# CraftVerify

Business Requirements Document
Team Wanderer
https://github.com/JPJ-5/Senior-Project

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**BRD Version Table:**

| Version | Description | Date |
|---|---|---|
| **1.0** | Initial BRD project plan | **10/11/2023** |
| **1.1** | Feature Revision | **10/20/2023** |
| **1.2** | Revise Security | **10/27/2023** |
| **1.3** | Adding proper logging | **11/02/2023** |
| **1.4** | Revise Security and added proper loggings. | **11/05/2023** |
| **1.5** | Overall Format Revision and added default behaviors along with feature revision | **11/18/2023** |
| **1.6** | Adding permission matrix, effort point unit, authentication input, and behaviors revision throughout BRD. | **11/22/23** |

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# Project Overview

## Purpose

The purpose of this Business Requirements Document (BRD) is to clearly outline the business objectives, scope, and specific requirements for CraftVerify. It serves as a foundational reference for our client, ensuring a shared understanding of the project's goals and functionalities. By documenting these key elements, the BRD will guide the development team, facilitate effective communication, and support successful project planning and execution

## Mission Overview

CraftVerify transforms handcrafted products into e-commerce by promoting transparency and authenticity. We've created a solution in response to the difficulties artisans have on well-known websites like Amazon and eBay, where mass-produced goods might obscure the actual craftsmanship. We provide vendors with a personalized platform where they can genuinely convey their distinct crafting experience, addressing the handcrafted community's ingrained need for originality. In essence, CraftVerify serves as a link between discriminating buyers and real artists rather than merely being an e-commerce platform.

## Target Audience

Our target customers are individuals with an appreciation for unique artisanal creations. These customers value craftsmanship, creativity, sustainability, ethical consumption, and the individual beauty of handcrafted goods in a world awash in mass-produced items. This web application caters to a diverse audience from hobbyists to independent skilled artisans, or just anyone with an interest in buying or selling handcrafted goods.

## Product Wide Scope

CraftVerify is a single-page web application that will support the Google Chrome web browser for desktop version 105.0.5195.127 and up with a standard display resolution of (1920 X 1080) Pixels, and mobile version 119.0.6045.66 and up of Google Chrome web browser including smart phone and tablet. CraftVerify aims to serve only the community of crafters and buyers within Long Beach and will only support the American English language, the time will be based on the Pacific Time Zone with the dates following the MM/DD/YYYY format of the American style Gregorian Calendar. Any measurement units will use the Imperial System. The prices of the items will be measured using the United States dollars. As Long Beach is in the United States, any measurements that the site used will support only the Imperial System of Measurements.

## Competition

The goal of our app is to provide safe selling/buying of handcrafted goods free of mass-produced craft products. This would mean taking some components of our competitors into our web application. Our main competition consists of vendor apps and social media platforms that currently allow users to sell their own crafted products. CraftVerify aims to provide all these features
 while providing a safe and enhanced experience specifically for handcrafted goods.

## Social Media Applications

Like Facebook, Instagram, and TikTok, we aim to allow our sellers to create a profile allowing them to share their stories and goods with the community. While Craftverify does not plan to be a social media web application, we do want to take note of community connection and allow our sellers to connect with buyers and enhance user experience.

## Vendor Sites

We want to provide a route for sellers to upload and list their items allowing our base of customers to set an offer for purchase. While most apps like Amazon and Craigslist dominate current vendor sites, the app is aimed specifically at the selling and buying of handcrafted goods. Our target audience is anyone looking to buy/sell non-mass-produced items ethically from their community.

## User Matrix

|  | Root Admin | Delegate Admin | Registered User | Public User |
|---|---|---|---|---|
| User Creation: | Pre-configured in the system | Created by the owner of the system | Created by anyone on the site | The default user type if no other type is logged in |
| Monitor all platform operations: | X | X |  |  |
| Delete/Modify Item Listing: | X | X |  |  |
| Address user complaints or difficulties: | X | X |  |  |

| | | | | |
|---|---|---|---|---|
| Control and monitor seller listings: | X | X | | |
| Check reported photographs, videos and listings | X | X | | |
| Answer registered user questions and reports | X | X | | |
| Upload pictures and videos | | | X | |
| Manage and list their items | | | X | |
| Message consumers through the message platform | X (For addressing user's problem) | X (For addressing user's problem) | X | |
| Buying items sold by sellers | | | X | |
| View items being sold by sellers | X | X | X | X |
| Class Hosting and Joining System | | | X | |
| Make to Order | | | X | |
| Wishlist Functionality | | | X | |
| Shopping Cart | | | X | |
| Price Range Sorting | | | X | X |
| Search Engine | | | X | X |
| Report, Rating & Review System | | | X | |

| | | | | |
|---|---|---|---|---|
| Item Auction | | | X | |
| Class Management | | | X | |
| Timeline Management Calendar | | | X | |
| Seller Dynamic Dashboard | | | X | |
| Quiz creation | | | X | |
| CraftGuilds | | | X | |
| Supplies and Materials | | | X | |
| Story Teller | | | X | |
| Monthly Spotlight of Crafter | X (For determining the submission for the Spotlight) | X (For determining the submission for the Spotlight) | X | |

## Root Admin:

The main admin which oversees all operations on the CraftVerify system. The primary responsibility the Root Admin has is to oversee the persistent data store. They will be able to view all of the data added from both loggers and information added to the data store by every system-specific feature.

## Delegate Admin:

The Delegate Admin is an account created by the system owner and has the same power as the Root Admin. The primary responsibility of the Delegate Admin is to oversee the persistent data store. Delegate Admins serve as a second pair of hands and eyes to the Root Admin if the Root Admin is either unavailable or does not notice an issue within the data store. They will be able to view all of the data added from both loggers and information added to the data store by every system-specific feature.

## Registered User:

Any registered user who is not an admin. They are the buyers and sellers on the website and are created through the Account Creation feature. They will also be referred to as an authenticated non-admin user if the user needs to be logged in as a registered user to use a feature.

Public User:

This is any user who is not logged in as an admin or a registered user. They have limited functionality to encourage users to sign up as a registered user. This user exists to give visitors a test run of the website before becoming a buyer or seller.

# Phase 1 Features:

## Security

1. Authentication
- User Stories:
  - Unauthenticated Registered User(URU): As an unauthenticated registered user, I can provide my username and a one-time password to authenticate my identity as a CraftVerify user and gain access to my account.
  - Anonymous User (AU): As an anonymous user,
    - With Account: I can request an authentication process to gain access to the special features.
    - Without Account:  I can attempt a request for an authentication process to gain access to the special features.
- Scope:
  - (Apply To URU):
    - Any unauthenticated user who wants to use CraftVerify features can apply for the authentication process.
  - (Apply To AU)
    - Any unauthenticated anonymous users
- Effort Points (Hours): 100
- Data Source:
  - (Apply To URU and AU)
    - Origin: Internal.
    - Type: Database.
- App Permission:
  - (Apply To URU and AU):
    - Permission = Account Login
    - Scope = access to registered account
- Target Audience:
  - (Apply to URU and AU)
    - Any anonymous user
- Pre-condition:
  - (Apply To URU and AU):

1. The unauthenticated user is on the CraftVerify login option.
2. The unauthenticated user has no live authenticated session on the same device.
3. All collected PII data is kept inside our data store following CPRA rules for data requests and deletions.
4. Any Logging from this function will have additional logging data: Any logging for this function will have this extra logging data: Username, Function.
5. The unauthenticated user provides the required username and password for the authentication process.

- Required Inputs:
    - (Apply To URU and AU)
    - Required email restrictions:
        - The email cannot be null.
        - The email cannot be an empty string.
        - The email is the email that is used during the account creation process.
        - The email must be at least 8 characters consisting of lowercase characters, uppercase characters, and single-digit numbers.
        - The email only supports these special characters: '.', and '-'
        - The email format needs to be in this format:
            - (supported inputs)@(supported inputs).(supported inputs)
    - Required password restrictions:
        - The password cannot be null.
        - The password cannot be an empty string.
        - The password is a one-time password (new password every login).
        - The password must be at least 8 characters consisting of lowercase characters, uppercase characters, and single-digit numbers.
        - OTP, One-time password creation is defined in NIST Special Publication 800-63B: Digital Identity Guidelines, Section: 5.1.4.1.
        - The password is created by our system and provided to the unauthenticated user through email.
- Success Outcomes:
    - (Apply to AU With An Account):
        - Their success outcome will be the same as URU.

- ○ (Apply To URU):
    - ■ The Authentication is completed from 0 to 3 seconds.
    - ■ Our system will ask the unauthenticated user to Login before using any off-limit features or accessing off-limit data.
    - ■ The unauthenticated user provides the correct email.
    - ■ The entered email is 8 or more characters.
    - ■ The unauthenticated user provides the correct password/OTP.
    - ■ The password is 8 or more characters.
    - ■ The password will be provided through email.
    - ■ The correct password is provided through email.
    - ■ Our system will not ask an authenticated user to Log In.
    - ■ The account will be locked after 3 unsuccessful attempts or the 24-hour timer runs out starting from the first unsuccessful attempt.
    - ■ The first successful attempt reset the unsuccessful attempts.
    - ■ Each successful authentication attempt will be logged following the format and the time is based on UTC.
        - ● Logging Level: Info, Category: Business, "Successfully Authenticated: "Account Username" "IP Address" "Time Stamp" " as the message.
    - ■ Each unsuccessful authentication attempt will be logged following the format and the time is based on UTC.
        - ● Logging Level: Info, Category: Business, "Unsuccessfully Authenticated: "Account Username" "IP Address" "Time Stamp" " as the message.
    - ■ The unauthenticated user cannot authenticate their identity for a locked account.
    - ■ The authenticated user will be navigated to the profile view after successfully authenticating their identity.
    - ■ The failure of this function will not bring the whole system down.
- ○ (Apply to AU Without An Account):
    - ■ When an anonymous user (without an account) attempts authentication, the system should recognize that they are not registered.
    - ■ The system should redirect them to a sign-up or registration page view, prompting them to create an account.
    - ■ A success message might be displayed, such as "No account found. Please register to access features."

- ○ The system will change and navigate the user to their profile view after they successfully complete the authentication process.
- ● Failure Outcomes:
    - ○ (Apply To AU With Account):
        - ■ Their failure outcome will be the same as URU
    - ○ (Apply To URU):
        - ■ Authentication completed after 3 seconds
            - ● Error Handling: The system will log this error. Logging Level: Error, Category Business, "Authentication Takes More Than 3 Seconds To Completed" as message. System will still navigate user to the user profile view.
        - ■ Our System did not ask the unauthenticated user to Log In before using any off-limit features or accessing off-limit data.
            - ● Error Handling: The system will log this error. Logging Level: Error, Level: Business, "Did Not Prompt Unauthenticated User For Log In" as the message. The system will leave the user at the default page view.
        - ■ The unauthenticated user provides the incorrect email.
            - ● Error Handling: The system will display a message "Incorrect Email. Please Try Again." and log this error. Logging Level: Error, Category: Business, "Invalid Email Entered" as the message. The system will leave the user in the email input view waiting for a retry attempt.
        - ■ The email is less than 8 characters long.
            - ● Error Handling: The system will display "Email Must Be Over 8 Characters. Please Re-Enter", and log this error. Logging Level: Error, Category: Business, "Invalid Email Length" as the message. The system will leave the user in the email input view waiting for a retry attempt.
        - ■ The unauthenticated user provides the incorrect password/OTP.
            - ● Error Handling: The system will display a message "Incorrect Password. Please Try Again." and log this error. Logging Level: Error, Category: Business, "Invalid Password Entered" as the message. The

system will leave the user at the password input view for a retry attempt.

- The password is less than 8 characters.
  - Error Handling: The system will display "Password Must Be Over 8 Characters", and log this error. Logging Level: Error, Category: Business, "Invalid Password Length" as the message. The system will leave the user at the password input view for a retry attempt.
- The password is not provided through email.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Business, "Password/OTP Was Not Emailed" as the message. The system will leave the user at the default page view.
- The incorrect password is provided through email.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Business, "Invalid Password Provided" as the message. The system will leave the user at the default page view.
- The unauthenticated user provides the incorrect email and incorrect password/OTP.
  - Error Handling: The system will display a message "Incorrect Username and Password. Please Try Again." and log this error. Logging Level: Error, Category: Business, "Invalid Username and Password Entered" as the message. The user will stay at the input view for reattempt. The system will also note the fail count in order to block user access.
- The account is not locked after 3 unsuccessful attempts or the 24-hour timer runs out starting from the first unsuccessful attempt.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Business, "The Account Is Not Locked After 3 Attempts or 24-Hour Timer" as message. The system will block log in access and navigate the user to the default page view.
- The first successful attempt does not reset the unsuccessful attempts: unacceptable behavior.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Business, "The Unsuccessful

Authentication Attempt Did Not Reset" as message. The user will be navigated to the profile view.

- Each successful Authentication attempt is not logged.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Data Store, "Unable to Log Successful Authentication Attempt" as message. The system will log the error and navigate the user to their profile view after they successfully complete the authentication process.
- Each unsuccessful Authentication attempt is not logged.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Data Store, "Unable to Log Unsuccessful Authentication Attempt" as message. If the user keeps failing log in, the user will stay at log in view for reattempt or until the system blocks log in access. If the user successfully logs in, the system will navigate the user to the profile view.
- Our system asks an authenticated user to Log In.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Business, "The System Asked An Authenticated User To Log In" as message. The user will stay at their current view.
- The unauthenticated user can authenticate their identity for a locked account.
  - Error Handling: The system will log this error. Logging Level: Error, Category: Business, "Unauthenticated User Bypass The Unsuccessful Attempt Count" as message. The user will stay at the log in view to try to bypass the authentication process.
- The authenticated user view did not change.
  - Error Handling: The system will log this error. Logging Level: Error, Category: View, "Auto Navigation Did Not Take Place" as message. The user will stay at their current view.
- The function failure brought down the whole system
  - Error Handling: The system will display "CraftVerify Is Unavailable, Please Comeback At A Later Time" and log this error. Logging Level: Error, Category: Server, "Authentication Broke The Server" as message. The user will navigate to the default page view.

- ○ (Apply to AU Without Account)
    - ■ If the system erroneously allows an anonymous user (without an account) to proceed past the authentication stage.
        - ● Error Handling: The system will display "No Account Associated With The User" and log this error. Logging Level: Error, Category: Business, "An Anonymous User Without Account Bypass Authentication" as the message. The user will navigate to the default page view.
    - ■ The system grants access to any protected features or data.
        - ● Error Handling:  The system displays an error message such as "Authentication failed. No account associated with the provided credentials." and log this error. Logging Level: Error, Category: Business, "Authentication Broke The Server" as message. The user will navigate to the default page view.
    - ■ An error log should be recorded for such incidents, with a Logging Level of Error and a Category of Security, with a message like "Anonymous user without an account attempted to authenticate."

- 2. Authorization
    - ● User Story:
        - ○ As an authenticated user, I will get authorizations for my user type to have access to CraftVerify features and my data.
    - ● Scope:
        - ○ Any authenticated user who needs authorization to access special features or their data.
    - ● Effort Points (Hours): 100
    - ● Data Source:
        - ○ Origin: Internal.
        - ○ Type: Database.
    - ● App Permission:
        - ○ Permission = Read
        - ○ Scope = Permissions associated with authenticated user
    - ● Target Audience:
        - ○ Any currently authenticated user.
    - ● Pre-condition:
        - ○ The unauthorized user must be an authenticated user.

- ○ The authenticated user has a live session.
    - ○ Any logging for this function will have this extra logging data: Username, Function.
- Success Outcomes:
    - ○ Authorization is completed from 0 to 3 seconds. Granting access based on user type.
    - ○ The authenticated user has access to the features or data that match their user type.
    - ○ The system logs any unauthorized access.
    - ○ The system does not allow an unauthorized user to create/modify/delete data inside the datastore.
    - ○ The system does not allow an unauthorized user to have access to a special feature.
    - ○ The unauthorized user can not see the view if they don't have proper authority to access the special view.
    - ○ Any modification to the user access permission is applied for the next successful authentication attempt.
    - ○ The failure of this function will not bring the whole system down.
    - ○ The system will navigate the user to their profile view after a successful authorization process.
- Failure Outcomes:
    - ○ Authorization is completed after 3 seconds.
        - ■ Unauthorized access attempt keeps the user on the current page.
        - ■ Error Handling: The system will log this error. Logging Level: Error, Category Business, "Authorization Takes More Than 3 Seconds To Completed" as message.
    - ○ The authenticated user does not have access to the features or data that match their user type.
        - ■ Error Handling: The system will display "Access Granted Incorrectly" and log this error. Logging Level: Error, Category: Server, "Access Was Not Granted Correctly" as message. The system will prompt the user with the error report navigation option.
    - ○ The system does not log any unauthorized access.
        - ■ Error Handling: The system will display "Invalid Access", and the system logs this error. Logging Level: Error, Category: Business, "Unauthorized Access Attempt: "Function" "TimeStamp" " as message. Users will be navigated to the

default page view when attempting to access unauthorized resources.

- ○ The system allows an unauthorized user to create/delete/modify data inside the datastore.
    - ■ Error Handling: The system will display "Unauthorized Access", hide the data, and log this error. Logging Level: Error, Category: Data, "Unauthorized User Have Access To Data" as message. Users will be navigated to the default page view when attempting to access unauthorized resources.
- ○ The system allows an unauthorized user to have access to a special feature.
    - ■ Error Handling: The system will display "Unauthorized Access" and log this error. Logging Level: Error, Category: Server, "Unauthorized User Have Access To Special Feature" as message. Users will be navigated to the default page view when attempting to access unauthorized resources.
- ○ The unauthorized user can see the view even if they don't have the proper authority to access the special view.
    - ■ Error Handling: The system will display "Unauthorized Access" and log this error. Logging Level: Error, Category: Server, "Unauthorized User Have Access To Special View" as message. Users will be navigated to the default page view when attempting to access unauthorized resources.
- ○ Any modification to the user access permission is not applied for the next successful authentication attempt.
    - ■ Error Handling: The system will display "Incorrect Accesses" and log this error. Logging Level: Error, Category: Server, "Access Is Not Up-To-Date" as message. The system will prompt the user with an error report navigation view.
- ○ The authorized user has access to a special view that has data that the user does not have permission to read.
    - ■ Error Handling: The system will display "Unauthorized Access", hide the data, and log this error. Logging Level: Error, Category: Data, "Unauthorized User Try To Read Data" as message. Users will be navigated to the default page view when attempting to access unauthorized resources.

- ○ The authorized user has access to a special view that has data that the user has permission to read only but attempts to modify it.
    - ■ Error Handling: The system will display "Unauthorized Access", hide the data, and log this error. Logging Level: Error, Category: Data, "Unauthorized User Try To Write Data" as message. The user will be navigated to the default page view.
  - ○ The function failure brought down the whole system
    - ■ Error Handling: The system will display "CraftVerify Is Unavailable, Please Comeback At A Later Time" and log this error. Logging Level: Error, Category: Server, "Authorization Broke The Server" as message. The user will be navigated to the default page view.

3. Logout
- User Story:
  - ○ Active Authenticated User(AAU): As an authenticated user, I can request the server for the Logout process to end my live session.
  - ○ Inactive Authenticated User(IAU): As an inactive authenticated user, I will be automatically Logout after 20 minutes of inactivity to end my active session and protect my data.
- Scope:
  - ○ AAU: Any authenticated user who needs to terminate their live session.
  - ○ IAU: Any inactive authenticated user.
- Effort Points (Hours): 100
- Data Source:
  - ○ (Apply to AAU and IAU):
    - ■ Origin: Internal.
    - ■ Type: Database.
- App Permission:
  - ○ (Apply to AAU and IAU):
    - ■ Permission = Logout
    - ■ Scope = User Account
- Target Audience:
  - ○ (Apply to AAU and IAU):
    - ■ Any currently authenticated user.
- Pre-condition:
  - ○ (Apply to AAU and IAU):
    - ■ The user must be an authenticated user.
    - ■ The authenticated user has a live session.

- ■ Any logging for this function will have this extra logging data: Username, Function.
    - ○ (Apply to AAU):
        - ■ The authenticated user is on the Logout option.
- ● Successful outcomes:
    - ○ (Apply to AAU and IAU):
        - ■ Logout is completed from 0 to 3 seconds.
            - ● User is redirected to the homepage
        - ■ The user is unable to log out if the user is unauthenticated.
            - ●
        - ■ The failure of this function will not bring the whole system down.
        - ■ The authenticated user logged out successfully.
        - ■ The authenticated user's live session terminated.
            - ● The system will display "Successfully Logout", and log this action. Logging Level: Info, Category: Business, "Authenticated User Logout Successfully: "Username" "IP" "Time Stamp" " as a message.
        - ■ The authenticated user view will automatically change to the CraftVerify homepage view.
        - ■ The server will apply the default setting of the web when the user is Logout.
    - ○ (Apply to IAU):
        - ■ The inactive authenticated user is automatically logged out after 20 minutes and redirected to homepage
- ● Failure outcomes:
    - ○ (Apply to AAU and IAU):
        - ■ Logout completed after 3 seconds.
            - ● User remains on the current page if logout fails
            - ● Error Handling: the system will log this error. Logging Level: Error, Category Business, "Logout Takes More Than 3 Seconds To Completed" as message.
        - ■ The user can log out even though they are unauthenticated.
            - ● User remains on the current page if logout fails
            - ● Error Handling: The system will display "Unauthenticated User Cannot Be Logout" and the system will log this error. Logging Level: Error, Category: Server, "Unauthenticated User Have Access To Logout" as a message.
        - ■ The authenticated user's live session did not terminate.

- User remains on the current page if logout fails
- Error Handling: The system will display "Logout Unsuccessful" and log this error. Logging Level: Error, Category: Server, "Authenticated Unable To End Their Live Session" as a message.
  - The function failure brought down the whole system.
    - User remains on the current page if logout fails
    - Error Handling: The system will display "CraftVerify Is Unavailable, Please Comeback At A Later Time" and log this error. Logging Level: Error, Category: Server, "Logout Broke The Server" as a message.
  - The authenticated user logged out unsuccessfully.
    - User remains on the current page if logout fails
    - Error Handling: The system will display "Logout Unsuccessful" and log this error. Logging Level: Error, Category: Server, "Authenticated Unable To End Their Live Session: "Username" "IP" "Time Stamp" " as a message.
  - The authenticated user view did not change to the CraftVerify homepage.
    - User remains on the current page if logout fails
    - Error Handling: The system will log this error. Logging Level: Error, Category: View, "Auto Navigation Did Not Take Place" as a message.
  - The server does not apply the default setting of the web when the user is Logout.
    - User remains on the current page if logout fails
    - Error Handling: The system will display "Inaccurate Web Default Setting" and log this error. Logging Level: Error, Category: Server, "The Server Did Not Apply The Web Default Setting" as a message.
- (Apply to IAU):
  - The inactive authenticated user did not log out after 20 minutes.
    - Error Handling: The system will log this error. Logging Level Error, Category: Business, "Inactive User Did Not Logout After 20 Minutes" as message. User will be navigated to default page view.

# User Administration

Description: This is a feature to allow for users to create an account, delete their own account, recover their account if they forget their password or to update and add information about their account.

1. Account Creation:
   - User Story:
     - As a public user, I can create a registered user account for the ability to sell and buy hand-crafted goods.
   - Scope: Any non-registered user wishes to use CraftVerify.
   - Effort Points (Hours): 50
   - Data Source:
     - Source: Internal
     - Type: Database
   - App Permission:
     - Permission = Read and Write
     - Scope = Read existing user accounts to make sure username is not repeated and Write the new user account after successful creation.
   - Target Audience:
     - Any non-registered user looking to create an account.
   - Pre-conditions:
     1. User is currently not logged into any account
     2. User is on the user registration screen
     3. Throughout the user story, Log will be recorded with extra data as username, feature: Account Creation.
   - Success Outcomes:
     - After confirming the email address through accepting a confirmation email, the registered user account is successfully created and is saved to our relational database assigned with a unique user ID to uniquely define and identify the user system-wide. The system will display the message "Registration complete for [username] within 3 seconds of completion of the confirmation of the email address."
       - Redirects user to homepage
       - (Required Input) An account must have a username that is at least 6 characters long and at max 30 characters long and cannot contain spaces.
       - (Required Input) An account must have an email address that is valid.
         - It is in the format of <valid_characters>@<valid_characters>
         - a-z, A-Z and 0-9 are all valid characters

- May also use the special characters. and - in the input.
        - ■ (Required Input) An account must have the user's date of birth.
            - Valid birth dates start at January 1st, 1970, and end by the current date.
    - ○ Users cannot enter the user registration screen if the user is currently authenticated.
- Failure Outcomes:
    - ○ The confirmation email is not sent to the user's email address
        - The system will create an error log with the message "Confirmation email failure" The log will have a Log Level of Error and a category of Server.
        - User stays on the registration page
    - ○ The user completes the confirmation of their account 2 hours after the email was sent.
        - The system will display the message "Confirmation period has expired. Register again or contact system administrator" to the user. Logging Level is Info. Logging Category is Business. "User used an expired confirmation link to confirm" as a message.
        - User stays on the registration page
    - ○ The registered user account fails to be created as the Username is less than 6 characters long or is more than 30 characters long.
        - ■ The system will display the message "The username does not meet the length requirement for the username. It is either less than 6 characters or more than 30 characters." Logging Level is Info. Logging Category is Business. "Invalid input, username is less than 6 characters" as message.
        - ■ User stays on the registration page
    - ○ The registered user account fails to be created as the Username contains a space or contains symbols
        - ■ The system will display the message "The username can only contain letters and numbers. The current username input has either a space or has a symbol in it." Logging Level is Info. Logging Category is Business. "Invalid input, Username contains a space or contains symbols" as message.
        - ■ User stays on the registration page

- ○ The registered user account fails to be created as the Username already exist on a different account
  - ■ The system will display the message "An account with that username already exists." Logging Level is Warning. Logging Category is View. "Attempted registration of an account with the same username as an existing one." as message.
  - ■ User stays on the registration page
- ○ The email given for the account is not a valid email address.
  - ■ The system will display the message "Invalid email provided. Retry again or contact system administrator" to the user. Logging Level is Info. Logging Category is Business. "User provides invalid email" as message.
  - ■ User stays on the registration page
- ○ The registered user account fails to be created as the date of birth is invalid.
  - ■ The system will display the message "Invalid date of birth provided. Must be within 1/1/1970 to [current date]." Logging Level is Info. Logging Category is Business. "Invalid date of birth provided" as message.
  - ■ User stays on the registration page
- ○ The user accepts the confirmation email within 2 hours, but the unique user ID for the account fails to be assigned.
  - ■ The system will display the message "Unable to assign user ID. Retry again or contact system administrator" to the user. The account is not created if this error happens. Logging Level is Error. Logging Category is Server. "Valid confirmation, Fail to assign user ID" as message.
  - ■ User stays on the registration page
- ○ The user accepts the confirmation email within 2 hours. The system successfully assigns the unique user ID for the account, but the operation took longer than 3 seconds.
  - ■ The account will be successfully created. Logging Level is Warning. Logging Category is Server. "Valid confirmation, User ID assigned in more than 3s. Operation exceeded timeframe" as message.
  - ■ User stays on the registration page
- 2. User Account Deletion:
  - ● User Story:

- ○ As an authenticated user, I can go into settings to delete my account to delete all of my data within the system.
- Scope:
    - ○ Any authenticated registered user that wants to delete their CraftVerify Account.
- Effort Points (Hours): 50
- Data Source:
    - ○ Source: Internal
    - ○ Type: Database
- App Permission:
    - ○ Permission = Delete
    - ○ Scope = User Account
- Target Audience:
    - ○ Any registered user that wishes to delete their account.
- Pre-conditions:
    1. The user is currently logged on to the account they wish to delete.
    2. They are on the settings page which has the option to delete their account.
    3. The user has permission to delete the account.
    4. Throughout the user story, the Log will be recorded with extra data as username, feature: Account Deletion.
- Success Outcomes:
    - ○ The user decides to delete their account and confirms the operation to delete the account. All PII data and user account data are permanently deleted from the system. The system will then display the message "Account deletion successful." Once the user acknowledges the system message, the user will be navigated to the home screen with the default setting of the American English language setting and Long Beach location.
        - ■ redirection to the homepage
- Failure Outcomes:
    - ○ The user decides to delete their account, but the system does not delete both PII data or user account data
        - ■ User stays on the account settings page with an error message if deletion fails.
        - ■ The system will display the message "The deletion process for your account failed. Try again." Logging Level is Error. Logging Category is Server. "User confirmed account deletion, system failed to delete both PII data or user account data" as a message.

- The data is not permanently deleted from the system
  - User stays on the account settings page with an error message if deletion fails.
  - The system will display the message "The deletion process failed to delete every data from the system. Please contact an admin to delete all of your data." Logging Level is Error. Logging Category is Server. "User confirmed account deletion, system failed to permanently delete data" as a message.
- A system message is not shown or the wrong message is shown after all PII data and user account data are permanently deleted from the system
  - User stays on the account settings page with an error message if deletion fails.
  - The account deletion operation will still be successful, but the system will log the operation with the context of "failed to display a message or incorrect message shown for account deletion." Logging Level is Warning. Logging Category is View. "User confirmed account deletion, system permanently deleted data, but failed to display a message or incorrect message shown for account deletion user" as message.
- The user is unable to acknowledge the system message "Account deletion successful" after the successful data deletion.
  - User stays on the account settings page with an error message if deletion fails.
  - The account deletion operation is still successful, but the system will log the operation with the context of "Account data deleted, deletion message was not acknowledged by the user." The log level will be Warning with a category of View.
- The user is not redirected to the default home screen.
  - User stays on the account settings page with an error message if deletion fails.
  - The user account will be successfully deleted, but the operation will be logged by the system with the description "Account data deleted, the operation did not send the user to the home screen." The log level will be Warning with a category of View.
- The user is redirected to the home screen, but the default American English language setting and Long Beach location are not shown.

- - ■ User stays on the account settings page with an error message if deletion fails.
    - ■ The user account will be successfully deleted, but the operation will be logged by the system with the description "Account data deleted, the operation did not give default settings." The log level will be Warning with a category of View.

3. User Account Recovery:
- User Story:
  - As a registered user, I can regain access to my active or disabled account through an email given to my email address.
- Scope:
  - Any registered user that wishes to regain their access to CraftVerify features and data.
- Effort Points (Hours): 50
- Data Source:
  - Source: Internal
  - Type: Database
- App Permission:
  - Permission = Recover
  - Scope = User Account
- Target Audience:
  - Any registered user who forgot their password.
- Precondition:
  1. The user cannot be currently authenticated.
  2. The user is currently on the account recovery page.
  3. Throughout the user story, the Log will be recorded with extra data such as username, OTP status, and feature: Account Recovery.
- Success Outcomes:
  - User provides assigned username and valid OTP. After input, a request is made available to authorized system admin users within 3 seconds. A system message displays "Account recovery request sent" within 3 seconds of invocation of the request.
    - ■ (Required Input) Assigned user ID of the account being recovered.
    - ■ (Required Input) The valid OTP for the account.
  - An authorized system admin user completes the account recovery for the user who made an account recovery request. A system message displays "Account recovery completed successfully for the user" within 3 seconds of invocation of account recovery completion. The user who

sent the request regains access to the system within 3 seconds of invocation of account recovery completion.

- ■ Redirected to homepage to login
- ● Failure Outcomes:
  - ○ User provides an invalid username.
    - ■ User stays on the recovery page
    - ■ The system will display the message "Invalid username or OTP provided. Retry again or contact the system administrator." Logging Level is Info. Logging Category is Business. "User provides invalid username" as message.
  - ○ User provides a valid username, but an invalid OTP.
    - ■ User stays on the recovery page
    - ■ The system will display the message "Invalid username or OTP provided. Retry again or contact the system administrator." Logging Level is Info. Logging Category is Business. "User provides valid username, but invalid OTP" as message.
  - ○ User provides valid username and valid OTP. Request is not available to authorized system admin users.
    - ■ User stays on the recovery page
    - ■ The system will display the message "Account recovery request was not successfully sent to the system administrator. Retry again or contact system administrator." Logging Level is Error. Logging Category is Server. "User provides valid username and OTP but system cannot recover the account" as message.
  - ○ User provides a valid username and valid OTP and the request is available to authorized system admin users. However, the system message does not display within 3 seconds on invocation.
    - ■ User stays on the recovery page
    - ■ The account recovery request is successfully sent, but the system will display the message "account recovery request message failed to display." Logging Level is Warning. Logging Category is View. "Account recovery request is sent, fail to display message to user" as message.
  - ○ An authorized system admin completes account recovery for the user, but the system message does not display within 3 seconds on invocation of account recovery completion.
    - ■ User stays on the recovery page

- - - The account recovery process will still successfully complete, but the system will display the message "account recovery completion message failed to send." Logging Level is Warning. Logging Category is View. "Account recovery is done, but failed to display the message to user" as message.
  - An authorized system admin completes account recovery for the user, but the system message does display within 3 seconds on invocation of account recovery completion. However, the user the account recovery was for does not regain access.
    - User stays on the recovery page
    - The operation will be logged by the system with the message "Account recovery is done, the user failed to regain access." Logging Level is Error. Logging Category is Business.
  - An authorized system admin completes account recovery for the user, but the system message does display within 3 seconds on invocation of account recovery completion.The user the account recovery was for does not regain access within 3 seconds.
    - User stays on the recovery page
    - The account recovery process will still be successful, but the system will log the operation with the message "Account recovery is done, but user gains access in more than 3s. Operation exceeded timeframe." Logging level is Warning. Logging Category is Business.

4. User Profile Update:
   - User Story:
     - As a registered user, I can update any information that is currently incorrect or if I wish to add additional information.
   - Scope:
     - Any authenticated registered user that wants to update their profile.
   - Effort Points (Hours): 50
   - Data Source:
     - Source: Internal
     - Type: Database
   - App Permission:
     - Permission = Update and Upload
     - Scope = Update User Account and Upload photos and videos for User Account
   - Target Audience:
     - Any registered user which needs to add/change information

- Preconditions:
    1. The user is currently logged in as a registered user
    2. They are currently on their user profile page.
    3. Throughout the user story, Log will be recorded with extra data as username, feature: User Profile Update.
- Success Outcomes:
    - The user successfully changed their username.
        - (Required input) the new username
        - changes immediately visible.
    - The user successfully changed their email address.
        - (Required Input) the new email address
            - It is in the format of <valid_characters>@<valid_characters>
            - a-z, A-Z and 0-9 are all valid characters
            - May also use the special characters . and - in the input.
        - changes immediately visible.
    - The user successfully adds or changes their profile picture.
        - (Required Input) the file for the profile picture in the JPEG, PNG, non-animated GIF, or TIFF format with a max file size of 7 MB.
        - changes immediately visible.
    - The user successfully adds or changes their video.
        - (Required Input) the file for the video in the MP4 or MOV format with a max file size of 500 MB.
        - changes immediately visible.
    - The user successfully adds or changes their personal description.
        - (Required Input) the written description about their account that is within 5000 characters.
        - changes immediately visible.
- Failure Outcomes:
    - The user exits the form early while editing information without saving.
        - User stays on the profile update page
        - The information that was being changed will stay as their original values. Log will be recorded with Logging Level: Warning, Category: Data, "User exits the data form before input all data" as message.
    - The form to edit information fails to appear.
        - User stays on the profile update page

- The system will display the message "The edit form failed to appear. Please try again or try to contact an admin about this issue." Log will be recorded with Logging Level: Error, Category: View, "Fail to show form for user input" as message.
  - ○ The username fails to change as it already exists as a different user.
    - User stays on the profile update page
    - The system will display the message "An account with that username already exists. Please try a different username." Log will be recorded with Logging Level: Info, Category: Data, "User inputs existing username, no change in data" as message.
  - ○ The username fails to change as it is less than 6 characters long or is more than 30 characters long.
    - User stays on the profile update page
    - The system will display the message "The username does not meet the length requirement for the username. It is either less than 6 characters or more than 30 characters." Log will be recorded with Logging Level: Info, Category: Business, "User inputs invalid length of username, no change in data" as message.
  - ○ The username fails to change as it contains a space or contains symbols.
    - User stays on the profile update page
    - The system will display the message "The username can only contain letters and numbers. The current username input has either a space or has a symbol in it." Log will be recorded with Logging Level: Info, Category: Business, "User inputs invalid digit for username" as message.
  - ○ The email changed into is not a valid email address.
    - User stays on the profile update page
    - The system will display the message "Invalid email provided. Retry again or contact system administrator" to the user. Log will be recorded with Logging Level: Info, Category: Business, "User provides invalid email" as message.
  - ○ The profile picture fails to be added/changed due to being an invalid file type.
    - User stays on the profile update page
    - The system will display the message "The profile picture failed to be uploaded as it is in an invalid file type." Log will

be recorded with Logging Level: Info, Category: Business, "User provides invalid type of profile picture" as message.
- ○ The profile picture fails to be added/changed due to the file size of the picture exceed the size limitation
    - ■ User stays on the profile update page
    - ■ The system will display the message "The profile picture failed to be uploaded as the file exceeded the file size limitation." Log will be recorded with Logging Level: Info, Category: Business, "User provides oversized profile picture" as message.
- ○ The video fails to be added/changed due to being an invalid file type.
    - ■ User stays on the profile update page
    - ■ The system will display the message "The video failed to be uploaded as it is in an invalid file type." Log will be recorded with Logging Level: Info, Category: Business, "User provides invalid type of video" as message.
- ○ The video fails to be added/changed due to the file size of the video exceed the size limitation
    - ■ User stays on the profile update page
    - ■ The system will display the message "The video failed to be uploaded as the file exceeded the file size limitation." Log will be recorded with Logging Level: Info, Category: Business, "Users provides oversized video" as message.
- ○ The written description fails to be added/changed due to exceeding the 5000 characters limitation.
    - ■ User stays on the profile update page
    - ■ The system will display the message "The description went over the 5000 characters limitation." Log will be recorded with Logging Level: Info, Category: Business, "User provides over 5000 characters in description" as message.

5. User Management:
- ● User Story:
    - ○ As an admin, I can control the administration of any user account in the system.
- ● Scope:
    - ○ These features are only usable by admin users.
- ● Effort Points (Hours): 50
- ● Data Source:
    - ○ Source: Internal
    - ○ Type: Database

- App Permission:
  - Permission = Read, Write, Update, Modify and Delete
  - Scope = The admin can read other user accounts, write the new user account after successful account creation, update any information in any user account, can modify accounts to disable and enable them and delete any user account.
- Target Audience:
  - Any authenticated admin that needs to modify and/or manage a user account.
- Preconditions:
  1. The user must be currently logged in as an admin account
  2. The user is on the user management view
  3. Throughout the user story, Log will be recorded with extra data as username, feature: User Management
- Success Outcomes:
  - User is able to perform any single UM operation within 3 seconds upon invocation. A successful invocation will display the system message stating "UM operation was successful" and redirect to homepage.
    - (Required input) the operation being used for user management.
      - Must be from the following:
        - Create Account
        - Update Account
        - Delete Account
        - Disable Account
        - Enable Account
- Failure Outcomes:
  - Single UM operation takes longer than 3 seconds
    - User stays on the account settings page
    - The UM operation will be successful, but the operation will be logged by the system with the context of "User Management Operation exceeded timeframe." The log level will be Error with a category of Business.
  - Single UM operation completes within 3 seconds, but no system message is shown or inaccurate system message is shown
    - User stays on the account settings page
    - The UM operation will be successful, but the operation will be logged by the system with the context of "User Management does not show message or an inaccurate

system message is shown." The log level will be Warning with a category of View.

- ○ Single UM operation completes within 3 seconds, with the system message "UM operation was successful" shown, but the latest data is not written to the data store
    - ■ User stays on the account settings page
    - ■ The UM operation will be successful, but the operation will be logged by the system with the context of "User Management operation was successful, but Data failed to record." The log level will be Error with a category of Data Store.

6. User Privacy Control
- ● User Story:
    - ○ As an authenticated registered user, I can learn what data is being used and protect myself from that data being used without explicit consent.
- ● Scope:
    - ○ Any registered user looking into user privacy
- ● Effort Points (Hours): 50
- ● Data Source:
    - ○ Source: Internal
    - ○ Type: Database
- ● App Permission:
    - ○ Permission = Read and View
    - ○ Scope = Reads and View all PII data collected by the system.
- ● Target Audience:
    - ○ Any authenticated registered user.
- ● Pre-conditions:
    1. User must be currently authenticated
    2. User must be on the User Privacy page
    3. Throughout the user story, Log will be recorded with extra data as username, feature: User Privacy Control.
- ● Success Outcomes:
    - ○ The user can view the user's PII data collected by the system. The data is accurate and up to date to the current date.
    - ○ The User is able to delete their user account. Refer to the account deletion section of user administration for more information.
- ● Failure Outcomes:
    - ○ The user is unable to view their PII data.

- The system will display the message "Unable to retrieve user data." Log will be recorded with Logging Level: Error, Category: View, "Fail to show the user their PII data" as message.
    - The user is able to view another user's PII data.
        - This must not happen in the system. However, if this does happen, the operation will be logged with the description of "User viewed another user's PII data." The log level will be Error and the category will be Data.
    - User is able to delete another user's account.
        - This must not happen unless the user is a system administrator (look at the user management section of User Administration for more information). However, if this does happen, the operation will be logged with the description of "Unauthorized user deleted another user's account." The log level will be Error and the category will be Data.

# System Observation:

## Usage Dashboard Analytics:
- User Story:
    - As an authenticated system administrator, I can view the usage analysis dashboard to gain insights into my system.
    - As an authenticated system administrator, I can change the time period of the usage analysis dashboard to view other historical data.
- Scope:
    - Provide system administrators with a comprehensive view and analysis of application usage metrics, trends, and user activities.
- Effort Points (Hours): 85
- Data Source:
    - Origin: Internal
    - Type: Analytical Data
- App Permission:
    - Permission = View
    - Scope = System Analysis
- Target Audience:
    - System administrators and delegated admins
- Preconditions**:**
    - Users must have an active authenticated session.
    - Users must be delegated or root admins to see the analytics
    - Users must be on the Analytics Dashboard view.

- Successful Postcondition
    - The charts load within 15 seconds.
    - All metrics automatically refresh every minute.
    - *Logins Per Day* (1 week, 1 month, 3 months) successfully log and update
    - *Registrations Per Day* (1 week, 1 month, 3 months) successfully log and update
    - *DAU (Daily Active Users)* (1 week, 1 month, 3 months) successfully log and update
    - *Error Rate* (1 week, 1 month, 3 months) successfully log and update
    - *Customer service ratings* (1 week, 1 month, 3 months) successfully log and update
    - *User ratings from reviews* (1 week, 1 month, 3 months) successfully log and update
    - The dashboard reloads aggregated data every 60 seconds and updates all charts.
- Failure Scenarios
    - Real Time Analytics update don't appear within 60 seconds
        - Error handling: notify user there was a problem updating analytics and told to exit or refresh page. Log will be recorded with Logging Level: Error, Category: View, "Fail to display new real time analytics within 60s" as message.
    - *Logins Per Day data* won't load
        - Error handling: pulls up notification alerting user there was an error in loading up the analytics for Registrations. Log will be recorded with Logging Level: Error, Category: DataStore, "Fail to load Login Per Day data" as message.
    - *Registrations Per Day data* won't populate
        - Error handling: pulls up notification alerting user there was an error in loading up the analytics for Registrations. Log will be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as message.
    - *DAU (Daily Active Users) data* won't populate
        - Error handling: pulls up notification alerting user there was an error in loading up the analytics for Registrations. Log will be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as message.
    - *Error Rate data* won't populate
        - Error handling: pulls up notification alerting user there was an error in loading up the analytics for Registrations. Log will

be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as message.

- ○ *Customer service ratings data* won't populate
  - ■ Error handling: pulls up notification alerting user there was an error in loading up the analytics for Registrations. Log will be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as message.
- ○ *User ratings from reviews data* won't populate
  - ■ Error handling: pulls up notification alerting user there was an error in loading up the analytics for Registrations. Log will be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as message.
- ○ Dashboard metrics don't load within 3 seconds of clicking in.
  - ■ Error handling: user is told there was a timeout in loading in dashboard and told to retry loading page. Log will be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as message.
- ○ Dashboard not accessible to users with delegate or admin permissions.
  - ■ Error handling: User told he does not have permissions to access page. Log will be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as a message.

## Logging

- ● This is an internal mechanism to keep track of all user activities and system records for error handling, monitoring system health, security, and performance analysis.
- ● Scope:
  - ○ All user events and system events throughout the system running time.
- ● Effort Points (Hours): 100
- ● Data Source:
  - ○ Origin: Internal.
  - ○ Type: Data Stored.
- ● App Permission:
  - ○ Permission = Write
  - ○ Scope = Logs for the entire CraftVerify System
- ● Target Audience:
  - ○ All system events and user events change.

- Pre-condition:
    1. System is up and running.
    2. System read and write permission.
    3. Persistent storage access.
    4. Persistent storage has enough space for saving log entries.
        - Log entries must be saved to a persistent data store LBDMS
        - Log entries can be archived out of the data store.
        - The log records cannot be changed.
        - Log entries are available for user data privacy reports.
        - Logging cannot block users from using the system.
        - Having log levels as Info, Debug, Warning, and Error.
            - Info: an event when the system is working as predicted, to show the system flow.
            - Debug: an event with info mainly for the developer to check and use for maintaining the system.
            - Warning: an event could possibly lead to a system error in the future.
            - Error: an event when the system is currently having an error.
        - Having valid Categories as View, Business, Server, Data, Data Store
            - View: an event is having issues with user interface, such as no info showing, invalid format, non-relevant info, etc.
            - Business: an event is having issues with business rules.
            - Server: an event is having issues with a web server, such as no request response, server is down, server is slow, etc
            - Data: an event is having issues with data, such as null data, invalid type, over type limit, etc
            - Data Store: an event is having issues with database, such as leaking, lost of data, cannot retrieve data, etc
- Success Outcomes:
    - Log entries must have a UTC timestamp, log levels, category, user actions or system events, and a message describing each situation.
    - Log entries should be in JSON or text file format.
    - The log system is active.
    - The log mechanism successfully records system events and user events with the correct log level in under 5s.
- Failure Outcomes:
    - The logging takes longer than 5s to record and save an event to RDBMS.
        - Error Handling: log will be recorded with Logging Level: Error, Category: Server, "Fail to record log within 5s" as message.

- ○ The logging is recorded within 5s, but cannot save to RDBMS.
    - ■ Error Handling: log will be recorded with Logging Level: Error, Category: DataStore, "Fail to record log to database" as message.
- ○ Log entries are not in the correct level, format, information.
    - ■ Error Handling: log will be recorded with Logging Level: Error, Category: Data, "Invalid log data is recorded" as message.
- ○ Log entries are modifiable.
    - ■ Error Handling: log will be recorded with Logging Level: Error, Category: DataStore, "Log entries are modifiable" as message.
- ○ The user cannot continue to use the service when the logging is in process.
    - ■ Error Handling: log will be recorded with Logging Level: Error, Category: View, "Logging process blocks users" as message.
- ○ Log entries cannot be archived out of storage
    - ■ Error Handling: log will be recorded with Logging Level: Error, Category: Database, "Log entries cannot be archived" as message.

## Default Behaviors:
- ● Success Messages:
    - ○ Provide a context-specific confirmation message for all operations completed within 0.1-3.0 seconds (e.g., "Account created," "Product listed," "Item deleted," etc.).

- ● Operation Duration Ranges:
    - ○ 0.1-3.0 seconds: Treated as a successful operation without additional logging.
    - ○ 3.1-5.0 seconds: Considered successful; however, a warning is logged.
        - ■ Logging Level: Warning, Category: Business, "Operation duration exceeded 3 seconds but is within the tolerable range for Product Editing. This may be due to high server load or large file uploads."
    - ○ 5.1+ seconds: Treated as a failure with an error message displayed to the user.
        - ■ Logging Level: Error, Category: Business, "Operation duration exceeded 5 seconds and is considered a failure for Product Editing.

Check for possible database connectivity issues or excessively large file uploads."

- Data Access Responses:
    - Expected Empty Result Sets: Inform the user of no results without logging as an error.
    - Unexpected Empty Result Sets: Display an error message and log the incident.
    - Logging Level: Error, Category: Data, "Expected data not found for Wishlist Retrieval, referential integrity may be compromised."

- Error Handling (General):
    - Display a generic error message for unexpected system issues.
    - Log the error with specific details for resolution.
    - Logging Template: "Logging Level: Error, Category: Server, 'Unexpected error occurred during Payment Processing: timeout.'"

- Validation Errors:
    - Display specific messages for input that fails validation.
    - Log the incident for user input-related issues.
    - Logging Level: Info, Category: Business, "Validation error for Username: must be at least 6 characters long."

- System Errors:
    - Prompt user to retry the action for operational errors.
    - Log the error with specifics.
    - Logging Level: Error, Category: Server, "Operational error during Account Update: null reference."

- Performance Issues:
    - Log slow response times or timeouts for further investigation and optimization.
    - Logging Level: Warning, Category: Server, "Performance issue during Search Query: response time exceeded expectations."

- Referential Integrity:
    - Prevent operations that may breach database integrity.
    - Provide an error message and critical log entry.

- - Logging Level: Error, Category: Data Store, "Operation Bidding Process blocked to preserve referential integrity: child record not found for parent ID."

- **No Data Presents:**
  - Scenario: Applies in the context of an object with a 0 to many relationship where the parent record is allowed to have no child records associated with it without violating referential integrity.
  - Behavior:
  - Displays the error message "No available data at this time."
  - In dashboard features like Usage Analysis, shows placeholders or visual indicators of no data.
  - Offers alternative data views or suggestions to navigate to other relevant sections.
  - Logs the event for analytics purposes, marking it for system performance review.
  - Ensures that other system features remain accessible and functional despite the absence of data.

- **Required Input:**
  - Scenario: Involves situations where specific user input or data is essential for a feature's operation.
  - Behavior:
  - System displays a clear, contextual error message indicating the nature of the required data.
  - Forms or input fields highlight missing required fields, possibly disabling submission buttons until filled.
  - For critical operations like user authentication, system retries or provides alternative verification methods if required data is unavailable.
  - The system logs attempts to operate features without required data for security and auditing purposes.
  - Offers inline tips or help icons explaining why the data is required and how to provide it.

- **Optional Input:**
  - Scenario: Pertains to cases where user input or data enhances but is not critical for a feature.
  - Behavior:
  - The system operates in a default mode with limited functionality or generic settings in the absence of optional data.

- ○ User interface elements subtly encourage the provision of optional data, e.g., through tooltips or optional field markers.
- ○ In cases like the Usage Analysis Dashboard, the system extrapolates or interpolates data based on available inputs to provide best-guess analytics.
- ○ The system remembers previously entered optional data for user convenience, auto-filling it in subsequent sessions where applicable.
- ○ Where partial optional data is provided, the system tailors its functionality to make the best use of available information, dynamically adjusting its response.

# Feature #1: Item listing/Creation and Offering System

1. Item Listing + Creation
- ● User Story:
    - ○ As a registered non-admin user, I can create an item to sell and list it for users or buy. Information in the listing includes item names, a description, product costs, images, and videos.
- ● Scope: Feature that will allow registered users to create and list items for sale for handcrafted items.
- ● Effort Point: 100
- ● Data Source:
    - ○ Origin: Internal
    - ○ Type: Database
- ● User Input:
    - ○ Required
        - ■ Item Name
            - ● Must be max 250 characters. a-z, A-Z, and 0-9 allowed characters.
            - ● The value is not nullable.
        - ■ Item Price
            - ● Must be a max of 5 characters. 0-9 allowed characters.
            - ● The value is not nullable.
    - ○ Optional
        - ■ Item Description
            - ● Must be max 2000 characters. a-z, A-Z, and 0-9 allowed characters.
            - ● Default to null.
        - ■ Item Production Cost

- - - Must be a max of 5 characters. 0-9 allowed characters.
      - Default to null.
    - Photo Upload
      - <= 5 photos allowed. (JPEG, PNG, GIF - non-animated, TIFF; max 7 MB each).
    - Video Upload
      - <= 2 videos allowed for sellers. MP4 or MOV format, restricted to 500MB and resolutions between 240p and 1080p.
- App Permission:
  - Permission = Read, Write and Upload
  - Scope = The user can read and write Item Listings. The user can upload up to two videos and upload up to 5 photos for each Item Listing.
- Target Audience
  - Any registered user who wants create an item and or list it for sell
  - Any registered user who wishes to make an offer on an item.
- Preconditions:
  1. User must be logged in as a registered user.
  2. User is and must be on the seller dynamic dashboard.
  3. Throughout the user story, Log will be recorded with extra data as username, SKU number, feature: Item Listing/Creation
- Successful outcomes.
  - Item created successfully within 3 seconds and saved to the persistent data store.
  - The Item Listing + Creation operation is logged to the persistent data store.
    - Log includes Timestamp, Logging Level: Info, Category: Data, and Log Message: "Item Listing + Creation operation successful."
  - Item created successfully with a 12 digit length SKU number.
  - User input requirements from the User Input section are met.
  - Items listed successfully during creation or after creation.
    - List item for sale box checkmarked during or after creation of item.
  - Item unlisted successfully within 3 seconds
  - Item unlisted successfully by user
    - Un-Checkmark List item for sale box
  -

- ○
  - ○ Item is created and listed successfully within 3 seconds.
  - ○ The operation is logged in the persistent data store, including timestamp, logging level (Info), category (Data), and log message "Item Listing + Creation operation successful."
  - ○ Item is assigned a unique 12-digit SKU number.
  - ○ All user input requirements (Item Name, Price, Description, Production Cost, Photo and Video Uploads) are validated and met.
  - ○ The item is listed for sale with the option to unlist available.
- ● Failure Outcomes
  - ○ Item creation is successful but cannot be assigned with a unique 12 digits length SKU number.
    - ■ Error handling: Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "Fail to assign SKU number to a new item".
  - ○ User exceeds the range of acceptable offer listing price.
    - ■ Error handling: user is told to re-submit a price within parameters. Log will be recorded with Timestamp, Log Level: Warning, Category: Business, Message: "User inputs price excess the limit range".
  - ○ User exceeds characters allowed for name or leaves name blank
    - ■ Error Handling: User is told that they exceeded character limit or left blank and instructed to retype their name within parameters. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "User inputs invalid size of item name".
  - ○ User exceeds description character limit.
    - ■ Error handling: Users will be notified they exceeded character limit and told to redo their description within the requirement parameters. Log will be recorded with Timestamp, Log Level: Warning, Category: Data, Message: "User exceeds the character limit for item name".
  - ○ Users exceed the acceptable range of acceptable item production cost.
    - ■ Error handling: Users will be notified they exceeded acceptable range and told to resubmit their production cost within the correct parameter. Log will be recorded with Timestamp, Log Level: Warning, Category: Data, Message: "User exceeded acceptable range for item production cost".
  - ○ Users image upload fails due to wrong file type, exceeds size limitation.

- ■ Error handling: Users will be notified of the error with their image and told to try uploading again. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "User provides invalid size/type image".
    - ○ User video fails to upload due to type of file, size of file.
        - ■ Error handling: Users will be told of the error with their video submissions and will be told to try again. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "User provides invalid size/type video".
    - ○ User fails to upload image/video due upload failure
        - ■ Error handling: Users will be told of the error with their submissions and will be told to try again. Log will be recorded with Timestamp, Log Level: Error, Category: Server, Message: "User provides valid type and size of video/ image but system fails to upload".
    - ○ Item is not created successfully as it took longer than 3 seconds after operation.
        - ■ Error Handling: The system will inform the user that the operation took too long and will be asked to try again. Log will be recorded with Log Level: Error, Category: View, Message: "System failed to create listing under 3s".
    - ○
    - ○ Failure to Assign Unique SKU Number:
    - ○ Log entry created with timestamp, level (Error), category (Data), and message "Fail to assign SKU number to a new item."
    - ○ User Input Errors:
    - ○ Various user input errors (e.g., exceeding character limits, invalid file types or sizes for uploads) trigger specific error messages and logging actions.
    - ○ System guides users to correct their inputs within specified parameters.
    - ○ Listing Creation Time Exceeds 3 Seconds:
    - ○ System notifies the user of the delay and asks to retry.
    - ○ Log entry records the incident with an error message "System failed to create listing under 3s."


- 2. Item Offer
    - ● User Story:

- - As a registered non-admin user I can offer a price to buy an item only requiring your bid offer number. Initiates a chat with the seller when an offer is made.
- Scope: Feature that will allow registered users to submit an offer on a listed item and facilitate sale between vendor and buyer.
- Effort Point: 60
- Data Source:
  - Origin: Internal
  - Type: Database
- User Input:
  - Required
    - For auction offers the buyer has to input a price to make an offer.
      - Only required and available on auction offers.
      - This value is not nullable.
- App Permission:
  - Permission = Read and Write
  - Scope = Read Item Listings and Write Item Offers
- Target Audience
  - Any registered user who wishes to make an offer on an item.
- Preconditions:
  1. Users must be logged in as registered users.
  2. User is on the item listings page to make an offer.
  3. Throughout the user story, Log will be recorded with extra data as username, SKU number, Offer Price, feature: Item Offering
- Successful outcomes.
  - Offer sends within 3 seconds
  - Messaging initiates within 3 seconds of successful offer
  - User is able to click on an item listing and make an offer.
- Failure Outcomes
  - User exceeds range of acceptable offer price
    - Error handling: users will be told that their offer exceeds the acceptable range and told to submit a new price. Log will be recorded with Timestamp, Log Level: Warning, Category: Business, Message: "User provides valid price range for item offering".
  - Offer was not sent successfully as it took longer than 3 seconds after operation.
    - Error Handling: The system will inform the user that the operation took too long and will be asked to try again. Log

will be recorded with Timestamp, Log Level: Error, Category: View, Message: "System failed to send offer in under 3s".

# Feature #2: Wishlist Functionality:

1. Add to Wishlist
   - User Story:
     - As an authenticated user, I can add items to a list for items I want to buy in the future.
   - Scope:
     - The function will only be available to authenticated non-admin users
   - Effort Points (Hours): 40
   - Data Source:
     - Origin: Internal
     - Type: Database
   - User Input:
     - Required
       - The listing of a particular item.
         - This is fetched automatically when the user clicks the add to wishlist button.
         - This value is not nullable.
   - App Permission:
     - Permission = Read and Write
     - Scope = Item Listings are read then are written into the wishlist
   - Target Audience:
     - Any authenticated non-admin user.
   - Pre-conditions:
     1. User is logged in as a authenticated non-admin user
     2. User is on either an individual item listing of the item they wish to add.
     3. Throughout the user story, Log will be recorded with extra data as username, SKU number, feature: Add to Wishlist.
   - Success Outcomes:
     - An item is successfully added to the wishlist within 3 seconds.
     - Wishlist can hold up to 20 items in it at a time.
     - System will leave user at the current item page.
   - Failure Outcomes:
     - An item is not added as it took more than 3 seconds after operation

- Error Handling: The system will inform the user that the operation took too long and will be asked to try again. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "System failed to add item to wishlist under 3s". Major error, system will leave user at current item view for user retry attempt.
  - An item fails to be added to the wishlist as there are already 20 items on the wishlist.
    - Error Handling: The system will inform the user that the item was not added to the wishlist due to there already being 20 items on the wishlist currently. Log will be recorded with Timestamp, Log Level: Warning, Category: Business, Message: "System failed to add item to wishlist due to wishlist size limit". Minor error, system will leave user at current item view to decide the next actions.

2. Remove from Wishlist
   - Scope:
     - The function will only be available to authenticated non-admin users
   - User Story:
     - As an authenticated user, I can remove items from my own wishlist.
   - Effort Points (Hours): 40
   - Data Source:
     - Origin: Internal
     - Type: Database
   - User Input:
     - Required
       - The listing of a particular item.
         - This is fetched automatically when the user clicks the remove from wishlist button.
         - This value is not nullable.
   - App Permission:
     - Permission = Delete
     - Scope = an item listing from the wishlist
   - Target Audience:
     - Any authenticated non-admin user
   - Pre-conditions:
     1. User is logged in as a registered user
     2. User is on either an individual item listing or on their wishlist page.

3. Throughout the user story, Log will be recorded with extra data as username, SKU number, feature: Remove from Wishlist
- Success Outcomes:
  - An item is successfully removed to the wishlist within 3 seconds from either the individual item listing of the item that was removed or from the user's wishlist page.
  - System will leave user at the current wishlist view.
- Failure Outcomes:
  - An item is not removed as it took more than 3 seconds after operation.
    - Error Handling: The system will inform the user that the operation took too long and will be asked to try again. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "System failed to remove item from wishlist under 3s". Major error, system will leave user at the current wishlist view for user retry.

3. List and Sort Wishlist:
- Scope:
  - The function will only be available to authenticated non-admin users
- User Story:
  - As an authenticated user, I can view and sort my own wishlist.
- Effort Points (Hours): 40
- Data Source:
  - Origin: Internal
  - Type: Database
- User Input:
  - Required
    - The sorting method
      - Options are the date added ascending, the date added descending, the price ascending, or the price descending.
      - The default is the date added ascending.
- App Permission:
  - Permission = Read
  - Scope = The item listings that are in the wishlist
- Target Audience:
  - Any authenticated non-admin user
- Pre-conditions:
  1. User is logged in as a registered user
  2. User is on their wishlist page.

3. Throughout the user story, Log will be recorded with extra data as username, SKU number, feature: List and Sort Wishlist
- Success Outcomes:
  - The wishlist is sorted by the method defined by the user as date added, price order in ascending or descending.
  - The sorting of the wishlist completes within 3 seconds.
  - System will leave user at the wishlist view with the valid sorting results in correct format 10 items per page with 0-100 page limit.
- Failure Outcomes:
  - The wishlist fails to be sorted by the method defined by the user.
    - Error Handling: If the system detects an issue with the sorting function, it will passively log the issue for the admins to look at. Authenticated users on this page can also report this issue to the admins if they notice a problem with the sorting. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System failed to sort item from wishlist". Major error, system will navigate user to default unsorted wishlist view.
  - The wishlist is not sorted as it took more than 3 seconds after operation.
    - Error Handling: The system will inform the user that the operation took too long and will be asked to try again. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System failed to sort wishlist in under 3s". Major error, system will navigate user to default unsorted wishlist view.

# Feature #3: Shopping Cart
- User Story:
  - As an authorized user, I want to be able to place items in a shopping cart before I make an offer on them.
- Scope:
  - This function will be used by authenticated registered users while they are logged in.
- Effort Points (Hours): 100
- Data Source:
  - Origin: Internal
  - Type: Database
- User Input:
  - Required

- ■ The listing of a particular item.
  - ● This is fetched automatically when the user clicks the add to cart button on the item page, the add to wishlist button while the item is in the cart, the remove from cart button, or the send offer button.
  - ● This value is not nullable.
- ● App Permission:
  - ○ Permission = Read, Write and Delete
  - ○ Scope = Read Item Listings and write them to the shopping cart. Can delete item listings from the shopping cart.
- ● Target Audience:
  - ○ Any registered user.
- ● Pre-Conditions:
  1. User is logged in as an authenticated registered user.
  2. User is looking at an individual item's page or their shopping cart page.
  3. Throughout the user story, Log will be recorded with extra data as SKU number, username, feature: Add to/Remove from Shopping Cart.
- ● Success Outcomes:
  - ○ An item is added to the users' shopping cart, which is stored in a database.
  - ○ An item is removed from the users' shopping cart either manually, by adding it to their wishlist, or by sending an offer.
  - ○ Shopping cart stores up to 50 items in it at a time.
  - ○ Shopping cart empties itself when the user logs out.
  - ○ After adding an item into cart, user will be navigated to cart view with the valid added item list.
- ● Failure Outcomes:
  - ○ An item is not added to the users' shopping cart because the operation took longer than 3 seconds.
    - ■ Error Handling: System aborts the operation, logs the time and reason for the error, and notifies the user why the error occurred. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System failed to add item to shopping cart in under 3s". Major error, system will leave user at the current item view in order for user retry attempt.
  - ○ An item is not removed from the users' shopping cart because the operation took longer than 3 seconds.
    - ■ Error Handling: System aborts the operation, logs the time and reason for the error, and notifies the user why the error occurred. Log will be recorded with Timestamp, Log Level:

Error, Category: Data, Message: "System failed to remove item from shopping cart in under 3s". Major error, system will leave user at the cart view in order for user retry attempt.

- ○ An item is not added to the users' shopping cart because the cart is full with the 50 item limit.
  - ■ Error Handling: System aborts the operation, logs the time and reason for the error, and notifies the user that their shopping cart is full. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System failed to add item to shopping cart due to over 50 items limitation". Major error, system will leave user at the current item view.
- ○ The users' shopping cart is not emptied upon logging out.
  - ■ Error Handling: System aborts the operation, logs the time and reason for the error, and notifies the user that the shopping cart failed to empty. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System failed to empty shopping cart upon logout". Major error, system will navigate user to login page view when user click on cart.

# Feature #4: Price Range Sorting

1. Price Range Sorting
   - ● User Story:
     - ○ PRS-1, as an authenticated user, I can sort craft goods, auction goods, and craft classes based on the price range set by me.
     - ○ PRS-2, as an unauthenticated user, I can sort craft goods, auction goods, and craft classes based on the price range set by me.
   - ● Scope:
     - ○ This feature can be used by any type of users, authenticated and unauthenticated.
   - ● Effort Points (Hours): 100
   - ● Data Source:
     - ○ Origin = Internal
     - ○ Type = Database
     - ○ Details = BuyingGoods, AuctionGoods, ClassJoining
   - ● User Input:
     - ○ Optional
       - ■ Top price
         - ● Numerical input between 1 and 1,000,000.
         - ● Default value is 1,000,000.00.

- ● Cannot be lower than bottom price.
  - ■ Bottom price
    - ● Numerical input between 0 and 999,999.
    - ● Default value is 0.
    - ● Cannot be higher than top price.
- ● App Permission:
  - ○ Permission = View
  - ○ Scope = Item listings, users could sort 1 range at a time.
- ● Target Audience:
  - ○ Any type of users, authenticated and unauthenticated.
- ● Pre-conditions:
  1. The user could be an authenticated or unauthenticated user.
  2. The user is on the buying page/ auction page/ class list page.
  3. Throughout the user story, Log will be recorded with extra data as username, sorting status, input prices, result count, feature: Price Range Sorting.
- ● Success Outcomes:
  - ○ An authenticated/ non authenticated user successfully sees the sorting results of craft goods, auction goods, and craft classes in under 3s.
  - ○ Results are within the top and bottom prices.
  - ○ Results are shown in up to 10 items/classes per page format.
  - ○ Results pages are from 0 up to 100.
  - ○ Results show count of items, classes, auction items from 0 up to 100.
  - ○ Results are shown in order of ascending price, from low to high.
  - ○ System successfully logs the input prices, the results count from unauthenticated user to persistent storage in under 3s.
  - ○ System successfully logs the input prices, results count, user id of authenticated user to persistent storage in under 3s.
  - ○ Users will stay at the same page view, and only a portion of the page get reloaded to show valid sorted results.
- ● Failure Outcomes:
  - ○ No results are shown although there are items/classes available in the chosen price range.
    - ■ Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System fails to show the sorting result with valid available data." Major error, system will navigate users to the default non sorted page view.
  - ○ Results show non-price relevant items/classes.

- - ■ Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System fails to show item in valid price range." Major error, system will navigate users to the default non sorted page view.
  - ○ Results are not shown in up to 10 items/classes per page format.
    - ■ Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "Wrong sorting format is shown to user." Minor error, system will leave users at the current sorted page view.
  - ○ Results page count is missing or not in correct format from 0 up to 100.
    - ■ Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "Invalid Page Count shown to user.". Additional log data: username, sorting status = success, input prices, result count, feature: Price Range Sorting. Minor error, system will leave users at the current sorted page view.
  - ○ Results show wrong format or don't show count of items, classes, auction items from 0 up to 100.
    - ■ Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "Invalid Count Format or Item Counts for item classes, auction items." Minor error, system will leave users at the current sorted page view.
  - ○ Results are not shown in order of ascending price, from low to high.
    - ■ Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "Invalid Order Format for items, classes, auction items shown to user". Major error, system will navigate users to the default non sorted page view.
  - ○ System unsuccessfully logs the input prices, result count of unauthenticated user and extra log data as user id for authenticated user to persistent storage within 3s.
    - ■ Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: Data, Message: "System

unsuccessfully logs the input prices, result count of unauthenticated user". Minor error, system will leave users at the current sorted page view.

# Feature #5: Search Engine

1. Search Capability
   - User Story:
     - SE1, as an authenticated user, I can search for the specific items by title or creator and get the results that fit my interest.
     - SE2, as an unauthenticated user, I can search for the specific items by title or creator and get the results that fit my interest.
   - Scope:
     - This feature can be used by any type of users, authenticated and unauthenticated.
   - Effort Points (Hours): 100
   - Data Source:
     - Origin = Internal
     - Type = Database
     - Details = BuyingGoods, AuctionGoods, ClassJoining
   - User Input:
     - Required
       - User search input
         - Must be max 32 words or 100 characters. a-z, A-Z, and 0-9 allowed characters.
         - This value is not nullable.
   - App Permission:
     - Permission = View
     - Scope = Item Listings
   - Target Audience:
     - Any type of users, authenticated and unauthenticated.
   - Pre-conditions:
     1. The user could be an authenticated or unauthenticated user.
     2. The user is on the CraftVerify goods, auction goods, class pages.
     3. Throughout the user story, Log will be recorded with extra data as username, Search term, search status, result count, feature: Search Capacity.
   - Success Outcomes:
     - User input meets the validation requirements.

- ○ User is able to see the result items, which have the name or metadata match with at least 3 characters from the user's search term in under 3s.
- ○ A maximum of 10 outcomes per page will be shown to user, with page numbers from 0 to 100.
- ○ The search tool is prominently displayed on the homepage.
- ○ Logging records the start of the search process operation with the search query then records the search results of the operation.
- ○ System will leave user at the current view, only a portion of the page will be reloaded to show the valid searching results.
- Failure Outcomes:
  - ○ If a search query surpasses 32 words or 100 characters, the system cannot handle it.
    - Error Handling: Display an error message stating "The search query contains more than 32 words. Please remove words from your search." Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "Search term excesses 32 words/ 100 characters limitation." Minor error, system will leave user at the current view so user can retry with a valid input.
  - ○ The search yields no outcomes, leaving the user without useful data despite a valid item being available.
    - Error Handling: send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "System fails to show results despite valid item being available". Major error, system will navigate user to the default page view.
  - ○ Search is successful but the outcomes take more than 3 seconds to appear.
    - Error Handling: Display a loading spinner or animation with a note "Fetching results, please wait..." to keep the user informed. The user can cancel the search while this message is displayed. Log will be recorded with Timestamp, Log Level: Error, Category: Server, Message: "Search is successful but the outcomes take more than 3 seconds to appear". Minor error, system will show user the current results view.
  - ○ The search mechanism doesn't show item's name or metadata in order of the most keywords matching down to 3 characters matching.

- ■ Error Handling: Send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: View, Message: "System failed to show results in most matching order". Major error, system will navigate user to the default page view.
  - ○ Search operation timed out due to heavy server load or poor query optimization.
    - ■ Error Handling: Inform the user of the delay with an in-app notification: "We're taking longer than expected to fetch your results. Please stand by." Timestamp, Log Level: Warning, Category: Search, Message: "Search operation timeout." Major error, system will leave user at the current page view.
  - ○ Newly added items are missing in search results due to indexing delays.
    - ■ Error Handling: Notify the user with a banner: "Some newly added items might not appear in your search. We are working to update our search index as quickly as possible." Timestamp, Log Level: Info, Category: Indexing, Message: "Incomplete index for search query." Minor error, system will show user the current results view.
  - ○ Search functionality becomes non-responsive or fails completely.
    - ■ Error Handling: Revert to a simplified search mode temporarily and notify the user: "Our advanced search is down; we've switched you to basic search for now." Timestamp, Log Level: Critical, Category: Search, Message: "Search function unresponsive." Major error, system will navigate user to the default page view.
  - ○ Search results contain private or sensitive data due to a security oversight.
    - ■ Error Handling: Immediately restrict affected search results and conduct an audit. Notify affected users with a security alert message. Timestamp, Log Level: Critical, Category: Security, Message: "Privacy violation detected in search results." Minor error, system will navigate user to the default page view.

2. Autocomplete Suggestions
- ● User Story:
  - ○ AS1, as an authenticated user, I can choose a search autocomplete suggestion to complete a search term that matches my interest.

- ○ AS2, as an unauthenticated user, I can choose a search autocomplete suggestion to complete a search term that matches my interest.
- Scope:
  - ○ This function is within the search capability and is accessible to any user, authenticated and unauthenticated.
- Effort Points (Hours): 60
- Data Source:
  - ○ Origin = Internal
  - ○ Type = Database
  - ○ Details = BuyingGoods, AuctionGoods, ClassJoining
- App Permission:
  - ○ Permission = Read
  - ○ Scope = Item Listings
- Target Audiences:
  - ○ Any type of users, authenticated and unauthenticated.
- Pre-conditions:
  1. The authenticated/ unauthenticated user is on the CraftVerify platform.
  2. The user is typing American English words in the search bar.
  3. User's search term should be at least 3 characters for autocompletion to process.
  4. Throughout the user story, Log will be recorded with extra data as username, Search term, autocomplete status, feature: Autocomplete Suggestions.
- Success Outcomes:
  - ○ The user types in the search bar at least 3 characters and possible suggested autocompletions are available for choosing.
  - ○ The search tool interacts with the Relational Database Management System (RDBMS) to fetch pertinent search outcomes.
  - ○ System shows user up to 5 autocomplete options at the current view.
- Failure Outcomes:
  - ○ Autocompletions are not shown for the user when they are typing at least 3 characters in search term despite a valid suggestion is available.
    - ■ Error Handling: Send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: Server, Message: "System fails to show results despite valid suggestion is available". Major error, system will still leave user at the current view waiting for search confirmation.

- The search tool is unable to connect with the RDBMS to fetch pertinent search outcomes.
  - Error Handling: Send a detailed message to inform the user of the situation. Log will be recorded with Timestamp, Log Level: Error, Category: Server, Message: "System failed to fetch item name and metadata for suggestions". Major error, system will still leave user at the current view waiting for search confirmation.
- Autocomplete suggestions are irrelevant or nonsensical.
  - Error Handling: Prompt the user to provide feedback on suggestions to enhance accuracy. Timestamp, Log Level: Warning, Category: Autocomplete, Message: "Irrelevant autocomplete suggestions provided." Minor error, system will still leave user at the current view waiting for search confirmation.
- Autocomplete suggestions lag or appear with a significant delay.
  - Error Handling: Display a loading spinner and a message: "Suggestions are on the way…" Timestamp, Log Level: Info, Category: Performance, Message: "Delayed autocomplete suggestions." Major error, system will still leave user at the current view waiting for search confirmation.
- Server becomes overloaded with autocomplete suggestion requests.
  - Error Handling: Throttle incoming requests and display a notice: "Autocomplete is currently slower due to high traffic." Timestamp, Log Level: Warning, Category: Performance, Message: "Server overload by autocomplete requests." Major error, system will still leave user at the current view waiting for search confirmation.
- Autocomplete does not correct or suggest alternatives for misspelled queries.
  - Error Handling: Implement an interim spelling correction notification: "Did you mean: suggestion?" Timestamp, Log Level: Error, Category: Autocomplete, Message: "Misspelled query with no suggestions." Minor error, system will still leave user at the current view waiting for search confirmation.

3. Results Sorting
  - User Story:

- ○ RS1, as an authenticated user, I can sort the results of my search to refine what I'm looking for.
        - ○ RS2, as an unauthenticated user, I can sort the results of my search to refine what I'm looking for.
- Scope:
    - ○ This function is within the search capability and is accessible to any type of user.
- Effort Points (Hours): 40
- Data Source:
    - ○ Origin = Internal
    - ○ Type = Database
    - ○ Details = BuyingGoods, AuctionGoods, ClassJoining
- User Input:
    - ○ Optional
        - ■ The user selects the type of sorting from a drop down menu.
            - ● Relevance (Default)
                - ○ Product searches: The relevance is determined by metadata attributes like color, price, shape, weight, and craftsmanship quality.
                - ○ creator searches: Relevance is based on the creator's popularity which is determined by the number of views the creator's products had, the craftsmanship skills they have such as sculpting and knitting for example or by the number of products available by that creator.
            - ● Date (Ascending or descending)
            - ● Alphabetical (Ascending or descending)
                - ○ Refers to comparing the item name listed on each item listing by alphabetical order.
- App Permission:
    - ○ Permission = Read
    - ○ Scope = Item Listings
- Target Audience:
    - ○ Authenticated and unauthenticated users.
- Pre-conditions:
    1. The authenticated, unauthenticated user is on the CraftVerify platform.
    2. The user has performed a search.
    3. Throughout the user story, Log will be recorded with extra data as username, Search term, search status, sort status, sort choice, feature: Search Sorting.

- Success Outcomes:
    - Navigating and sorting through the search results matches the selected sort option.
    - Users have the option to sort search outcomes by relevance, date, or in alphabetical sequence.
    - System leave user at the current view with only a portion of the page will be reloaded with sorting results.
- Failure Outcomes:
    - The sorting tool (by relevance, date, or alphabetical sequence) doesn't work correctly or produces incorrect sequences.
        - Error Handling: Display an error message, "Sorting failed. Displaying default results," and log the time and reason for the issue for immediate developer review. The default results will be the list of every available item that a user can buy sorted by the date each item was added. Timestamp, Log level: Error, Category: Business, Message: "The sorting tool by relevance, date, or alphabetical sequence doesn't work correctly". Major error, system will leave user at unsorted searching result view.
    - Results sorting does not follow the user's selected criteria.
        - Error Handling: Prompt user to retry with a message: "There was an issue with sorting your results. Please try again." Timestamp, Log Level: Error, Category: Sorting, Message: "Results sorting criteria failure." Major error, system will leave user at unsorted searching result view.
    - Sorted results are incorrectly paginated or cut off.
        - Error Handling: Enable users to report page issues directly and display: "Having trouble? Let us know." Timestamp, Log Level: Warning, Category: Pagination, Message: "Inconsistent result pagination." Major error, system will leave user at unsorted searching result view.
    - Some sorting options become unavailable due to a system error.
        - Error Handling: Provide a default sorting method and inform users: "Some sorting options are temporarily out of order. We're fixing this as quickly as possible." Timestamp, Log Level: Error, Category: Sorting, Message: "Sorting option unavailability." Major error, system will leave user at unsorted searching result view.
    - User's preferred sorting settings are not remembered by the system.

- ■ Error Handling: Apologize for the inconvenience and encourage the user to set their preference again with a message. Timestamp, Log Level: Error, Category: User Preferences, Message: "User preference saving error." Major error, system will leave user at unsorted searching result view.

# Feature #6: Feedback, Scoring, & Report Mechanism

1. Score System
   - User Story:
     - ○ As an authenticated user, I wish to score sellers based on the quality of the product.
   - Scope:
     - ○ This mechanism is part of the seller's profile and the post-purchase area on the CraftVerify site. Only authenticated users who have made a purchase can use this feature.
   - Effort Points (Hours): 50
   - Data Source:
     - ○ Source: Internal
     - ○ Type: Database
   - User Input:
     - ○ Required
       - ■ User selected score for an item.
         - Numerical value between 0 and 5.
         - This value is not nullable.
   - Target Audience:
     - ○ Authenticated users who have made a purchase.
   - App Permission:
     - ○ Permission = Write
     - ○ Scope = Score
   - Pre-conditions:
     1. The user is an authenticated registered user.
     2. A purchase has been made by the user.
     3. Throughout the user story, Log will be recorded with extra data as username, SKU number, score number, feature: Score System.
   - Success Outcomes:
     - ○ Users can successfully provide scores of products.
     - ○ Within 3 seconds of submission, scores are visible on the seller's profile.
     - ○ The RDBMS stores the scores.

- ○ The system logs the submission of scores.
- ○ System will navigate user to the current item view.
- Failure Outcomes:
  - ○ The user is unable to provide scores of products.
    - ■ Error Handling: The time and reason for the error is logged and the user is notified that the operation failed. Timestamp, Log Level: Error, Category: Data Store, Message: "User is unable to provide score". Major error, system will leave user at the current item view for user retry attempt.
  - ○ If the system doesn't display newly added scores on the seller's profile within 3 seconds.
    - ■ Error Handling: Show a temporary message "Processing your score. It will appear shortly." and ensure it refreshes after the delay. Timestamp, Log Level: Warning, Category: View, Message: "New score is not update to user profile". Minor error, system will leave user at the current item view.
  - ○ The system is unable to log the submission of scores.
    - ■ Error Handling: The operation is aborted and the time and reason for the error is logged for developer action. Timestamp, Log Level: Error, Category: Data Store, Message: "System is unable to log the submission of scores". Major error, system will leave user at the current seller view for user retry attempt.
  - ○ User scores fail to record or submit due to system glitches.
    - ■ Error Handling: Assure users their input isn't lost with an in-app message: "Your score is safe with us. We'll auto-submit once things are back to normal." Timestamp, Log Level: Error, Category: Scoring, Message: "Score submission error." Minor error, system will leave user at the current seller view.
  - ○ Score calculations are incorrect because of a software defect.
    - ■ Error Handling: Cross-check scores and allow for manual correction prompts. Timestamp, Log Level: Critical, Category: Scoring, Message: "Faulty score calculation detected." Major error, system will leave user at the current seller view.
  - ○ There's a noticeable delay in the score being displayed after submission.
    - ■ Error Handling: Show a provisional score and a message: "Finalizing your score, hold tight!" Timestamp, Log Level:

Info, Category: Scoring, Message: "Score display lag." Minor error, system will leave user at the current seller view.
- ○ System accepts multiple score submissions from a single user unintentionally.
  - ■ Error Handling: Implement safeguards to prevent duplicate submissions and notify the user: "It looks like we've received your score already. Thank you!" Timestamp, Log Level: Warning, Category: Scoring, Message: "Duplicate score submission detected." Major error, system will leave user at the current seller view.

2. Feedback System
- ● User Story:
  - ○ As an authenticated user, I want to be able to provide feedback to sellers to help them improve their products.
- ● Scope:
  - ○ This mechanism is part of the seller's profile and the post-purchase area on the CraftVerify site. Only authenticated users who have made a purchase can use this feature.
- ● Effort Points (Hours):50
- ● Data Source:
  - ○ Origin: Internal
  - ○ Type: Database
- ● User Input:
  - ○ Optional
    - ■ User provided feedback on an item.
      - ● Review titles are up to 250 characters. Review content can be up to 1,000 characters. a-z, A-Z, and 0-9 allowed characters.
      - ● Default value is null.
- ● App Permission:
  - ○ Permission = Write
  - ○ Scope = Feedback
- ● Target Audience:
  - ○ Authenticated users who have made a purchase.
- ● Pre-conditions:
  1. The user is signed in as a registered user.
  2. A purchase has been made by the user.

3. Throughout the user story, Log will be recorded with extra data as username, SKU number, FeedBack status, feature: Feedback System.

- Success Outcomes:
    - Users can successfully provide feedback on items.
    - Within 3 seconds of submission, feedback is visible on the seller's profile.
    - The RDBMS stores the feedback.
    - The system logs the submission of feedback.
    - System leave user at the current item view.
- Failure Outcomes:
    - The user is unable to provide feedback on products.
        - Error Handling: The time and reason for the error is logged and the user is notified that the operation failed. Timestamp, Log Level: Error, Category: Data Store, Message: "User is unable to provide feedback on products". Major error, system still leave user at the current item view for user retry attempt.
    - If a review surpasses 1,000 characters, users cannot provide their feedback.
        - Error Handling: Prompt users with "Your review is too long. Please limit it to 1,000 characters or less." Timestamp, Log level "Warning", category "Business". Log Level: Warning, Category: Data, Message: "User input excess 1,000 characters for feedback". Minor error, system still leave user at the current item feedback input view so user can modify it.
    - If the system doesn't display newly added feedback on the seller's profile within 3 seconds.
        - Error Handling: Show a temporary message "Processing your feedback. It will appear shortly." and ensure it refreshes after the delay. Timestamp, Log Level: Warning, Category: View, Message: "System fails to display new feedback". Minor error, system still leave user at the current item view.
        - If the system doesn't display newly added feedback on the seller's
    - The system is unable to log the submission of feedback.
        - Error Handling: The operation is aborted and the time and reason for the error is logged for developer action. Timestamp, Log Level: Critical, Category: Data Store, Message: "System fails to log feedback submission". Major error, system still leave user at the current item view so user can decide to retry.

- If the system doesn't display newly added feedback on the seller's
  - ○ Feedback submissions are not being saved due to database connectivity issues.
    - Error Handling: Reassure the user with an alert: "There's a hiccup with saving your feedback. We'll keep trying in the background." Timestamp, Log Level: Error, Category: Feedback, Message: "Feedback saving error." Major error, system still leave user at the current item view so user can decide to retry.
  - ○ Users are unable to submit feedback because the feedback form is unresponsive.
    - Error Handling: Provide an alternative contact method and address the issue promptly. Timestamp, Log Level: Critical, Category: Feedback, Message: "Feedback form unresponsive." Major error, system still leave user at the current item feedback input view so user can decide to resubmit.
  - ○ Feedback form allows submission of incomplete or corrupted data.
    - Error Handling: Validate inputs on the client-side and prompt users to correct their data before resubmission. Timestamp, Log Level: Error, Category: Feedback, Message: "Corrupted feedback submission attempt." Minor error, system still leave user at the current item view.
  - ○ The feedback system sends multiple notifications for a single submission.
    - Error Handling: Apologize for any inconvenience and ensure users that their feedback is received. Timestamp, Log Level: Warning, Category: Feedback, Message: "Multiple notifications sent for single feedback." Minor error, system still leave user at the current view.

3. Feedback Sorting
   - User Story:
     - ○ FS1, as an authenticated user, I want to be able to sort feedback on a seller's profile to find feedback I might want.
     - ○ FS2, as an unauthenticated user, I want to be able to sort feedback on a seller's profile to find feedback I might want.
   - Scope:
     - ○ This mechanism is part of the seller's profile on the CraftVerify site. Any user can use this feature.

- Effort Points (Hours): 40
- Data Source:
    - Origin: Internal
    - Type: Database
- User Input:
    - Optional
        - User marks the feedback as helpful.
            - Done when the user clicks the helpful button on feedback.
        - The user selects a type of sorting from a drop down menu.
            - Ratings
            - Date (Default)
            - Helpfulness
- App Permission:
    - Permission = Read and View
    - Scope = Feedback
- Target Audience:
    - Every CraftVerify visitor.
- Pre-conditions:
    1. User is on a seller's profile.
    2. User navigates to the feedback section of the seller's profile.
    3. Throughout the user story, Log will be recorded with extra data as username, SKU number, FeedBack status, feedback sorting status, feature: Feedback Sorting.
- Success Outcomes:
    - The user is able to mark feedback as helpful.
    - The user is able to sort feedback based on different criteria.
    - System will leave user at the current seller view.
- Failure Outcomes:
    - The feedback is not sorted in the way that the user selected or not sorted at all.
        - Error Handling: Display an error message, "Sorting failed. Displaying default results," and log the time and reason for the issue for immediate developer review. Timestamp, Log Level: Error, Category: Server, Message: "Invalid feedback sorting". Major error, system will navigate user to the seller default feedback view.
    - The feedback "helpful" marking system doesn't work or doesn't capture user inputs.

- - ■ Error Handling: Provide feedback like "Error marking review. Please try again later." and log this for developer action. Timestamp, Log Level: Warning, Category: View, Message: "Helpful Marking System Malfunctioned". Minor error, system will leave user at the seller default feedback view.
    - ○ Feedback sorting does not prioritize according to the user's selections.
      - ■ Error Handling: Alert the user to the issue and provide an option to retry sorting. Timestamp, Log Level: Error, Category: Feedback Sorting, Message: "Feedback sorting preference ignored." Major error, system will leave user at the seller default feedback view.
    - ○ Feedback entries get mixed up when sorted by date due to incorrect timestamps.
      - ■ Error Handling: Correct the display of feedback based on the accurate timestamps and notify users of the fix. Timestamp, Log Level: Error, Category: Feedback Sorting, Message: "Timestamp error in feedback sorting."
    - ○ The option to sort feedback by popularity fails due to a logic bug.
      - ■ Error Handling: Temporarily disable the faulty sorting option and inform the user: "Sorting by popularity is under maintenance. Please try other sorting options." Timestamp, Log Level: Error, Category: Feedback Sorting, Message: "Popularity sorting logic bug." Major error, system will leave user at the seller default feedback view
    - ○ Users' custom sorting settings reset to default after each session.
      - ■ Error Handling: Preserve user settings on the server-side and prompt the user to reapply their last used settings. Timestamp, Log Level: Error, Category: User Preferences, Message: "User's custom sorting settings reset error." Major error, system will leave user to the seller default feedback view.

- 4. Report System
  - ● User Story:
    - ○ As an authenticated user, I want to be able to make reports on products or sellers that have concerning attributes to help maintain the integrity of the site.
  - ● Scope:

- ○ This mechanism is part of the seller's profile and the post-purchase area on the CraftVerify site. Only authenticated users can use this feature.
- **Effort Points (Hours):** 60
- **Data Source:**
  - ○ Origin: Internal
  - ○ Type: Database
- **User Input:**
  - ○ Required
    - ■ User provides a report on the product or seller.
      - ● Reports need a brief description up to 3,000 characters. Reports can include up to five images (JPEG, PNG, GIF, TIFF) with a 7 MB limit for each image.
- **App Permission:**
  - ○ This function will need permission to write data to our data store.
- **Target Audience:**
  - ○ Authenticated users.
- **Pre-conditions:**
  1. The user is signed in as a registered user.
  2. The user clicks on the report button on a product or seller's page.
  3. Throughout the user story, Log will be recorded with extra data as username, SKU number, Report status, feature: Report System.
- **Success Outcomes:**
  - ○ Users can successfully provide reports on products or sellers.
  - ○ Reports are instantly sent to admins for review.
  - ○ The RDBMS stores the reports.
  - ○ The system logs the submission of reports.
  - ○ System will leave user at the current item/ seller view.
- **Failure Outcomes:**
  - ○ The user is unable to submit a report under 3s.
    - ■ Error Handling: The time and reason for the error is logged and the user is notified that the operation failed. Timestamp, Log Level: Error, Category: Data Store, Message: "User is unable to submit report under 3s". Major error, system will leave user at the current product/ seller report input for resubmit attempt.
  - ○ If a report description exceeds 3,000 characters, it hampers users from detailing their issues.

- Error Handling: Notify users with "Report description is too lengthy. Please keep it under 3,000 characters." Timestamp, Log Level: Warning, Category: Data, Message: "Report description exceeds 3,000 characters limitation". Major error, system will leave user at the current product/ seller report input for modifying and resubmit attempt.
- If uploaded image for reports are larger than 7MB, it can cause upload issues or delays.
  - Error Handling: Display "Image too large. Please upload an image smaller than 7MB." Timestamp, Log Level: Warning, Category: Data, Message: "Uploaded image excesses 7 MB limitation".
- If reports aren't sent to the admins after 3s, it could delay necessary actions.
  - Error Handling: Inform users with "Your report is saved but may be delayed in reaching our team. We appreciate your patience." Timestamp, Log Level: Warning, Category: Server, Message: "Report took longer than 3s to be sent". Major error, system will leave user at the current product/ seller default view.
- The system is unable to log the reports in under 3s.
  - Error Handling: The operation is aborted and the time and reason for the error is logged for developer action. Timestamp, Log Level: Critical, Category: Data Store, Message: "Fail to log report under 3s". Major error, system will leave user at the current product/ seller default view.
- Users are unable to report content due to the reporting feature malfunctioning.
  - Error Handling: Direct users to an alternate reporting method and resolve the issue urgently. Timestamp, Log Level: Critical, Category: Reporting, Message: "Reporting feature malfunction." Major error, system will leave user at the current product/ seller report input for resubmit attempt.
- The system does not acknowledge reports submitted by users.
  - Error Handling: Send a confirmation message manually if needed and assure users that all reports are reviewed. Timestamp, Log Level: Error, Category: Reporting, Message: "Unacknowledged report submission." Major error, system will leave user at the current product/ seller report input for resubmit attempt.

- ○ Reported content is not being hidden from the public view during review.
  - Error Handling: Implement an immediate content hide function upon report and inform the reporting user. Timestamp, Log Level: Error, Category: Reporting, Message: "Reported content hide failure." Major error, system will leave user at the current product/ seller default view.
- ○ Reporting system is flooded with spam, impeding legitimate reports.
  - Error Handling: Filter out spam reports using automated systems and update users on the improved process. Timestamp, Log Level: Warning, Category: Reporting, Message: "Spam reports flooding." Major error, system will leave user at the default page view.

# Feature #7: Product Bidding

1. Auction Initiation View
   - User Story:
     - ○ As an authenticated user, I can start an auction for my item with a specific base price.
   - Scope:
     - ○ Only authenticated sellers can initiate an auction.
   - Effort Points (Hours): 170
   - Data Source:
     - ○ Origin = Internal
     - ○ Type = Database
     - ○ Details = AuctionListings
   - User Input:
     - ○ Required
       - Base price
         - Numerical input only.
         - This value is not nullable.
       - Auction duration
         - Drop down menu between 1 and 7 days
         - This value is not nullable.
   - App Permission:
     - ○ Permission = Write and Read
     - ○ Scope = Auction
   - Target Audience:
     - ○ Authenticated user
   - Pre-conditions:

- ○ The seller must be an authenticated user.
- ○ The seller has a valid item listing.
- ○ The seller is on the auction initiation page.
- ○ Any logging for this function will have this extra logging data: Username, SKU number, Function.
- Success Outcomes:
  - ○ An authenticated seller successfully initiates an auction for their item in under 3s.
  - ○ Auction details are displayed correctly.
  - ○ Auction countdown begins based on the selected duration.
  - ○ Notifications are sent to interested buyers about the new auction.
  - ○ Auction is listed under the correct category or genre of the item.
  - ○ System will leave user at the current item auction view with updated bid result.
- Failure Outcomes:
  - ○ Auction not initiated.
    - ■ Error Handling: send a detailed message to inform the seller of the situation. Timestamp, Log Level: Error, Category: Server, Message: "Auction Is Not Initiated". System will leave user at the current bidding product view for reattempt.
  - ○ Auction details displayed inaccurately.
    - ■ Error Handling: prompt user to review and correct details. Timestamp, Log Level: Error, Category: View, Message: "Auction Details Is Inaccurate".  System will navigate user to the current bidding item view with reloaded info.
  - ○ Notification not sent to interested buyers.
    - ■ Error Handling: send a detailed message to inform the seller. Timestamp, Log Level: Error, Category: Server, Message: "No Notification Error".  System will resend the notification and note the count of failure to stop the retry attempt.
  - ○ Auction listed under the wrong category.
    - ■ Error Handling: prompt user to select the correct category. Timestamp, Log Level: Warning, Category: Business, Message: "Auction In Wrong Category". System will leave user at the current item auction view.


2. Auction Completion View
   - User Story:
     - ○ As an authenticated buyer, I can discuss payment details with the seller post-auction.

- Scope:
  - Only winning authenticated buyers and sellers can enter the discussion phase.
- Effort Points (Hours): 180
- Data Source:
  - Origin = Internal
  - Type = Database
  - Details = AuctionWinners
- App Permission:
  - Permission = Write and Read
  - Scope = Auction
- Target Audience:
  - Authenticated user

- Pre-conditions:
  1. Auction has ended.
  2. User is a winning buyer or the seller of the item.
  3. The user is on the auction completion page.
  4. Any logging for this function will have this extra logging data: Username, SKU number, Function.
- Success Outcomes:
  - Winning buyer and seller successfully enter a discussion phase.
  - Payment details are discussed and agreed upon.
  - System captures and logs the discussion for transparency.
  - Notification of auction completion is sent to both parties.
  - System leave user at the complete bidding item view and show contact information of seller/buyer.
- Failure Outcomes:
  - No discussion initiated within 24 hours.
    - Error Handling: send a detailed message to inform both users of the situation. Timestamp, Log Level: Warning, Category: Business, Message: "Discussion Is Not Initiated". System will send notification email, and suggest user with option to navigate to auction item discussion view.
  - System fails to log the discussion.
    - Error Handling: alert technical team for troubleshooting. Timestamp, Log Level: Error, Category: Server, Message: "Unable To Log Discussion". System will leave user at the current discussion view, retry the log, note the number of failure to stop retrying.

- - Notification of auction completion fails.
    - - Error Handling: prompt the system to resend the notification. Timestamp, Log Level: Warning, Category: Business, Message: "No Auction Completion Notification". System will resend the notification, note the number of failure to stop retry attempt.
  - Auction period set outside of the permissible 1 to 7 days.
    - - Error Handling:prompt user to select a valid duration. Timestamp, Log Level: Warning, Category: Business, Message: "Auction Period Exceed The Support Time Period". System will close the auction, remove item from auction list, navigate user to the default page view.
  - Multiple auctions initiated simultaneously for the same item.
    - - Error Handling: inform seller and terminate additional auctions. Timestamp, Log Level: Error, Category: Business, Message: "Multiple Auction For Similar Item". System will navigate user to the current item auction view when user attempt to initiate another auction session from the same item.
  - Incorrect base price is set over 999999.99.
    - - Error Handling: prompt user to correct the base price. Timestamp, Log Level: Warning, Category: Business, Message: "Base Price Exceed The Limit". System will leave user at the current item base price input view waiting for re input attempt.

# Feature #8: Seller Dynamic Dashboard

1. Product Editing
   - User Story:
     - As an authenticated user, I can edit my product from the database to update their aspects.
   - Scope:
     - Any authenticated user wants to edit their product.
   - Effort Points (Hours): 60
   - Data Source:
     - Origin: Internal
     - Type: Database
   - User Input:
     - Required
       - The product name

- 250 characters. a-z, A-Z, and 0-9 allowed characters.
- This value is not nullable.
    - ■ The item description
        - 2000 characters. a-z, A-Z, and 0-9 allowed characters.
        - This value is not nullable.
    - ■ The item price
        - Numerical input only.
        - This value is not nullable.
- ○ Optional User Inputs:
    - ■ The item production cost
        - Numerical input only.
        - Default is null.
    - ■ Up to five chosen photos
        - JPEG, PNG, non-animated GIF, or TIFF and each file size must be within 7MB.
    - ■ Up to two chosen videos
        - MP4 or MOV that are within 500MB and have resolutions between 240p and 1080p.
- App Permission:
    - ○ Permission = Update and Upload
    - ○ Scope = Update Item Listing and upload photos and files
- Target Audience:
    - ○ Any authenticated user.
- Pre-conditions:
    1. The user must be an authenticated user.
    2. The user is on the seller dynamic dashboard page.
    3. Any logging for this function will have extra logging data: Username, SKU number, and Function.
    4. All collected PII data is kept inside of our data store following CPRA rules for data requests and deletions.
- Success Outcomes:
    - ○ An authenticated user successfully edits an existing product within 3 seconds and saves it to our relational data store.
- Failure Outcomes:
    - ○ The given product name goes over 250 characters.
        - ■ Error Handling: Our system will ask the user to re-enter the product name. The system will log this error into our data store and archive it from the data store. Timestamp, Log

Level: Error, Category: Business, Message: "Product Name Over 250 Characters".

- The given product description goes over 2000 characters
    - Error Handling: Our system will ask the user to re-enter the product description. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category Business, Message: "Product Description Over 2000 characters".
- The given item price is not an integer or a float
    - Error Handling: Our system will ask the user to re-enter the product price. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category: Business, Message: "The Item Price Is Not An Integer nor A Float Number".
- The given production cost is not an integer or a float
    - Error Handling: Our system will ask the user to re-enter the product production cost. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category: Business, Message: "The Production Cost Is Not An Integer nor A Float Number".
- The given photo files are not of the supported file types.
    - Error Handling: Our system will ask the user to re-upload the photos. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category: Business, Message: "Unsupported Photo File Type".
- The given video files are not of the supported file types.
    - Error Handling: Our system will ask the user to re-upload the videos. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category: Business, Message: "Unsupported Video File Type".
- The given photos exceed the limit of 7MB for each photo
    - Error Handling: Our system will ask the user to re-upload the photos. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category Business, Message: "Unsupported Photo Size".
- The given videos exceed the limit of 500MB

- Error Handling: Our system will ask the user to re-upload the videos. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category: Business, Message: "Unsupported Video Size".
  - The product editing function is unable to write a product onto our data store.
    - Error Handling: Our system will ask the user to re-enter the inputs. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Error, Category: Data Store, Message: "Product Editing Unable to Write into Data Store".

2. Product Deletion
   - User Story:
     - As an authenticated user, I can delete my product to remove my item from the database.
   - Scope:
     - Any authenticated user wants to delete their product.
   - Effort Points (Hours): 80
   - Data Source:
     - Origin: Internal
     - Type: Database
   - User Input:
     - Required
       - The user chooses the delete product option on the seller dynamic dashboard.
   - App Permission:
     - Permission = Delete
     - Scope = Item Listing
   - Target Audience:
     - Any authenticated user.
   - Pre-conditions:
     1. The user must be an authenticated user.
     2. The user is on the seller dynamic dashboard page.
     3. Any logging for this function will have this extra logging data: Username, SKU number, Function.
     4. All collected PII data is kept inside of our data store following CPRA rules for data requests and deletions.
   - Success Outcomes:

- ○ Authenticated users successfully delete their products within 3 seconds.
- ● Failure Outcomes:
  - ○ The product deletion takes more than 3 seconds to complete.
    - ■ Error Handling: Our system will ask the authenticated user to re-select the deletion option. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Warning, Category: Business, Message: "Item Deletion Take Longer Than 3 Second".
  - ○ The product deletion function is unable to write an item off from our data store.
    - ■ Error Handling: Our system will ask the user to re-select the deletion option. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Error, Category: Data Store, MessageL "Unable To Delete Item From Data Store".


3. Inventory Stock List
   - ● User Story:
     - ○ As an authenticated user, I can view my products' stock.
   - ● Scope:
     - ○ Any authenticated user wishes to see the stocks of their inventory.
   - ● Effort Points (Hours): 40
   - ● Data Source:
     - ○ Origin: Internal
     - ○ Type: Database
   - ● User Input:
     - ○ Required
       - ■ The authenticated user chooses to show the Inventory Stock function on the seller dynamic dashboard.
   - ● App Permission:
     - ○ Permission = View
     - ○ Scope = Inventory Stock
   - ● Target Audience:
     - ○ Any authenticated user.
   - ● Pre-conditions:
     1. The user must be an authenticated user.
     2. Any logging for this function will have this extra logging data: Username, Function.
     3. The user is on the seller dynamic dashboard page.

- Success Outcomes:
  - The Inventory Stock List shows the inventory stock within 3 seconds.
- Failure Outcomes:
  - The Inventory Stock List takes more than 3 seconds to show the list.
    - Error Handling: Our system will ask the user to re-select the show stock list option. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Error, Category: Business, Message: "Inventory Stock List Loading Exceed 3 Seconds".
  - The Inventory Stock List function is unable to read from our data store.
    - Error Handling: Our system will ask the user to re-select the show stock list option. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Error, Category: Data Store, Message: "Inventory Stock List Unable to Read Data".

4. Financial Progress Report
   - User Story:
     - As an authenticated user, I can view my profit, revenue, and sales trends.
   - Scope:
     - As an authenticated user, I want to view my profit, revenue, and sales trends on the seller dynamic dashboard, So that I can track and analyze my financial performance over different periods.

   - Effort Points (Hours): 50
   - Data Source:
     - Origin = Internal
     - Source = Data Store
   - User Input:
     - Required
       - The authenticated user chooses to show the Financial Progress Report function on the seller dynamic dashboard.
     - Optional
       - The user chooses the time period option on the seller dynamic dashboard.
   - App Permission:
     - Permission = View
     - Scope = Financial Progress Report
   - Target Audience:

- ○ Any authenticated user
- Pre-conditions:
    1. The user must be an authenticated user.
    2. The user is on the seller dynamic dashboard page.
    3. Any logging for this function will have extra logging data: Username, Function.
    4. The profit of the authenticated user is calculated using the optional input of production as one of the base variables, so the integrity of the profit value depends on user input. If the user decides to leave it blank, the profit will be equal to the revenue.
- Success Outcomes:
    - ○ Authenticated users see the Financial Progress Report within 3 seconds.
    - ○ The profit, revenue, and sales can be viewed as yearly, quarterly, and monthly.
- Failure Outcomes:
    - ○ The Financial Progress Report takes more than 3 seconds to show
        - ■ Our system will ask the user to re-select the show Financial Progress Report. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Error, Category: Business", Message: "Financial Report Loading Exceed 3 Second".
    - ○ The Financial Progress Report is not shown in yearly, quarterly, or monthly order
        - ■ Our system will ask the user to re-select the time period option. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Error, Category: View, Message: "Financial Report Not Shown".
    - ○ The Financial Progress Report calculation function is unable to read data from our data store for calculation.
        - ■ Our system will ask the user to re-select the show Financial Progress Report. The system will log this error into our data store and archive it from the data store. Timestamp, Log Level: Error, Category: Data Store, Message: "Financial Report Unable to Read Data From Data Store".

# App Permission Matrix:

| | Account | Photos | Videos | Usage Analysis Dashboard | Item Listing | Item Offers | PII Data | Wishlist | Shopping Cart | Search Engine | Feedback, Scoring, & Report Mechanism | Product Bidding | Seller Dynamic Board |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **View** | non-PII data such as username [4] | Photos attached to User Account or Item Listing [4] | Videos attached to User Account or Item Listing [4] | The dashboard and all System Analysis associated with it | Details Item Listing [4] | Details about Item Offer [4] | Requested PII Data [4] | Item Listings on the Wishlist [4] | Item Listings on the Shopping Cart [4] | List of multiple item listings [4] | Scores, Feedback and Reports about Users and/or Item Listings [2], [3], [4] | Auctions [4] | Inventory Stocks for Item Listing and Financial Progress Report [4] |
| **Create** | User Account [1] | | | | Item Listing [4] | Item Offers [4] | | Item Listings to add to the Wishlist [4] | Item Listings to add to the Shopping Cart [4] | | Scores, Feedback and Reports about Users and/or Item Listings [4] | Auctions [4] | |
| **Delete** | User Account [2], [3], [4] | Photos from System [2]. [3], [4] | Videos from System [2]. [3], [4] | | | | PII Data [2], [3], [4] | Item Listings on the Wishlist [4] | Item Listings on the Shopping Cart [4] | | | | Item Listing [4] |
| **Recover** | Account Data [2], [3], [4] | | | | | | | | | | | | |
| **Update** | Account Information [2], [3], [4] | | | | Details about Item Listing [4] | | | | | | | | Details about Item Listing [4] |
| **Modify** | Account is Enabled or Disabled [2], [3] | | | | | | | | | | | | |
| **Upload** | | Photos for user account and/or item listing [4] | Videos for user account and/or item listing [4] | | | | | | | | | | |
| **Login** | For Account Authentication [2], | | | | | | | | | | | | |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [3], [4] | | | | | | | | | | | |
| **Logout** | For Account Authentic ation [2], [3], [4] | | | | | | | | | | | |

User Types: Anonymous User: [1], Delegate Admin: [2], Root Admin: [3], Authenticated Registered user [4]