

# **Software Requirements Specification**

## **Front Yard Sale**

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# **1. Introduction**

## **1.1 Purpose**

The goal of this project is to create a website application that allows our clients, UNT students, to put items up for auction and to allow other clients to bid for said items. This application will aid in the users interaction with each other based on bidding.

## **1.2 Scope**

The software product of our project is titled "Front Yard Sale" and is a website application that helps users get rid of unwanted items buy auctioning off their items.

Features include allowing users to bid on available items they want on the website application until the auction timer ends. Auctioneers provide information on each item put up for auction including auction price and bid timer. Administers will be able to monitor suspicious activity of auctions by having the ability to delete/ban fake items, cancel wins, and edit database.

## **1.3 Definitions**

To auction an item we will be implementing a bidding style named "First-Price Sealed-Bid Auction"(FPSBA). This style will allow each bidder one chance to bid for the item. Other uses also cannot view who has the highest bid.

# **2. Overall Description**

## **2.1 Product Perspective**

The web application is designed with XAMPP, which will use Apache web server to connect the frontend and backend information. The database for the backend will be MySQL and we will use PHP to communicate between frontend and backend. Users are required to have a system that can connect to the internet.

## **2.2 System Interfaces**

The Front Yard Sale system will contain user information, items auctioned, bidding prices, transaction information, and times of the auctions. This is needed to track the winners of an auction and where to send the item won. This information will be held on a single database because the clientele will only be held in the United States of America. Client/Server implementation will be needed for the client to communicate with the database (front-end and back-end) with the server being the DBMS (Database Management System).

## **2.3 User Interfaces**

A new user of the website application should see the popular items auctioned when opening the site as well as a sign-in/sign-up option. If the user signs in, then the sign-in option will be replaced with more items on the auction and an option to change account settings. The sign-up option will take the user to insert information to create their account. Additionally, there will be a checkbox as an option of the sign-up process that allows the user to appear "anonymous". This option can also be changed after account creation. Once the user has logged in, the search will also appear at the top of the website. The user will have the option to auction an item by clicking an "auction" button, or to bid for items by clicking on a "bid" button.

## **2.4 Hardware Interfaces**

The hardware interface for the system shall be required connection to the internet. This can be via wireless access network (WAN), local-area network (LAN), or Ethernet.

## **2.5 Software Interfaces**

The software we are using is XAMPP (X-Cross Platform, A-Apache, M-MariaDB, P-PHP, P-Perl). The software we will use provided by XAMPP will be MySQL for the database, phpMyAdmin to monitor the database, and Apache web server. HTTP protocol will be used using port 80. The versions of each software are below:

- XAMPP 1.8.3
- Apache 2.4.9
- MySQL 5.6.16
- phpMyAdmin 5.5.11

## **2.6 Communication Interfaces**

The auction system will use Apache HTTP protocol to communicate on the internet with TCP/IP and will connect MySQL database.

## **2.7 Operations**

Throughout the program the user will have many operations to perform such as, bidding for an item from another user, placing an item up for auction. There will also be certain operations that could happen without the user needing to be active, such as liking an item for later and receiving notifications about the status of the item.

## **2.8 User Characteristics**

- Admins - They will have the ability to ban/suspend users, maintain oversight, and monitor for false actions. They should be knowledgeable in maintaining a website, higher level computer knowledge.
- User (Auctioneer/Bidder) - Users are clients that can auction and bid items using a sign-in function with accounts. They have a basic level of computer knowledge.
- Auctioneer (Seller)- Users that auction their personal items onto the website by giving a description and a picture of the item. They set the time and starting price of the bid.
- Bidder- Users "bid" for an item that has previously been auctioned. The bidder can only bid between the time periods that the Auctioneer has set.

## **2.9 Production Functions**

- Bidding for an item: The bidder will enter any desired amount, has to be higher than the starting bid for the item. They will not be able to see what other bidders enter, and once the time for the auction has expired the winner will be revealed. The bidder that placed the highest bid will be the winner. If multiple bidders bid for the same price, then the user that bid first with that amount will win the auction.
- Buyout Price: During an auction a bidder may choose to pay the buyout price to immediately win the item. The buyout price will be decided by the auctioneer. The bidders can decide if they are willing to pay more for the item to guarantee winning, or risk losing the item but paying less for it.
- Placing an item up for auction: A user will be allowed to place an item up for auction on the website. They will have to enter the name of the item, a description, a photo is required, and some more info about when they want the auction to be held and for how long, as well as the buyout price.

## **2.10 Assumptions and Dependencies**

The lack of knowledge relating to implementing functions onto a website medium presents a possibility that the process model will have to be changed or revised mid-development. As time

progresses and more experience is accumulated, the developers will have to communicate more often to prevent discrepancies in implementation. The project could be affected if there is a need to pay money in creating a website in which the team can divide the cost between themselves. If the addition of other software is deemed necessary to include, the team must spend time to familiarize themselves with how it will interact with the project. Any user is assumed to have a keyboard, mouse, laptop, or desktop device and an internet connection to access the project's website.

### **3. Specific Requirements**

The functional requirements of our website is the process of a user selling, bidding, the monetary transaction of an item, and a list of recommended items. The user has to be able to create an account and login. A user with an account has to be able to put any item deemed legal and appropriate by either the system or administrator. A user selling an item must be able to set the starting bid, and time range the item is open for auction. After an item is available for auction, users excluding the seller must be able to make a bid at a price of their choosing with the minimum set by the starting bid. The website must keep track of the current highest bid made by a user and remember said user until the next highest bid. After the time window for an item to be auctioned closes, the current highest bidder must proceed with the monetary transaction process to pay for the item. The monetary transaction process must include transferring money from the buying user to the selling user as well as a small percentage towards an account approved for the website's profits. The user must be able to see a list of recommended items after a successful monetary transaction and during the bidding. The performance requirements of the website is to keep up with which user has the highest bid and have multiple users bid at the same time.

### **4. External Interfaces**

#### **4.1 User Interfaces**

The user interface of the website is graphical and text based. There will be graphical icons that serve as links to a section of the website to perform a functionality. Text that makes up an item's name will be able to serve as a link to move the user to that item's auction page if available.

#### **4.2 Hardware Interfaces**

The hardware interfaces are the keyboard, mouse, and scroll wheel for user input.

#### **4.3 Software Interfaces**

The software interface is the connection between the website and a monetary transaction system that handles money between two users and an approved account to hold the website's profits.

#### **4.4 Communications Interfaces**

The communication interface required to use the website is a web browser, email, and standard network server communication protocols.

## 5. Functional Requirements

### 5.1 All Users

#### 5.1.1 Create Account

- The admin user shall be logged on their account
- The admin shall select the create account option on homepage
- The admin shall enter the necessary information (TBD) to that creation of another admin's account
- The server shall confirm that there are no duplicates of usernames

#### 5.1.2 Log-in

- The user shall access the homepage and select log-in option
- The user shall input their credentials
- The server shall verify that the credentials match
- The server shall log-in the user if credentials are correct

#### 5.1.3 Auction Item

- The user shall complete the log-in steps from 5.1.2
- The user shall select the auction option
- The user shall enter in appropriate fields:
  - Brief description of the item
  - Picture of the item
  - Bidout price if applicable
  - Time period of the bid
  - Starting bid price
- The user shall confirm the creation of the item to the auction homepage
- The server shall add the item to the homepage for other users the bid for the item mentioned in 5.1.4 steps

#### 5.1.4 Bid for item (First-Price Sealed-Bid)

- The user only have one bid per item and shall not see what other users have bid
- The user shall select the bid button and enter the amount of money they shall bid
- The user shall receive a notification when the bid is finished show whether they won or lost the bid
- The user shall be redirected to exchange information to the auctioneer user to obtain shopping and payment information

#### 5.1.5 Bid Suggestions

- The user shall complete the 5.1.4 for bidding for an item
- The server shall use keywords from the item's name and description the user had bided on to search for similar items to auction
- The user shall receive notifications of similar items to bid for

#### 5.1.6 Search for items to bid on

- The user shall select the textbox designated for searching at the top of the webpage
- The user shall enter keywords using their keyboard into the textbox
- The user shall select the icon next to the textbox to enter their input into the system
- The system shall use the user's input to search the database for available items users can currently bid on
- The system shall display the results in descending order from most keyword similar items to least keyword similar items to the user

#### 5.1.7 Search result to auction

- The user shall see auctioned items on webpage to be bid for
- The user shall select one item from the webpage
- The user shall transition from the search results webpage to the selected item's auction webpage

#### 5.1.8 Update bid

- After a user has completed the steps from 5.1.4, the system shall observe the bid amount
- The system shall compare the bid amount with the item's current highest bid
- Should the bid amount be higher, the system shall update the item's current highest bid amount to the bid amount
- Should the bided amount be higher, the system shall update which user had placed the now highest bid on the item
- Should the bided amount be lower, the system shall make no changes to the item's data

## 5.2 Admins

#### 5.2.1 Create Management Account

- The admin user shall follow the steps from 5.1.1
- The admin user shall verify with peer admin to validate the account creation
- The new admin account shall be created with special privileges

#### 5.2.2 Remove Item

- The admin user shall be logged on their account
- The admin shall select the settings option on the item off the auctioning page
- The admin shall select the delete option and confirm deletion of the item
- The server shall remove the item from the auctioning database

#### 5.2.3 Edit/Update Database Information

- The admin user shall be logged on their account
- The admin shall select the settings option on the item off the auctioning page

- The admin shall change the fields of the items that need to be updated
- The admin shall confirm the changes
- The server shall change the information in the database

## 6. Non-Functional Requirements

### 6.1 Performance Requirements

- The website needs to be able to support at least 3 users at once.
- The user must be able to move into different sections of the web application such as from a search results page to an auction page within 10 seconds of receiving user input.
- An item must become available to bid on within 1 minute of its designated starting time.
- An item must become unavailable to bid on within 1 minute of its designated ending time.

### 6.2 Design Constraints

Due to the team's inexperience in creating a website, the developers are restricted to use C/C++ and SQL language to implement the functionality of the first-price sealed-bid auction. Additionally, the team may forgo implementing a real monetary transaction system for this project to focus on its functionality.

## 7. Appendix

### 7.1 Supporting Information:

1. Entity-Relationship Diagram (ERD)
2. Uses Cases
3. First-Price Sealed-Bid Auction  
a.k.a. blind auction

This style of auctioning allows each bidder to only bid once. All bids are hidden from the public so bidders don't know the bid of other participants. The highest bidder at the end of the timer wins the bid.