid on an item whereas a seller will upload the item that he wishes to sell, along with the product description and the start price of the bid. He also holds the authority of deciding the the span of time for which the auction will stay active. The figures below represents the communication of the users with the Application Server and vice-versa.

User type: Seller

The figure shows sequence diagram when a seller makes an attempt to upload the product. It starts with registration if it is a first time visitor, else the user can simply login with the “username” & “password”. The username and password are stored in the database encrypted using md5. Once the user is successfully logged in, he can upload the products.

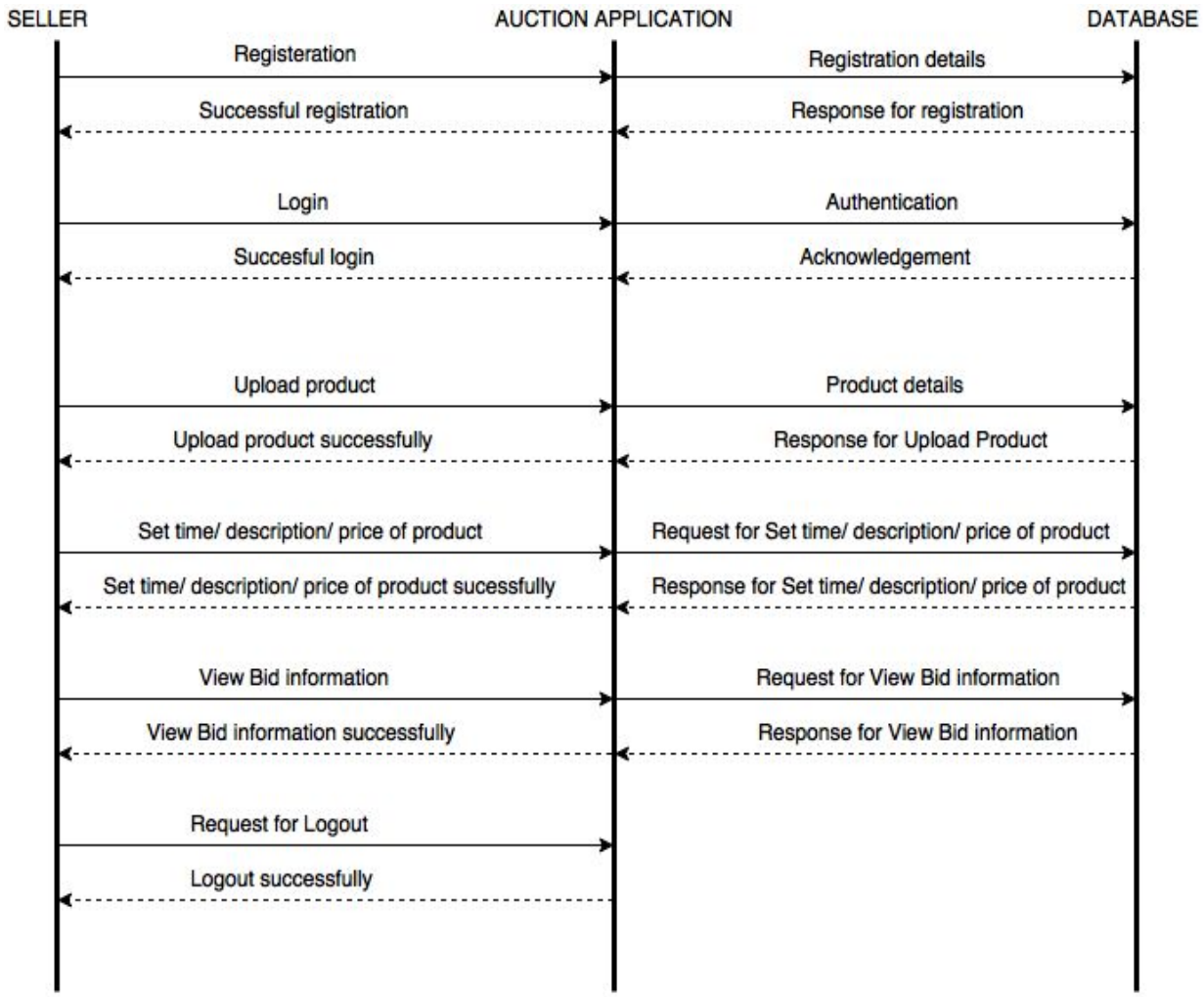


Figure 2: Sequence diagram of seller

User type: Bidder

Likewise, the bidder has to register/login into the application, once the details are authenticated, the bidder can select any product from the list of the products and bid. Also, he can modify the bid later.

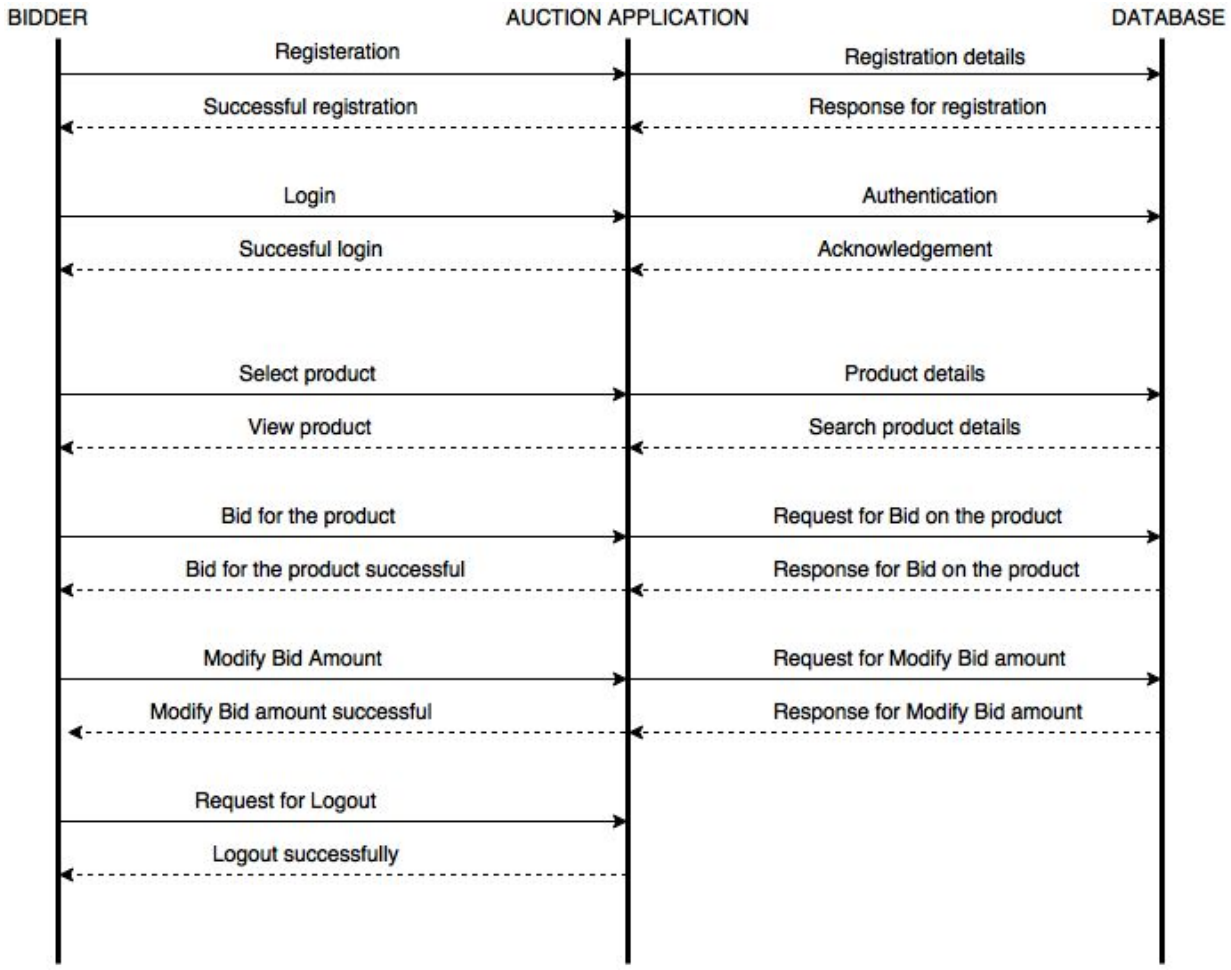


Figure 2: Sequence diagram of bidder

B. Web client

It is where the user interacts with the database. In the project, the web client is the application android application. We have used Android studio for Android Application Development. Android apps can be written using Java, and C++ languages. It has In the project we have taken use of Java SDK for the development purpose. The application helps the user to communicate easily

with the server. Also, the data of the application users is stored in the database in the form of an array.
One big advantage of using Android API is that, it is quiet like Java API, though Android doesn't support all classes of Java but, it supports the critical ones.

C. Web Server

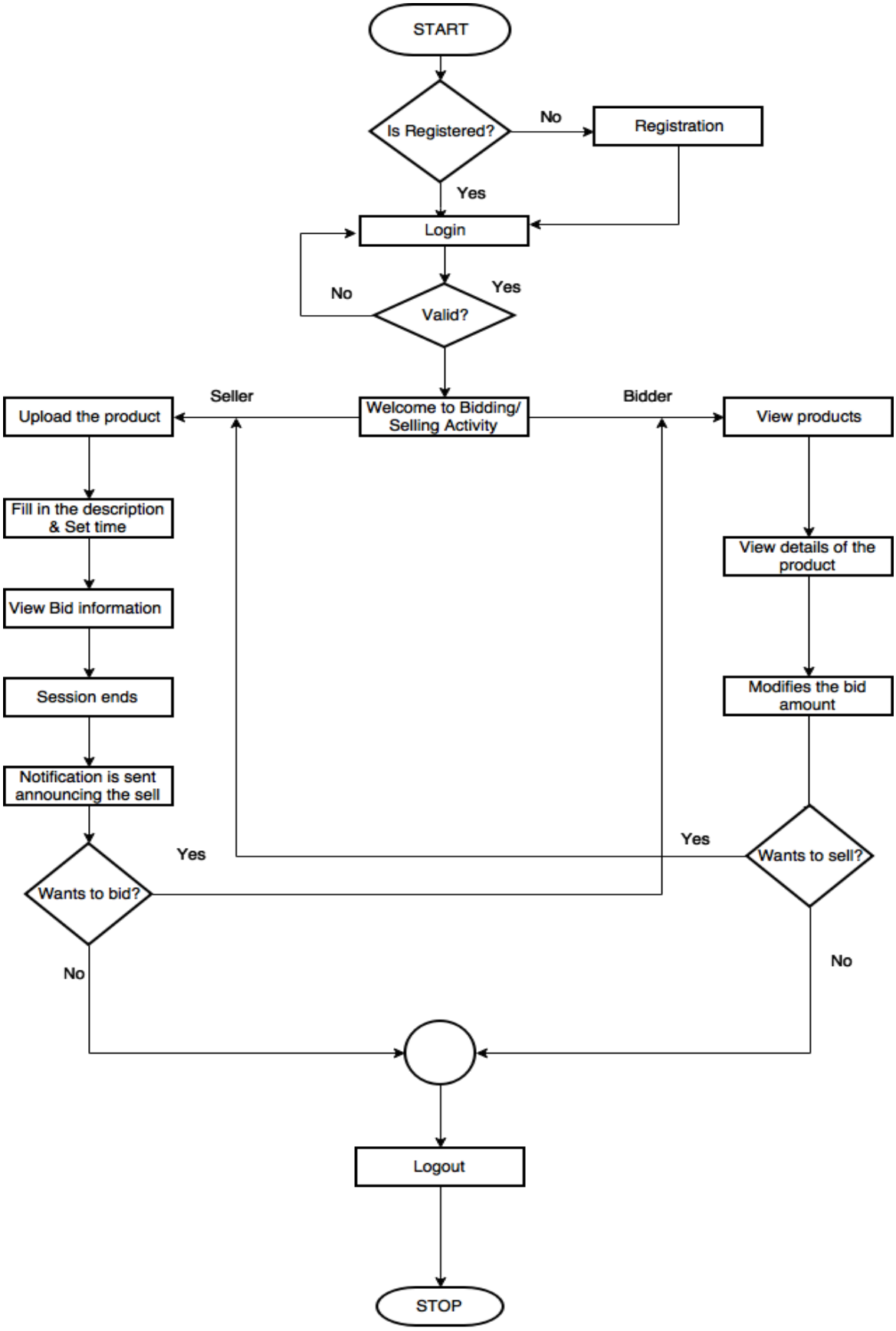
It is a very crucial element of the system, it is responsible for establishing communication between the client and the database. The server is hosted using XAMPP. XAMPP has a control panel that lets you start and stop individual components, like MySQL, Apache etc. Apart from that it also provides SSL(Secure Socket Layer) feature which WAMP doesn't. SSL is a networking protocol which helps in managing server and client authentication, encrypting communication between servers and clients.

D. Web Resource and data exchange

Web resource refers to the information that can be obtained from the database. In the project HTTP is used as the communication protocol, which has two request methods, GET and POST. A client requests the data using GET from the database, in response SQL accesses the database and further PHP, takes data from the database and deliver it to the user.
The server sends JSON object to the use, as communication between client and server can only be TEXT.

3. Working of the application

Working consists of communication in between server and the client, through request, response methods of HTTP. Firstly, when a user registers, PHP script a calls a function “register” which is used to transfer the data to database:
Syntax: *function register($username, $password, $vn_userstatus, $vn_newitem, $vn_itemsold)*
And when a registered user logs in function login is called which checks for the password match,
Syntax: *function login($username, $password)*
Once this is done, the user either bids or uploads a product to sell.
To add a product information to the database, bidData variable is updated and data is stored on the database:
Syntax: *$bidData = addBidRecord($amount, $product_id, $user_id, $date, $time);*
And If a user wishes to bid on a product, function addBid is called which adds his bid data to the database
Syntax: *function addBid($amount, $product_id, $user_id)*
By the end of the session, highest bidder wins the bidding session. Following is the flowchart that provides a comprehensive insight of the Android Auction Application.


START
Is Registered?
No
Registration
Yes
Login
No
Yes
Valid?
Seller
Welcome to Bidding/ Selling Activity
Bidder
Upload the product
View products
Fill in the description & Set time
View details of the product
View Bid information
Modifies the bid amount
Session ends
Notification is sent announcing the sell
Yes
Yes
Wants to sell?
Wants to bid?
No
No
Logout
STOP

The figure below shows the HTTP Transaction between a Android client and Web Server. It also represents communication in between clients through server.

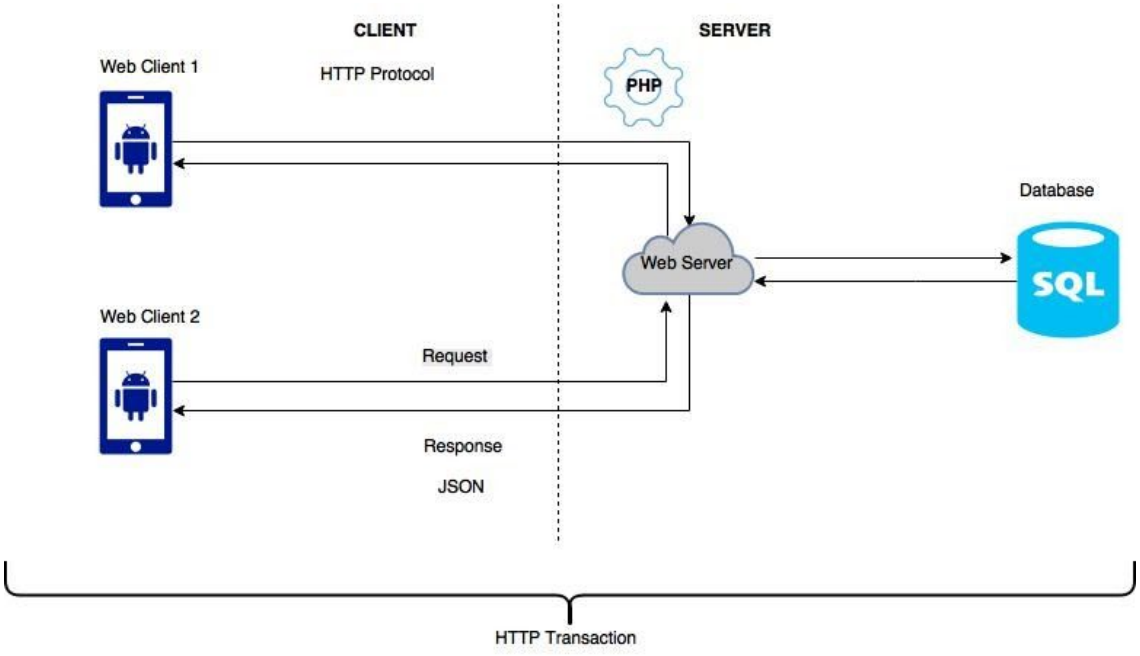


Figure 5: HTTP transaction representation

4. Motivation table

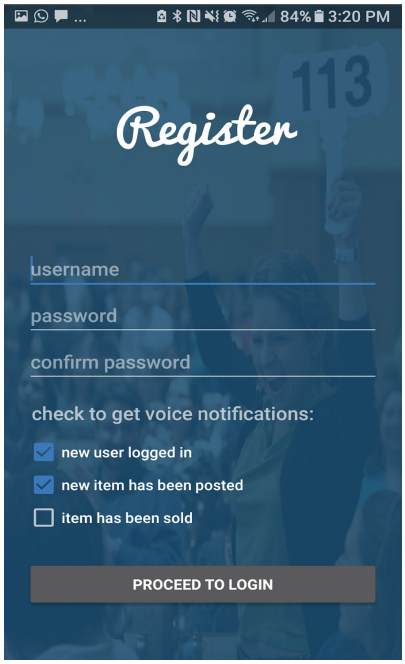
Table below represents the comparison among different software technologies and the motivation behind the selection of each technology in comparison to the others

	Technology used	**Others**	**Motivation**
Client	Android	WindowsOS, Apple OS	Open source
App development tool	Android Studio	Eclipse	Easy code completion; huge online support
Communication Protocol	HTTP	WebSocket	Fast response and allows REST API
Web resource	JSON	XML	Easy to read; tagged.
Stack	XAMPP	WAMP, LAMP	Easy to use and generic unlike LAMP

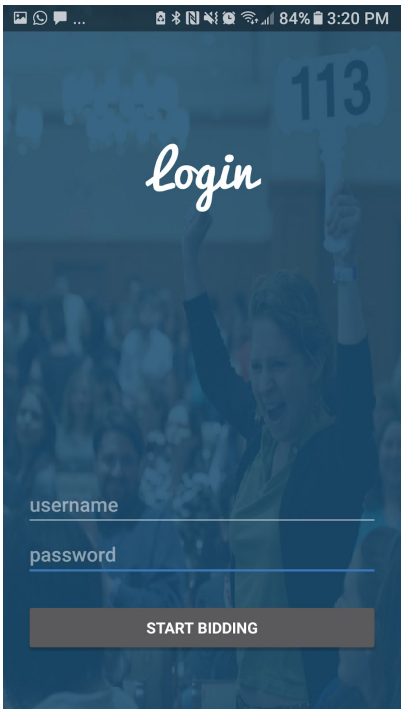
5. Client side User Interface design

5.1. Welcome page:

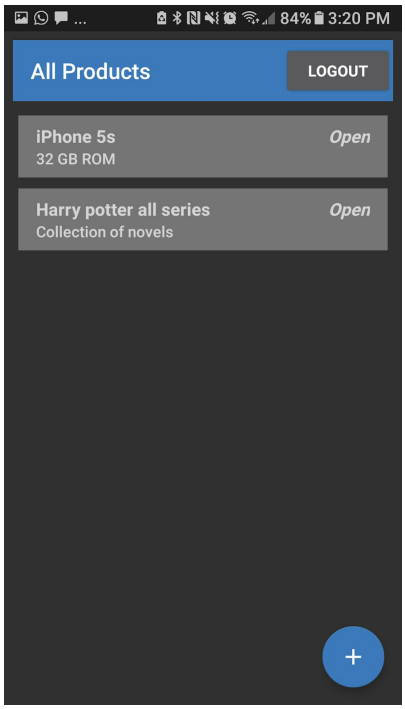
5.2. Registration



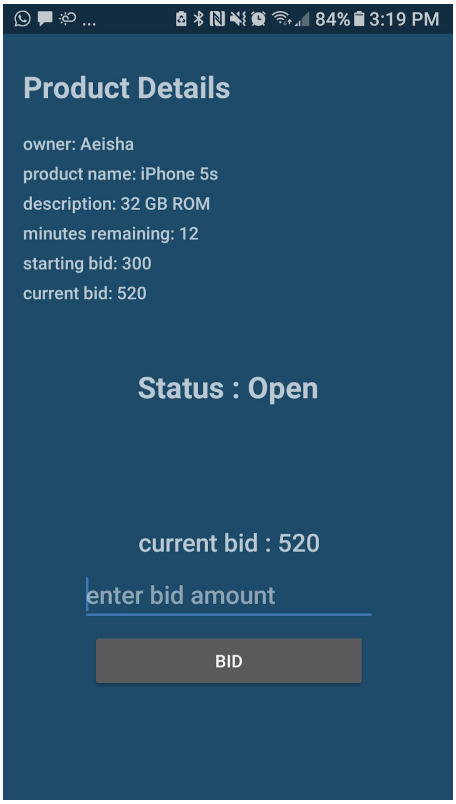
5.3. Login page



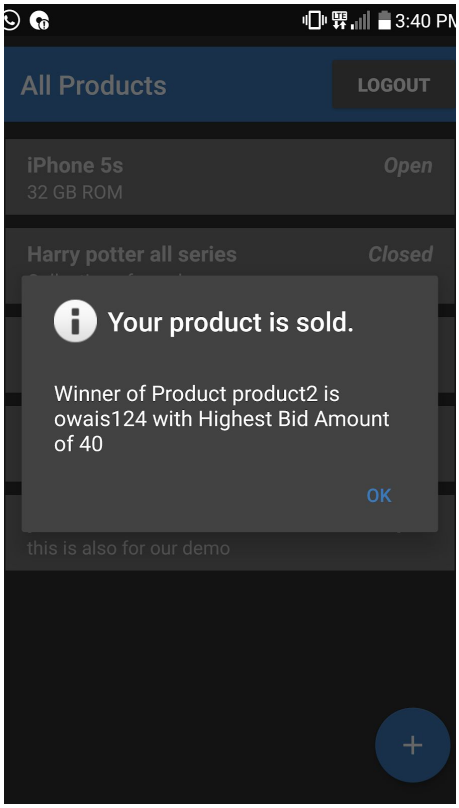
5.4. Ongoing Biddings



5.5. Product details



5.6. Notification when item is sold



6. References

For programming we took help from various videos on youtube and also from the websites below:

- stackoverflow.com.
- w3school.com.