Software Requirements Specification (SRS) Document

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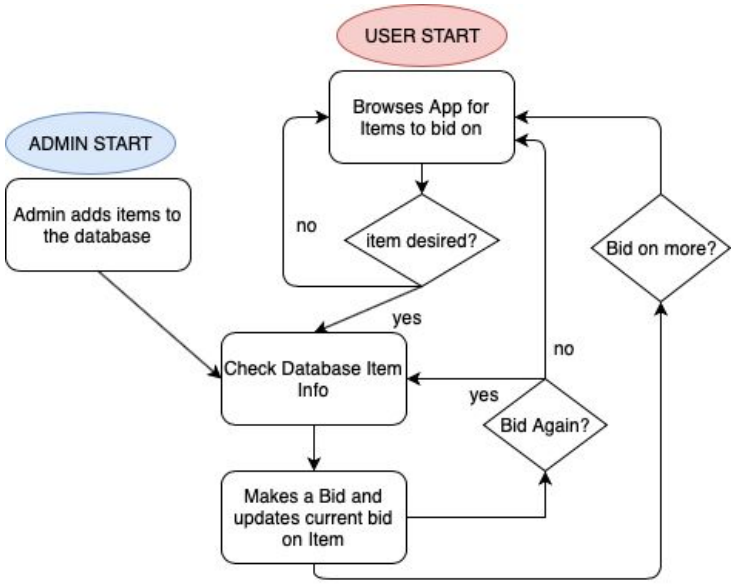
BSO Silent Auction Project

1. **Purpose and Scope of the Project**
    a. The purpose of this project is to produce an app and corresponding website for the auction fundraiser of the Baltimore Symphony Orchestra. The users will interact with the app to make bids on items. The administrators will have access to the website to maintain a database of items and user information.
    b. Stakeholders:
        i. User
            1. The user interacts with the Android application. They can browse the items that are up for bid.
            2. They can make bids by entering payment and shipping information. The user will have access to the items for sale; with a minimum payment, description, and image.
            3. A list of items that they have bid on and the current state of each will be in their profile.
            4. A user will be identified by their email and will log in using a password.
        ii. Administrator
            1. The administrator will be responsible for what items are posted onto the app and each users information.
            2. Users can send items to the administrator for posting that will include the starting price, description, and image.
            3. The administrator can add, remove, or edit an item, add, remove or edit user accounts, and add administrator accounts.
        iii. Client (BSO)
            1. Our BSO client has given his requirements for the product.
            2. He will work closely with the developers to make sure that the progress is in correspondence with the final product he would like to have.
        iv. Developers
            1. The developers will establish the initial requirements with the client.
            2. They will create an Android Application for the user to interact with that has the features that the user needs.
            3. They will create a website and database for the Administrators to access and modify in order to maintain all the details of the auction.
        v. Donors
            1. Donors will be able to submit items to administrators of this auctioning application so their items may be put up for bid.

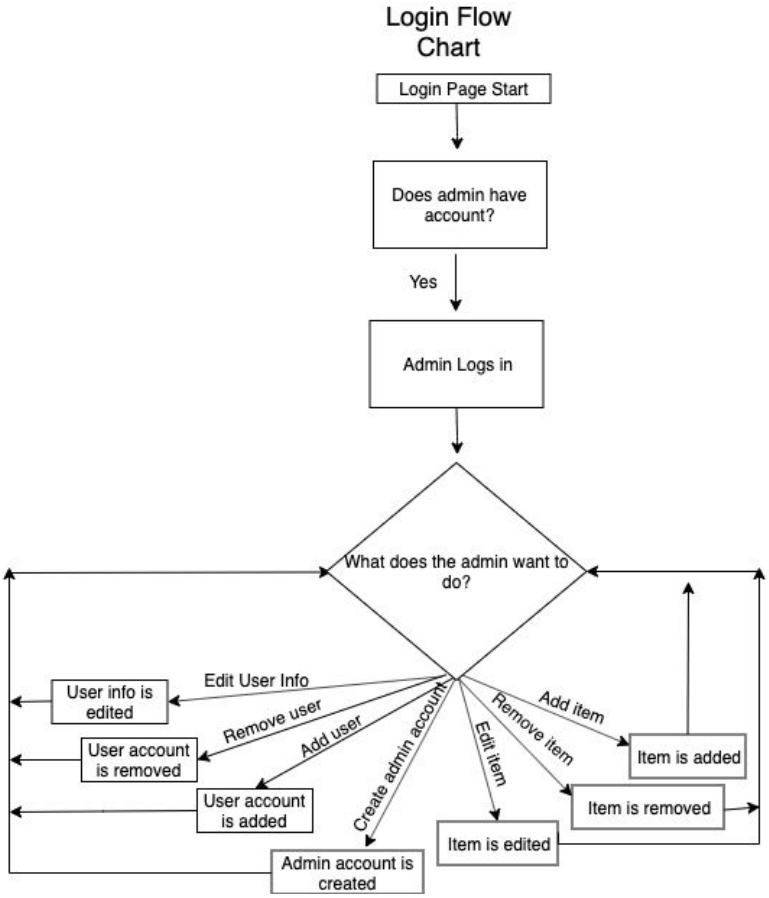
c. Scope
    i. Within Scope:
        1. Database table holding the user information and can be modified
        2. Database table holding the item information and can be modified
        3. Log-in page allowing use to create an account
        4. Log-in page allowing user to log into preexisting account
        5. Forget password option on log-in page
        6. Each user has a one-way encrypted password
        7. Items posted with a starting price, description, and image
        8. Personal bidding history viewable by each user
        9. Auto-incrementing of price of items
        10. Website for the administrator to use
        11. Searching for an item by keyword
        12. View items by featured, price high-to-low, low-to-high
        13. Guide to how the app works
        14. Get credit card information from user if they place a bid on an item
        15. Current bid is viewable on each item as well as the minimum price needed to be able to bid on it
        16. Notification in the app that the user won the bidding for an item
    ii. Out of Scope:
        1. Notifications by email to users
        2. Option for user to enter a maximum bid amount

2. **The problem and the problem domain**
    a. An Android application of a silent-auction for the Baltimore Symphony Orchestra that will allow users to bid on different items that are posted by the administrator. This app will have a corresponding website that administrators can access and maintain the databases of the products along with each users information.
    b. The Baltimore Symphony Orchestra needs a tool to enable fundraising through a silent auction. This will be done through mobile app development and internet database organization. Our problem domain will include: auction, encryption, banking transaction/information storage,

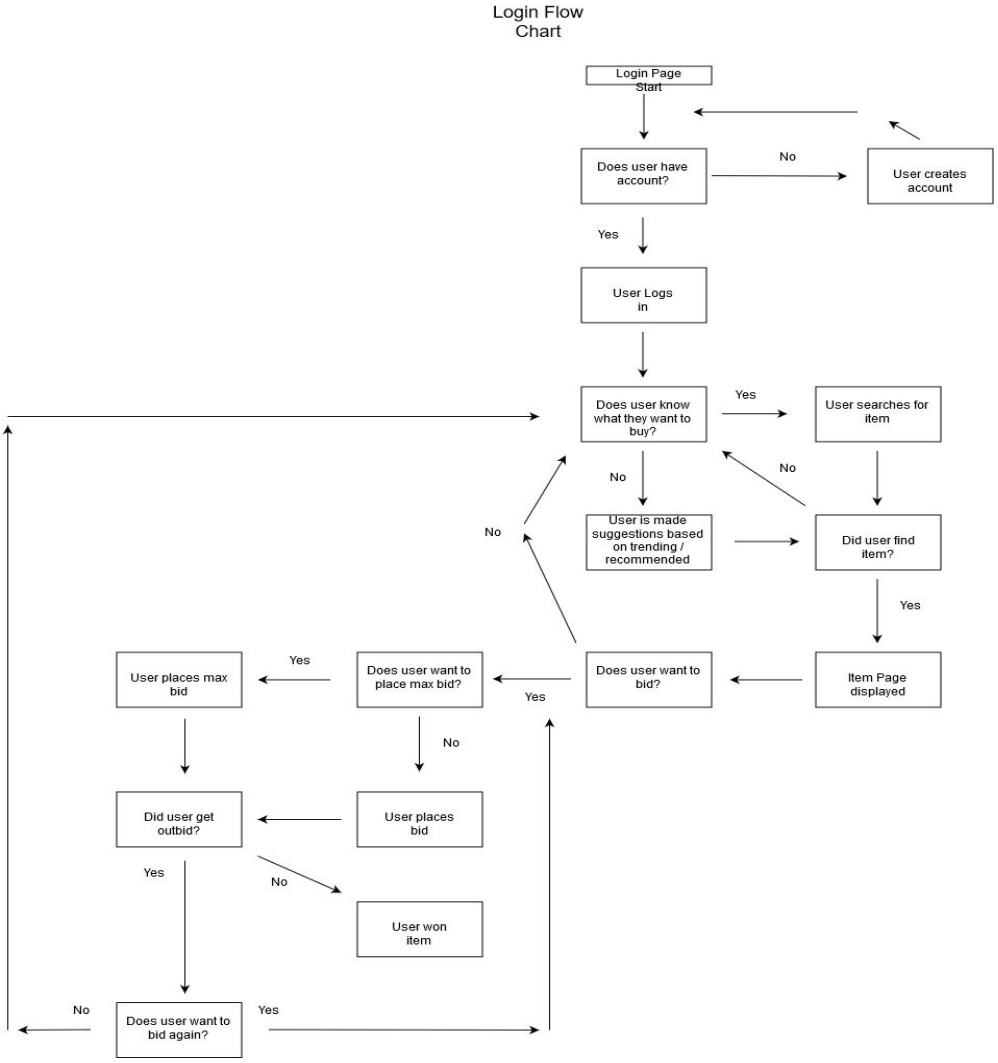
c. Auction flow diagram



3. Administrator flow diagram



a. User flow diagram



4. **Glossary:**
    a. Administrator: A person in charge of the BSO auction who has the ability to view the database, add to the database, and edit the database
    b. Application: A computer program designed to be used on a mobile device that users can interact with
    c. Android: An operating system used for mobile devices and tablets which the app will run on
    d. Bid: An offer of price that one is willing to pay for an item
    e. Database: A structured set of data stored on a server
    f. Developer: Someone who builds a product
    g. Silent-Auction: An auction where people can bid on items by writing down their bids on paper and the highest bidder at the end of the allotted time wins the item
    h. User: Someone who interacts with or operates something
    i. Website: A page or collection of pages on the internet

5. **Functional requirements**
    a. The primary actors and their general goals.
        i. User: To make the highest bid on items using the auction app.
        ii. Admin: To maintain an accurate list of items, current bids, and user information.
    b. **List of features**

    Top Priority:

        i. The database shall store user information identified as an email and name.
        ii. The database shall store a one-way-encrypted password for each user.
        iii. The database shall store each user's bids on products.
        iv. The database shall store each user's address and credit card information.
        v. The database shall store the product ID, initial price, name, category, description, and image.
        vi. The database shall store the bidding history for each item.
        vii. The database shall store the minimum and current bid on each item.
        viii. The application shall notify the user when they are outbid.
        ix. The website shall allow a few (around 3) administrators to log in with email and a one-way-encrypted password.
        x. The administrators shall be able to reset their password.
        xi. The administrators shall be able to add, remove, and modify items, including their:
            1. Description
            2. Starting price
            3. Image
            4. Name
            5. Category
            6. Increment
        xii. The administrator shall have access to the bidding history for each item and each user.
        xiii. A user shall be able to create an account with their email address.
        xiv. A user shall be able to reset their password.
        xv. A user shall be able to view items in order based on featured, price high-to-low, and price low-to-high.
        xvi. A user shall be able to filter items based on current price or by category.
        xvii. A user shall be able to place a bid on an item at a set increment.
        xviii. A user shall be able to see the current bid on every product.
        xix. A user shall be able to search for items through key words.
        xx. A user shall be able to see the items that they are currently the top bidder for.
        xxi. A user shall be able to view their personal bidding history
        xxii. A user shall be notified if they win an item.
        xxiii. A user shall enter their credit card number when they place their first bid.
        xxiv. The database shall store users credit card numbers in a one-way encrypted format.
        xxv. The app shall have a guide as to how the auction and the app work.

xxvi. The administrators shall have access to winners of each item's bid, along with the correct payment information and shipping address.

Lower Priority:

xxvii. The database shall have a set increment depending on initial price:
   1. $5 for items <$100 initial
   2. $10 for items >$100 and <$500 initial
   3. $25 for items >$500 initial

xxviii. The database shall store the max bid for a user if they choose to have automatic updating.

xxix. The database shall store the final day for bidding.

xxx. The application shall notify the user when the bidding is finished.

xxxi. A user shall be able to opt to have a maximum bid that will automatically be placed if the item price reaches that amount.

xxxii. A user shall be able to email an administrator if they would like to donate a product for the auction.

xxxiii. A user shall be emailed when they are outbid.

Future:

xxxiv. The next winner shall win an item and be notified if the first place winner does not claim their item.

c. **The user stories**

i. As a user, I want to be able to create my own account using my email address so that I can log into my account and be notified via email.

ii. As a user, I want to have a reset password option so that I can easily change my password if I forget what it previously was.

iii. As a user, I want to be notified in the app and/or by email when I have been outbid so that I am aware of my current status regarding items.

iv. As a user, I want to be notified when the auction is over so that I can immediately find out the results.

v. As a user, I want to be notified when I have won an item so that I know which items I have the highest bid for and have won.

vi. As a user, I want to view items in order based on featured, price high-to-low and low-to-high, filter items based on current price or category, and search for items through key words so that I can view the items I am most interested in.

vii. As a user, I want to be able to place a bid on an item at a set increment so that I don't have to worry about how much my bid has to be incremented by.

viii. As a user, I want to be able to see the current bid on every product so that I know how much I have to bid on that item at a minimum.

ix. As a user, I want to be able to see the items that I am currently the top bidder for as well as my personal bidding history so that I know what items I am currently winning and have previously bidded on.

x. As a user, I want to be able to email the administrator so that I can donate a product for the auction.
xi. As a user, I want to be able to enter my credit card number when I place my first bid so that I can use my primary source of payment method to pay for the item if I have been the highest bid.
xii. As a user, I want to be able to have the option of a maximum bid that is automatically placed if the item price reaches that amount so that I can be the top bidder even when I am not physically placing the bid.
xiii. As an administrator, I want to be able to reset my password so that I can access my account even if I forgot my old password.
xiv. As an administrator, I want to add, remove and modify the items so that the database is up to date.
xv. As an administrator, I want to have access to the bidding history for each item so that I know the current price and status of each item.
xvi. As an administrator, I want to have access to the winner of each item and the correct payment information and shipping address so that I can collect payment and send them what they bought.

d. The use cases.
    i. Use case UC1: User Account Creation
        1. Primary Actor: User
        2. Stakeholders and Interests:
            a. User: Wants to be able to create an account
            b. Administrator: Wants people to create accounts so they spend money on the items.
        3. Preconditions:
            a. User has the downloaded app
            b. Administrator has the database up to date
        4. Success Guarantee (Postconditions):
            a. Email is verified
            b. User information is added to the database
            c. The password is one-way encrypted
        5. Main success scenario (or basic flow):
            a. User has the app downloaded
            b. The user opens the app to the sign up page
            c. The user enters their name, email, and password
            d. An email is sent to the user to verify the email address
            e. Once the link in the email is clicked, the user can log in normally
        6. Extensions (or alternate flow):
            a. If an unvalid email is entered, the user has to re-create their account
            b. If the user leaves fields blank, indicate error
        7. Special requirements: Touch Screen capabilities for UI

8. Technology and Data Variations List: Password must meet security requirements
9. Open issues: How do we confirm that the email is real? How do we securely encrypt the password?

ii. Use case UC2: User Log in
1. Primary Actor: User
2. Stakeholders and Interests:
    a. User: Wants to be able to log in to an existing account
    b. Administrator: Wants people to log into their account so they spend money on the items
3. Preconditions:
    a. User has the downloaded app
    b. User already created an account
    c. The administrator has the database up to date
4. Success Guarantee (Postconditions):
    a. Correct email and password have been inputted
5. Main success scenario (or basic flow):
    a. User has the app downloaded
    b. The user logs in to the app using their preexisting account
6. Extensions (or alternate flow):
    a. User enters incorrect username or password and are not allowed to log into the app until they get it correct
    b. User doesn't remember password and clicks "Forget Password" which will allow them to reset it
    c. The user does not have an account and must create one
7. Special requirements: Touch screen capabilities
8. Technology and Data Variations List: Database
9. Open issues:

iii. Use case UC3: Bidding on an item
1. Primary Actor: User
2. Stakeholders and Interests:
    a. User: Wants to be able to place bids on an item or items in hopes of being the highest bidder and winning the item
    b. Administrator: Wants people to be able to bid easily so that people can spend money on the items
3. Preconditions:
    a. User already has an account
    b. Items are posted for bidding
    c. User is bidding the minimum bidding price
    d. The database exists and there is an existing items table
4. Success Guarantee (Postconditions):
    a. User is bidding the minimum price required for the item
    b. The item is updated in the database and app with the current bid

5. Main success scenario (or basic flow):
    a. The user wants to bid on an item
    b. The user searches for an item or views the items
    c. The user selects an item to bid on and enters the next bid amount
    d. The item table is updated in the databases and the changes are reflected in the app
    e. The user that was previously the top bidder is notified
6. Extensions (or alternate flow):
    a. If the user does not enter a bid amount that is at least the minimum price, they will not be able to bid until they do
    b. If it is the users first bid, they have to enter their credit card number which is verified, encrypted and added to the database
7. Special requirements: Must be meeting minimum and increment requirements
8. Technology and Data Variations List: One-way encryption of credit card information, database
9. Open issues: How do we update the database in real time? How do we encrypt the credit card number securely? How do we verify the validity of the credit card?

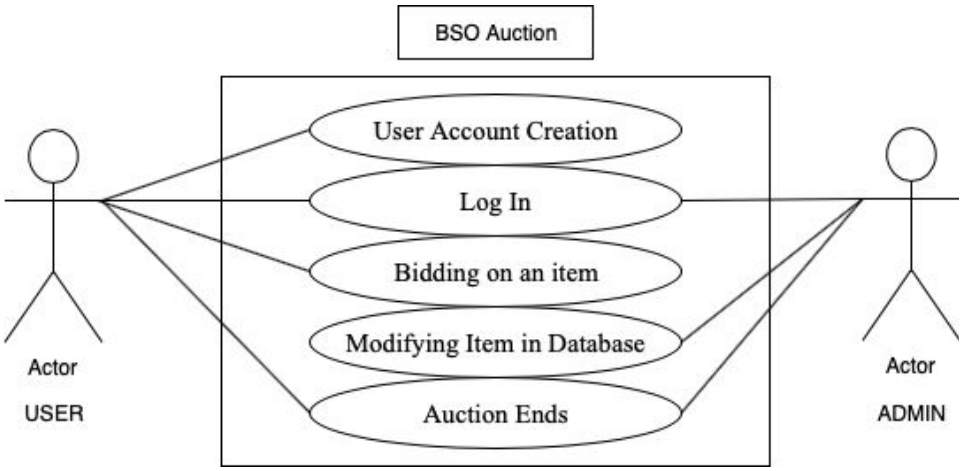
iv. Use case UC4: Modifying Item in Database

1. Primary Actor: Administrator
2. Stakeholders and Interests:
    a. Administrator: Wants items to be up to date so that users have the correct information
    b. User: Wants to be able to see the correct specifications of each item so they can make informed decisions when bidding
3. Preconditions:
    a. There are items to sell
    b. The database is created and there is an existing items table
4. Success Guarantee (Postconditions):
    a. The item is updated in the database and in the app
5. Main success scenario (or basic flow):
    a. The administrator wants to add, edit or remove an item in the auction
    b. The administrator manually enters an item into the table, modifies an item, or drops an item
    c. The item table is updated in the databases and the changes are reflected in the app
6. Extensions (or alternate flow):
    a. If the administrator misenters the modification, they have to remodify it
7. Special requirements: Database must have fields that can be updated ONLY by the administrators

8. Technology and Data Variations List: Database
9. Open issues: How do we update the app in real time?

v. Use case UC5: Auction Ends
1. Primary Actor: User
2. Stakeholders and Interests:
    a. User: Wants to know what items they won and how much they are paying for them
    b. Administrator: Wants users to claim their prize to make money
3. Preconditions:
    a. Items were bid on
    b. There is a pre-established time for the auction to end
4. Success Guarantee (Postconditions):
    a. The users successfully pays for their won items and they are shipped to them
5. Main success scenario (or basic flow):
    a. People bid on items
    b. The auction ends
    c. The top bidders for each item are notified that they won the item
    d. The top bidders are charged for their bid amount
    e. The item is shipped to the bidder
6. Extensions (or alternate flow):
    a. If the user entered the wrong address, the item is lost in the mail
    b. If the purchase bounces on the credit card, the user is notified and either they provide alternate payment or the next highest bidder wins the item
7. Special requirements: Disabling of app after bidding ends
8. Technology and Data Variations List: Database
9. Open issues: How can we make sure that the payments are processed before shipping items?

vi. Use Case Diagram



6. **Technology Used**
    a. Technology Requirements:
        i. Android Studio
            1. Java
            2. XML
        ii. MySQL
        iii. HTML
        iv. PHP
    b. Other systems we interact with:
        i. MySQL Databases
        ii. cs-databases.cs.loyola.edu

7. **Nonfunctional and Other Requirements**
    a. Capture the nonfunctional and other requirements. For example:
        i. Performance and scalability related requirements.
            1. Must be able to have about 1000 users using the app at a time
            2. Must be able to have about 1000 or more users entered into the database
        ii. User and usability related requirements.
            1. There must be a instructions pop up for how to use the application
        iii. Maintenance and portability related requirements.
            1. When users bid on items, the databases must be updated in real time
            2. When administrators modify an item in the database, the app must be updated in real time
            3. Relations must be structured so that the entries can be modified without breaking any restraints