

Scope, Mission Statement, User Stories, Use Cases, Requirements, and Design Diagrams for the BestPurchase Application.

Abstract: What is the scope and mission statement of the BestPurchase application? What user stories and use cases are important in the design process? What are the functional and non-functional requirements of the BestPurchase application? What will the state transition, sub-states, and graphical user interface diagrams look like?

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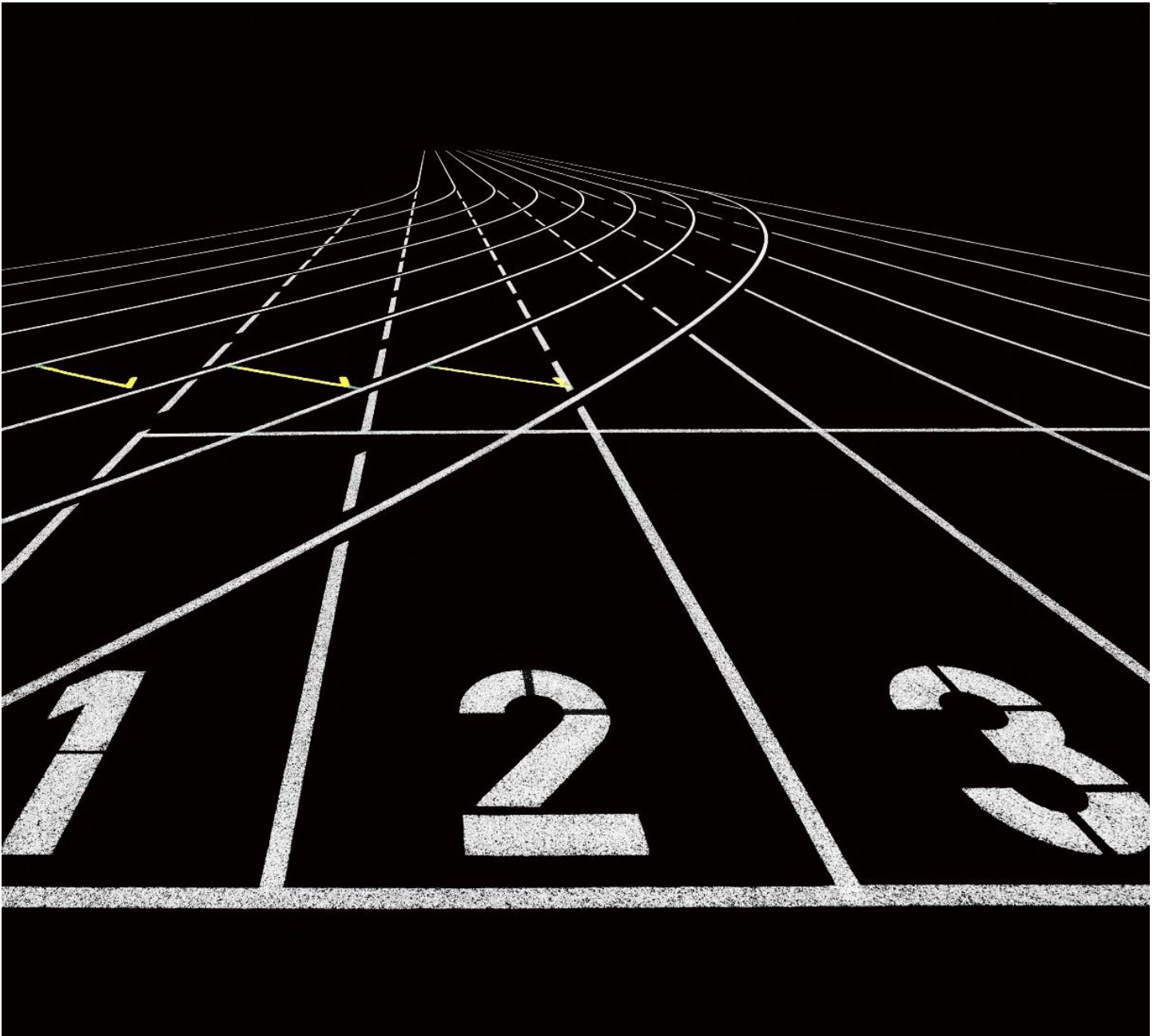
**CS682 – Assignment 3,
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INTRODUCTION

Assignment 3 focuses on the BestPurchase application. The scope and mission statement are defined and user stories and use cases are created. Functional and non-functional requirements are determined, and the state transition, sub-states, and graphical user interface designs are created.

ASSIGNMENT 3, PART 0

0. Assumptions/Scope

BestPurchase will act as a software that provides users with recommendations regarding potential shoe purchases. A BestPurchase account holder/customer will have the ability to fill in information regarding their preferences as to shoe size(s), types of shoe(s), price range, brands, and the shoe's source store. With the customer information in the account, BestPurchase will provide a recommended list of shoes from various retailers and allow for purchase directly from the application, as well as updating the list when new shoes fit the individual's criteria based on releases, price changes, and inventory changes.

ASSIGNMENT 3, PART 1

1. Overview/Mission Statement

BestPurchase is a desktop and mobile hybrid shoe recommendation, sourcing, and purchasing application. It allows account holders to receive tailored shoe recommendations based off their unique customer requirements. Through the application, users will stay abreast of shoes available, both new shoe releases and prior releases that fit the users' criteria. BestPurchase allows for the purchase and order tracking of shoes directly through its application. (Williams, 2023) Appendix 1

ASSIGNMENT 3, PART 2

2. User Stories

2.1 *First User Story*

As a BestPurchase account holder I want to know what shoes meet my specific requirements so that I can purchase a new pair of shoes within my budget and specifications. (Williams, 2023)

2.2 *Second User Story*

As an Admin I want to know what shoes customers purchased so that I can further enhance BestPurchase's future recommendations for the customer and for other customers with similar specifications. (Williams, 2023)

ASSIGNMENT 3, PART 3

3. User Stories

1. BestPurchase shall allow a New User to create an account and its associated information within the application.
 - a. BestPurchase shall allow a New User to enter an email address for the account.
 - b. BestPurchase shall allow a New User to enter a phone number for the account.
 - c. BestPurchase shall allow a New User to enter a first name for the account.
 - d. BestPurchase shall allow a New User to enter a last name for the account.
 - e. BestPurchase shall allow a New User to enter a payment method for the account.
 - f. BestPurchase shall allow a New User to enter a billing address for the account.
 - g. BestPurchase shall allow a New User to enter a shipping address for the account.("Module 3," 2023)
2. BestPurchase shall allow an Account Holder to update their account and its associated information within the application.
 - a. BestPurchase shall allow an Account Holder to update the first name for the account.
 - b. BestPurchase shall allow an Account Holder to update the last name for the account.
 - c. BestPurchase shall allow an Account Holder to update the email address for the account.
 - d. BestPurchase shall allow an Account Holder to update the phone number for the account.
 - e. BestPurchase shall allow an Account Holder to update the payment method for the account.
 - f. BestPurchase shall allow an Account Holder to update the billing address for the account.
 - g. BestPurchase shall allow an Account Holder to update the shipping address for the account.("Module 3," 2023)
3. BestPurchase shall allow an Account Holder to create a unique profile of shoe criteria.
 - a. BestPurchase shall allow an Account Holder to enter a price range.
 - b. BestPurchase shall allow an Account Holder to choose a shoe size or shoe sizes.
 - c. BestPurchase shall allow an Account Holder to choose a shoe type or types.
 - d. BestPurchase shall allow an Account Holder to choose a brand or brands.
 - e. BestPurchase shall allow an Account Holder to choose retailers.("Module 3," 2023)

4. BestPurchase shall allow an Account Holder to update their unique profile of shoe criteria.
 - a. BestPurchase shall allow an Account Holder to update the price range.
 - b. BestPurchase shall allow an Account Holder to update the shoe size or shoe sizes.
 - c. BestPurchase shall allow an Account Holder to update the shoe type or types.
 - d. BestPurchase shall allow an Account Holder to update the brand or brands.
 - e. BestPurchase shall allow an Account Holder to update the chosen retailers.
 - f. ("Module 3," 2023)
5. BestPurchase shall allow an Account Holder to view lists of shoes meeting their criteria.
 - a. BestPurchase shall allow an Account Holder to view the list of all shoes that meet their criteria.
 - b. BestPurchase shall allow an Account Holder to view the list of all newly released shoes that meet their criteria.
 - c. BestPurchase shall allow an Account Holder to view the list of all shoes that have recently met their criteria and are new to the list.
 - d. BestPurchase shall allow an Account Holder to view the list of all shoes based off past purchases if applicable.
 - e. BestPurchase shall allow an Account Holder to view the list of all shoes based off other customer purchases with similar or matching criteria if applicable.("Module 3," 2023)
6. BestPurchase shall allow the Account Holder to view each shoe individually.
 - a. BestPurchase shall allow the Account Holder to view each shoe's description.
 - b. BestPurchase shall allow the Account Holder to view each shoe's type.
 - c. BestPurchase shall allow the Account Holder to view each shoe's available sizes.
 - d. BestPurchase shall allow the Account Holder to view each shoe's available colors.
 - e. BestPurchase shall allow the Account Holder to view each shoe's retailer.
 - f. BestPurchase shall allow the Account Holder to view each shoe's price for each retailer.("Module 3," 2023)
7. BestPurchase shall allow the Account Holder to select a pair or pairs of shoes to add to their shopping cart through the application.
 - a. BestPurchase shall allow the Account Holder to select the shoe they would like to purchase.
 - b. BestPurchase shall allow the Account Holder to select the size of the shoe they would like to purchase.
 - c. BestPurchase shall allow the Account Holder to select the color of the shoe they would like to purchase.
 - d. BestPurchase shall allow the Account Holder to select the retailer from which they would like to purchase the shoes.("Module 3," 2023)

8. BestPurchase shall allow the Account Holder to view their shopping cart.
 - a. BestPurchase shall allow the Account Holder to view the shoes in their shopping cart.
 - b. BestPurchase shall allow the Account Holder to view the size of the shoes in their shopping cart.
 - c. BestPurchase shall allow the Account Holder to view the color of the shoes in their shopping cart.
 - d. BestPurchase shall allow the Account Holder to view the retailer(s) from which the shoes are being sold in their shopping cart.("Module 3," 2023)
9. BestPurchase shall allow the Account Holder to edit their shopping cart.
 - a. BestPurchase shall allow the Account Holder to remove pairs of shoes from their shopping cart.
 - b. BestPurchase shall allow the Account Holder to edit the size of a pair or pairs of shoes from within their shopping cart.
 - c. BestPurchase shall allow the Account Holder to edit the color of a pair or pairs of shoes from within their shopping cart.
 - d. BestPurchase shall allow the Account Holder to edit the retailer associated with a pair or pairs of shoes from within their shopping cart.("Module 3," 2023)
10. BestPurchase shall allow the Account Holder to see the prices of the items in their shopping cart.
 - a. BestPurchase shall allow the Account Holder to see the total price of all items in the shopping cart.
 - b. BestPurchase shall allow the Account Holder to see the price of each individual item in their shopping cart.
 - c. BestPurchase shall allow the Account Holder to see the total price of shipping for all items in the shopping cart.
 - d. BestPurchase shall allow the Account Holder to see the price of shipping for each individual item in their shopping cart.("Module 3," 2023)
11. BestPurchase shall allow the Account Holder to checkout of their shopping cart.
 - a. BestPurchase shall display all pairs of shoes being bought at checkout.
 - b. BestPurchase shall display the shipping address at checkout.
 - c. BestPurchase shall display the billing address at checkout.
 - d. BestPurchase shall display the customer's first and last name at checkout.
 - e. BestPurchase shall display the customer's email address at checkout.
 - f. BestPurchase shall display the payment method at checkout.
 - g. BestPurchase shall allow the Account Holder to submit the payment at checkout.("Module 3," 2023)

12. BestPurchase shall confirm the Account Holder's order post checkout.
 - a. BestPurchase shall display a confirmation of the order post checkout.
 - b. BestPurchase shall email a confirmation email to the Account Holder post checkout.
 - c. BestPurchase shall email an order tracking email to the Account Holder post checkout.
- ("Module 3," 2023)

ASSIGNMENT 3, PART 4

4. Use Cases

4.1 First Use Case

Use case Name	New User Account Creation	
Actor:	New User	
Description:	This use case describes the event of a New User creating an account on the BestPurchase application. The use case will include the steps for creating an account and its associated information. (This use case pertains to Functional Requirement 1, including a through g). The use case will end once the account is created.	
Pre-condition:	User does not have an account with BestPurchase and the user has navigated to the create an account page.	
Step #	Actor	System
1		System displays the create an account page with the following inputs: first name, last name, email address, phone number, payment method, billing address, and shipping address.
2	New User enters their first name.	System accepts the first name entered.
3	New User enters their last name.	System accepts the first name entered.
4	New User enters their email address.	System accepts the last name entered.
5	New User enters their phone number.	System accepts the phone number entered.
6	New User enters their payment method.	System accepts the payment method entered.

7	New User enters their billing address.	System accepts the billing address entered.
8	New User enters their shipping address.	System accepts the shipping address entered.
9	New User clicks create an account.	System displays account created successfully.
10		System displays the Profile page.
Alternate Courses:	<p>Alt Step #2 (System) – If first name is invalid (contains non-alphabetic characters), system prompts new user to enter a valid first name.</p> <p>Alt Step #3 (System) – If last name is invalid (contains non-alphabetic characters), system prompts new user to enter a valid last name.</p> <p>Alt Step #4 (System) – If email address is invalid, system prompts new user to enter a valid email address.</p> <p>Alt Step #5 (System) – If phone number is invalid, system prompts new user to enter a valid phone number.</p> <p>Alt Step #6 (System) – If payment method is invalid, system prompts new user to enter a valid payment method.</p> <p>Alt Step #7 (System) – If billing address is invalid, system prompts new user to enter a valid billing address.</p> <p>Alt Step #8 (System) – If shipping address is invalid, system prompts new user to enter a valid shipping address.</p> <p>Alt Step #9 (System) – If any information needed to create new user's account is missing, system prompts for missing inputs and displays (input name is required). Example: If no phone number was entered, system displays "Phone Number is required."</p>	

("Module 3," 2023)

4.2 Second Use Case

Use case Name	Profile Creation	
Actor:	Account Holder	
Description:	This use case describes the event of an Account Holder creating their unique profile on the BestPurchase application. The use case will include the steps for creating an Account Holder's unique profile and its associated information. (This use case pertains to Functional Requirement 3, including a through e). The use case will end once the account holder's unique profile is created.	
Pre-condition:	User has created an account in the BestPurchase application, and the system is currently displaying the profile page for the associated Account Holder's account.	
Step #	Actor	System
1		System displays the profile page with the following selections: price range, shoe size, shoe type, brand, and retailers.
2	Account Holder selects a price range.	System accepts the price range.
3	Account Holder selects a shoe size or sizes.	System accepts the size or sizes.
4	Account Holder selects a shoe type or types.	System accepts the shoe type or types.
5	Account Holder selects a brand or brands.	System accepts the brand or brands.
6	Account Holder selects a retailer or retailers.	System accepts the retailer or retailers.
7	Account Holder selects Save Profile.	System saves the Account Holder's Profile.
		System displays the Shoes page.
Alternate Courses:	<p>Alt Step #2 (System) – If price range is left unchanged. System keeps default price range of any.</p> <p>Alt Step #3 (System) – If shoe size is unselected. System keeps default shoe size of any.</p> <p>Alt Step #4 (System) – If shoe type is left unchanged. System keeps default shoe type of any.</p> <p>Alt Step #5 (System) – If brand is left unchanged. System keeps default brand of any.</p> <p>Alt Step #6 (System) – If retailer is left unchanged. System keeps default retailer of any.</p>	

("Module 3," 2023)

4.3 Third Use Case

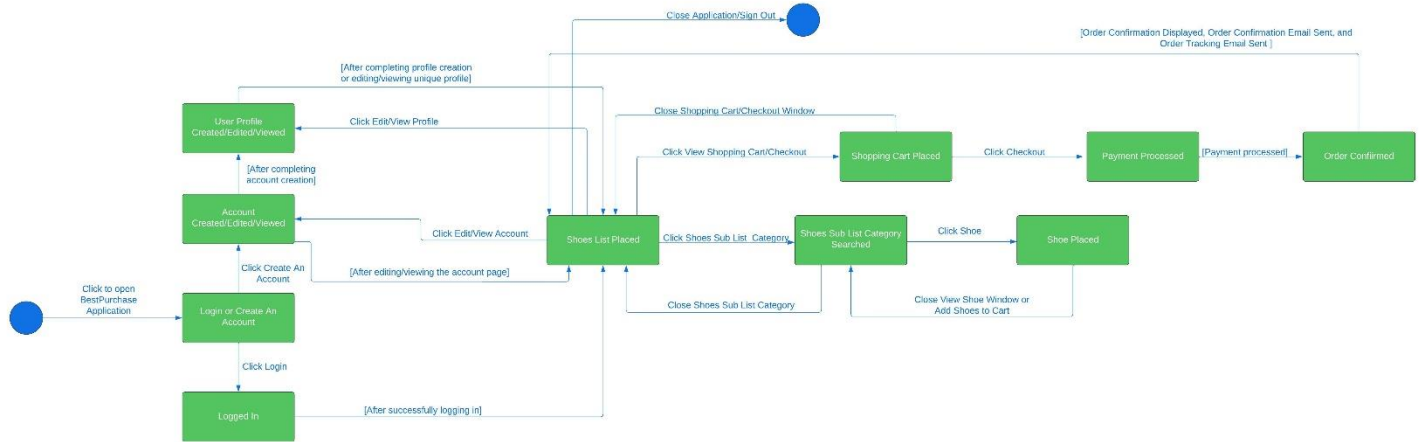
Use case Name	Navigating Shoe Inventory	
Actor:	Account Holder	
Description:	This use case describes the event of an Account Holder with a unique profile on the BestPurchase application navigating the different lists of shoes. The use case will include the steps for navigating an Account Holder's shoe lists based off of their unique profile. (This use case pertains to Functional Requirement 5, including a through e). The use case will end once the account holder has viewed each list.	
Pre-condition:	User has created an account and unique profile in the BestPurchase application, and the system is currently displaying the Shoe Lists Page.	
Step #	Actor	System
1		System displays the shoe lists page which displays the following subcategories: all shoes, newly released shoes, recently added shoes, shoes based off past purchases, shoes based off similar customers
2	Account Holder selects all shoes subcategory.	System displays a list of all of the shoes that match the Account Holder's unique profile.
3	Account Holder selects shoe lists page.	System displays the shoe lists page.
4	Account Holder selects newly released shoes subcategory.	System displays a list of all of the shoes that match the Account Holder's unique profile that are newly released.
5	Account Holder selects shoe lists page.	System displays the shoe lists page.
6	Account Holder selects recently added shoes subcategory.	System displays a list of all of the shoes that match the Account Holder's unique profile that are recently added to their all shoes category.
7	Account Holder selects shoe lists page.	System displays the shoe lists page.
8	Account Holder selects shoes based off past purchases subcategory.	System displays a list of all of the shoes that are similar the Account Holder's past purchased shoes.
9	Account Holder selects shoe lists page.	System displays the shoe lists page.

10	Account Holder selects shoes based off similar customers.	System displays a list of all of the shoes that were purchased by other customers with similar unique profiles to the Account Holder.
Alternate Courses:	<p>Alt Step #2 (System) – If no shoes meet the Account Holder’s unique profile, the system will display no shoes are available for your unique profile.</p> <p>Alt Step #4 (System) – If no newly released shoes meet the Account Holder’s unique profile, the system will display no newly released shoes are available for your unique profile.</p> <p>Alt Step #6 (System) – If no recently added shoes meet the Account Holder’s unique profile, the system will display no recently added shoes are available for your unique profile.</p> <p>Alt Step #8 (System) – If no shoes meet the Account Holder’s unique profile based off of past purchases, the system will display no shoes are available based off of your past purchases.</p> <p>Alt Step #8 (System) – If the Account Holder does not have any past purchases, the system will display there are no past purchases associated with this account.</p> <p>Alt Step #10 (System) – If no shoes meet the Account Holder’s unique profile based off of similar customers, the system will display no shoes are available based off of similar customer purchases.</p>	

(“Module 3,” 2023)

ASSIGNMENT 3, PART 5

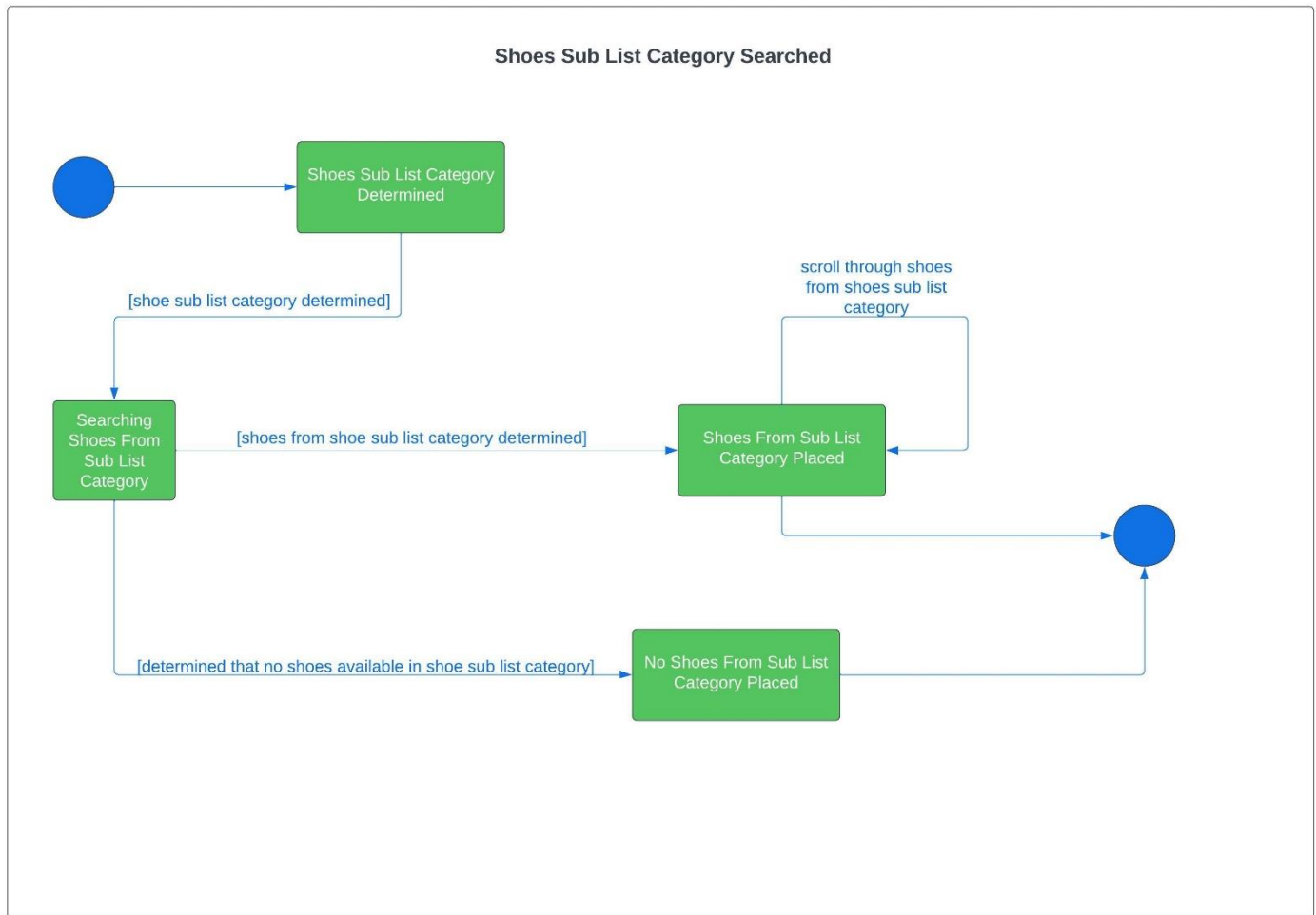
5. State Transition Diagram



("Module 3," 2023; Wiegers, 2020)

ASSIGNMENT 3, PART 6

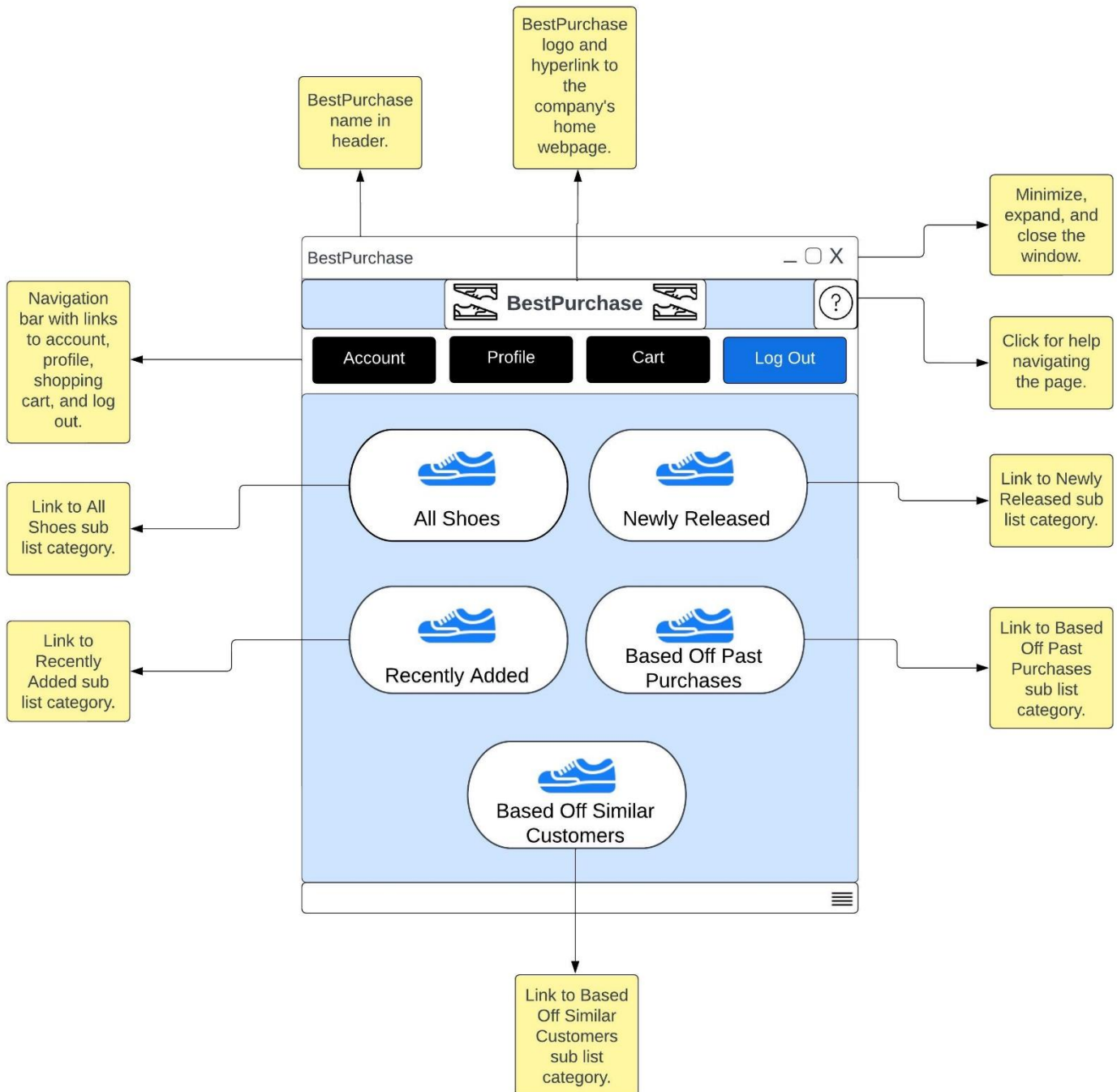
6. Sub-States



("Module 3," 2023; Wiegers, 2020)

ASSIGNMENT 3, PART 7

7. GUI Sketch



("Module 3," 2023)

The above graphical user interface diagram provides a visualization of the "Shoes List Placed" state of the system. It is anticipated that this would be the most prevalently used part of the BestPurchase application by the user. The GUI diagram has labels explaining various aspects of the interface itself.

ASSIGNMENT 3, PART 8

8. Non-Functional Requirements

8.1 First Non-Functional Requirement

BestPurchase will add new inventory from its partner retailers within 3 hours of release on the partner retailers' online store.

BestPurchase is dependent on having updated inventory across multiple retailers to offer its customers the best selection of shoes for their specific needs. To ensure BestPurchase is offering as many different pairs of shoes possible, it is of the utmost importance that they maintain an updated inventory of all shoes available.

As mentioned in the blog post “Shopper-First Retailing: New Research from 6,000 Consumers and 1.4 Billion Ecommerce Visits Reveals What Shoppers Actually Want”, “69% of consumers say it’s important or very important to see new merchandise each time they visit a store or shopping site.” (Young, 2018)

Having a short time frame in relation to when a retailer updates their online inventory compared to when BestPurchase does, will ensure that users are seeing more new shoe offerings on a more frequent basis and will help keep the various shoe lists from becoming “stale”. Also, a quick release of shoe offerings on the BestPurchase application will enhance the selection, increasing the chances that a user of the application will find a shoe that suits their specific needs. This will in turn raise the likelihood that a user will purchase shoes through BestPurchase and/or recommend others to use the application as well. Ultimately, the success of these factors will be paramount in driving sales and growth of the BestPurchase application. (Young, 2018)

8.2 Second Non-Functional Requirement

BestPurchase will process its orders and display a confirmation number within 30 seconds, send a confirmation email within one minute, and send a tracking information email within 15 minutes.

BestPurchase customers need assurance that their orders were successfully placed, and adequate tracking information is provided to ensure customers can track their orders. Delays in order confirmations and/or tracking information will negatively affect the customer’s buying experience and lower their confidence in BestPurchase’s application.

Fast performance in displaying the confirmation number, sending the confirmation email, and sending the tracking information email, will help legitimize the BestPurchase application in the eyes of the customer. Not only do they allow the customer to confirm their order was placed correctly, but they also allow the customer to review and confirm the details of their order. This provides

reassurance to the customer that their order was placed successfully and will in turn, increase their confidence in the BestPurchase application. (BigCommerce, 2023)

The order confirmation can also have a psychological effect on the buyer, by getting them more excited about their recent order. With this and the previously mentioned factors in mind, having a high-performance regarding confirmations and tracking could increase the chances a customer purchases shoes again through the BestPurchase application and/or recommends it to others. (BigCommerce, 2023)

CONCLUSION

The BestPurchase application's scope and mission statement provide a sense for what the application will achieve and how it fits in the marketplace. Two user stories provide context to how both a user and an admin may use the BestPurchase system. Twelve functional requirements, including multiple sub-requirements help identify functionality and features. The three use cases allow for an overview of new user account creation, profile creation, and the navigation of shoe inventory. The state transition diagram helps illustrate the system's states, while the sub-states diagram dives deeper into the "Shoes Sub List Category Searched" state. The graphical user interface diagram provides a visual of the "Shoes List Placed" state, which is anticipated to be the most prevalently used part of the application by the user. Two non-functional requirements, the first related to product inventory, and the second related to order confirmations/tracking, help set standards as it pertains to these areas and allow for better chances of success for the application and business.

SUMMARY

In summary, this assignment begins the systems analysis and design process for the BestPurchase application. It defines the scope, mission statement, user stories, functional and non-functional requirements, and the use cases as they pertain to BestPurchase. In addition, the state transition diagram, sub-states diagram, and graphical user interface diagram are included as parts of the overall process.

APPENDIX

Appendix 1: The hybrid mobile and desktop application design/implementation would be similar to what was described in Assignment 1, used by CampusSmoothie at their kiosks.

REFERENCES

- [1] BigCommerce (2023). *Order Confirmation Emails: Building Trust and Generating Engagement*. <https://www.bigcommerce.com/articles/ecommerce/best-order-confirmation-emails/>
- [2] Module 3: System and Requirements Analysis. (2023). In D. Williams (Ed.), *Functional and Non-functional Requirements: An Example* (pp. 12). Boston University Metropolitan College.
- [3] Module 3: System and Requirements Analysis. (2023). In D. Williams (Ed.), *State Transition Diagram - An Example* (pp. 23). Boston University Metropolitan College.
- [4] Module 3: System and Requirements Analysis. (2023). In D. Williams (Ed.), *Use Cases* (pp. 14). Boston University Metropolitan College.
- [5] Wiegers, K. (2020, February 18). *Modeling System States: State-Transition Diagrams and State Tables*. Medium. <https://medium.com/analysts-corner/modeling-system-states-state-transition-diagrams-and-state-tables-d37fe908ff23>
- [6] Williams, D. (2023, January 15). *Supplementary Live Session Week 3* [PowerPoint slides]. Boston University Metropolitan College.
- [7] Young, H. (2018, August 14). Shopper-First Retailing: New Research from 6,000 Consumers and 1.4 Billion Ecommerce Visits Reveals What Shoppers Actually Want. *The 360 Blog*. <https://www.salesforce.com/blog/digital-shopper-first-retail-report-research-blog/>