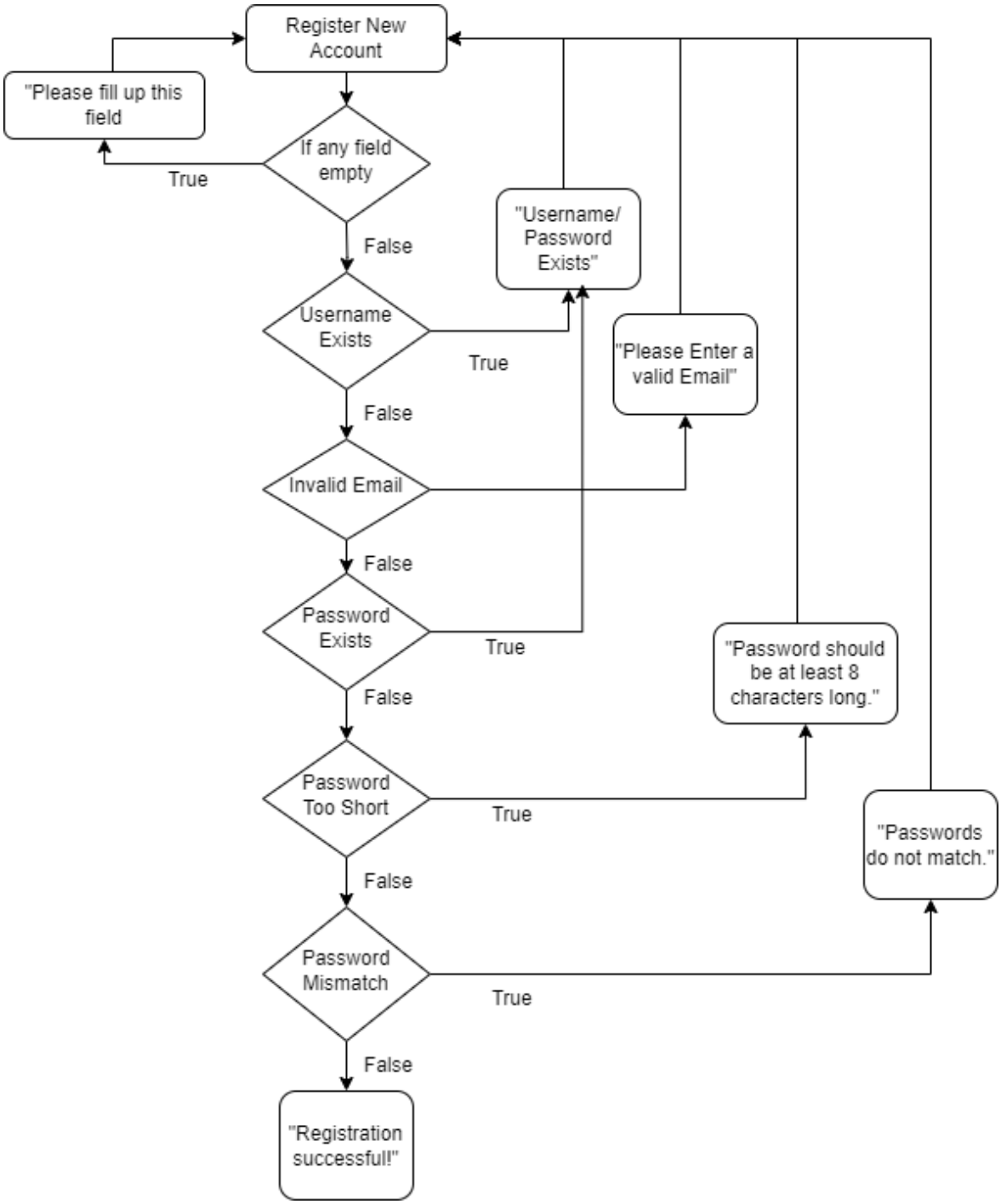
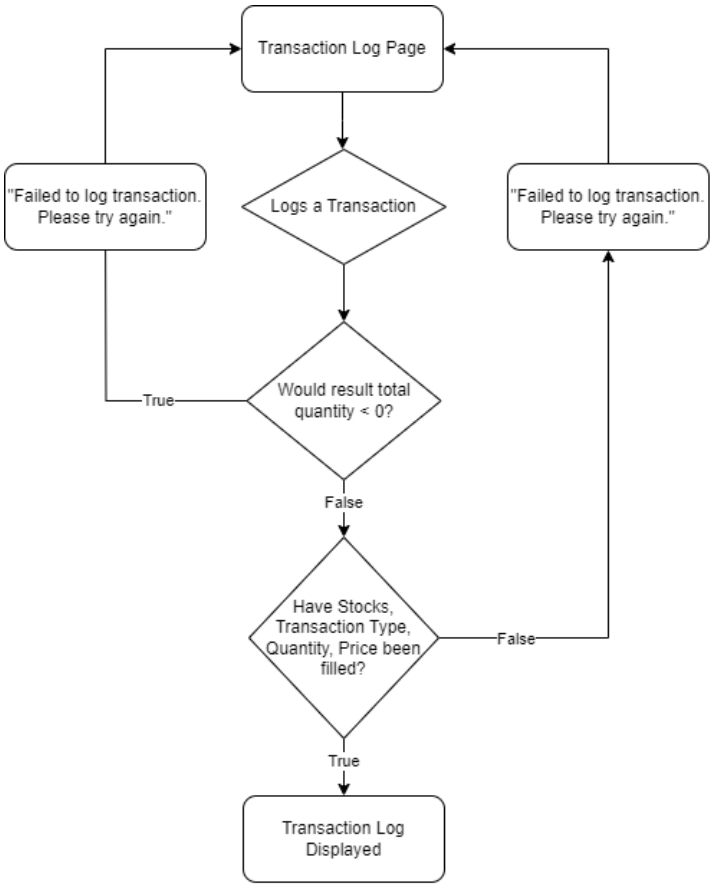
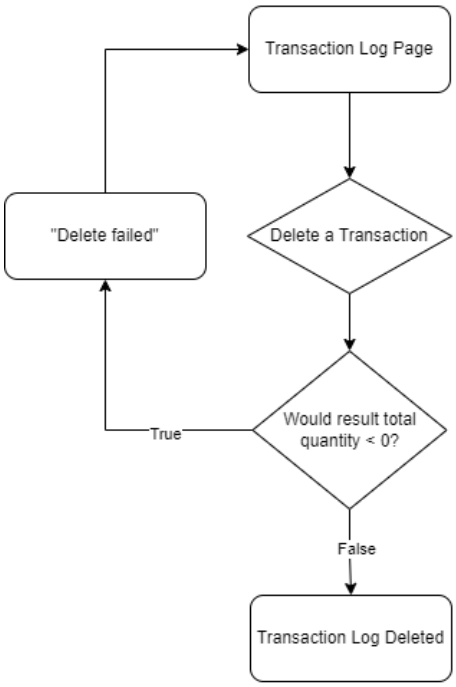
Control Flow Diagrams

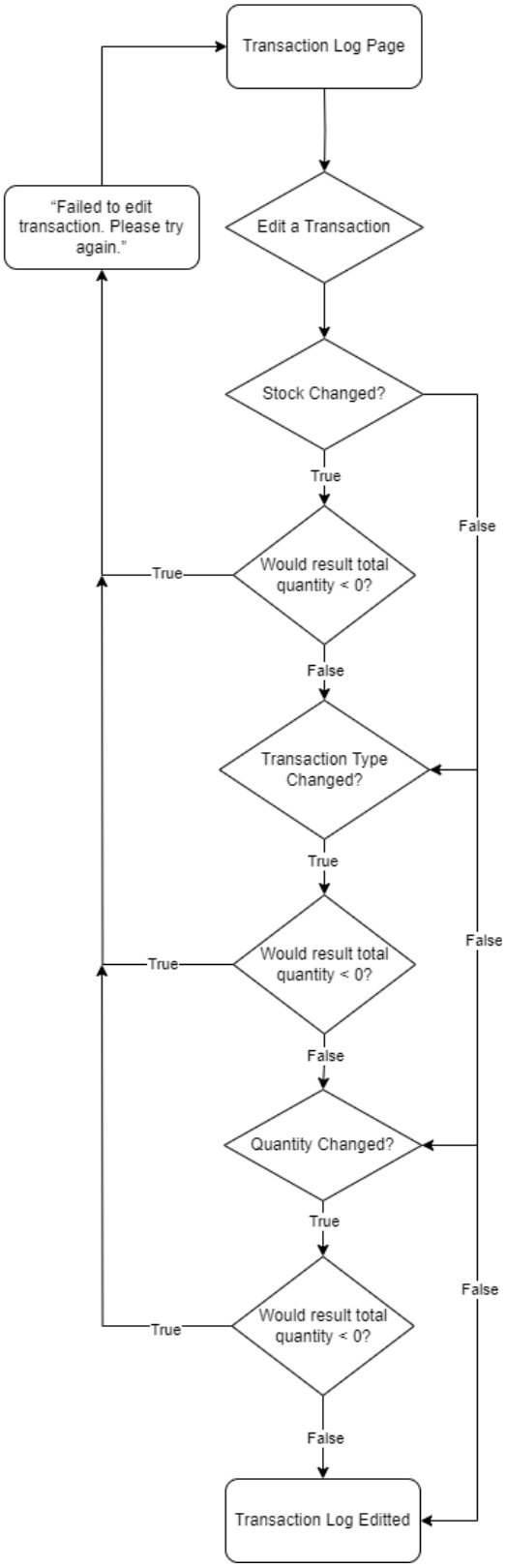
a) Functionality: Register Account



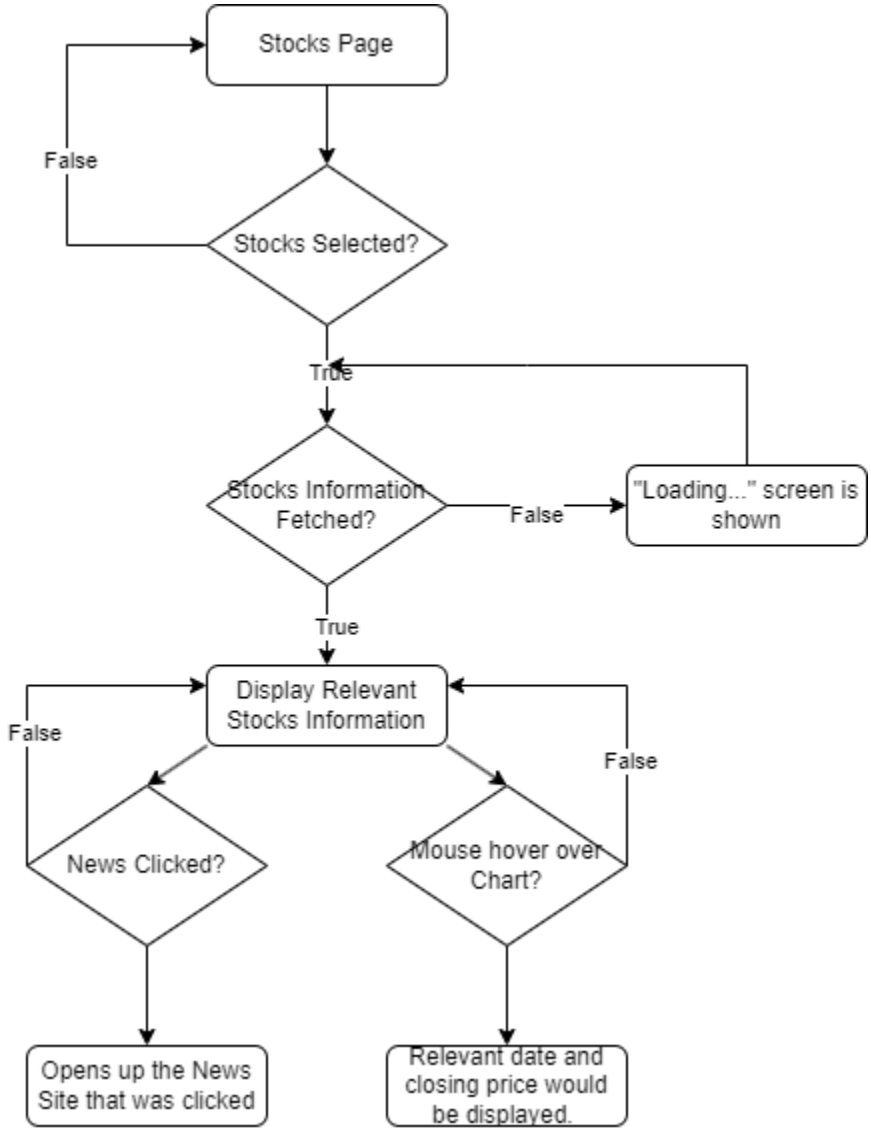
b) Functionality: Transaction Log



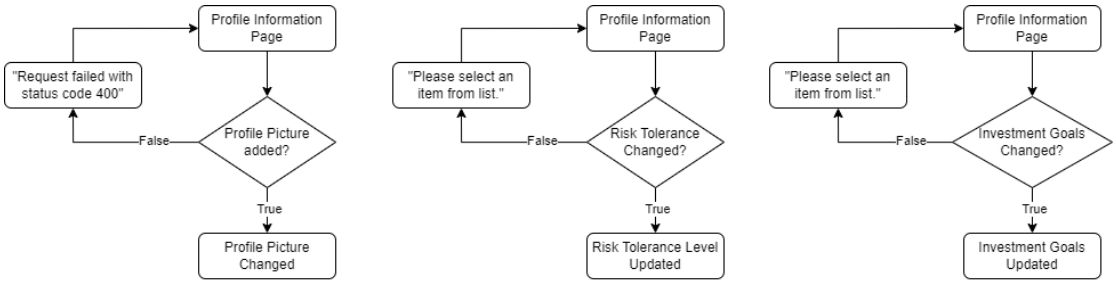


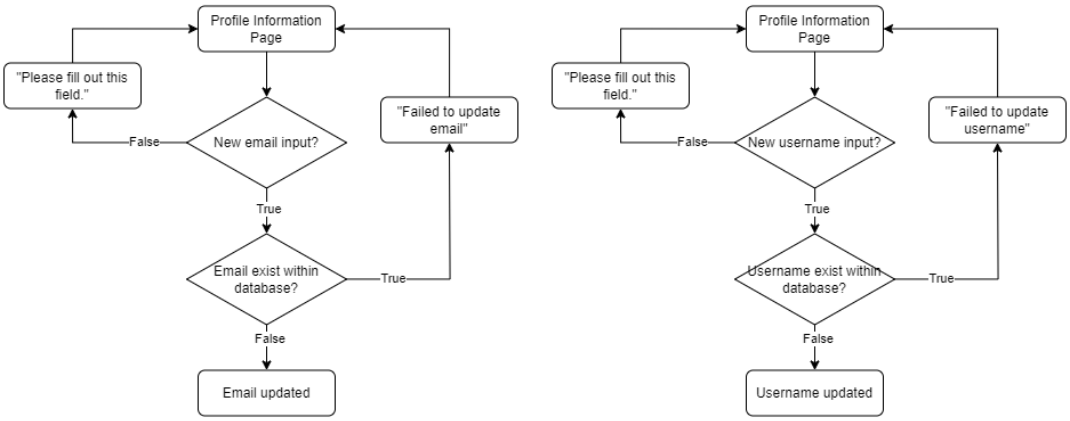


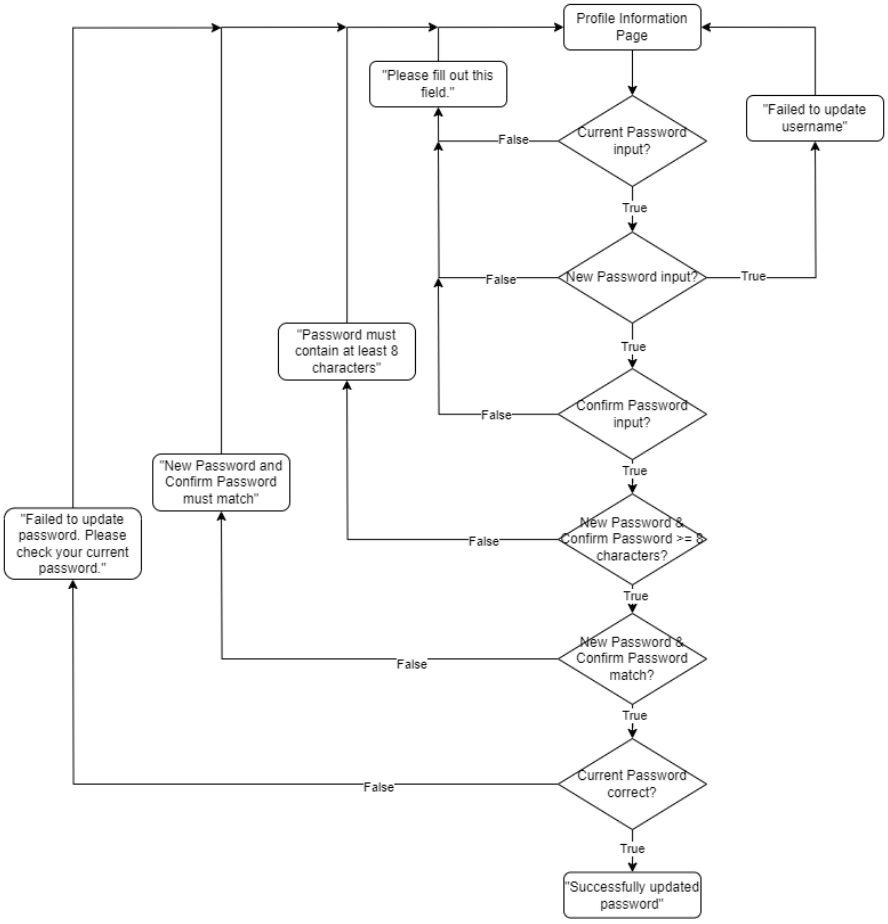
c) Functionality: Stocks



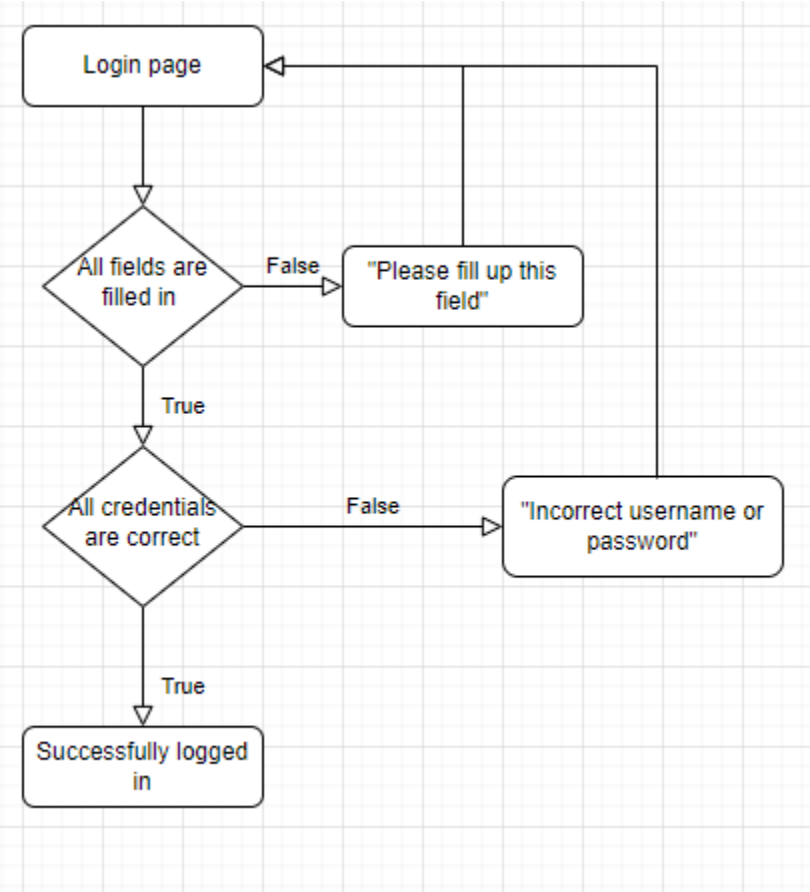
d) Functionality: Profile



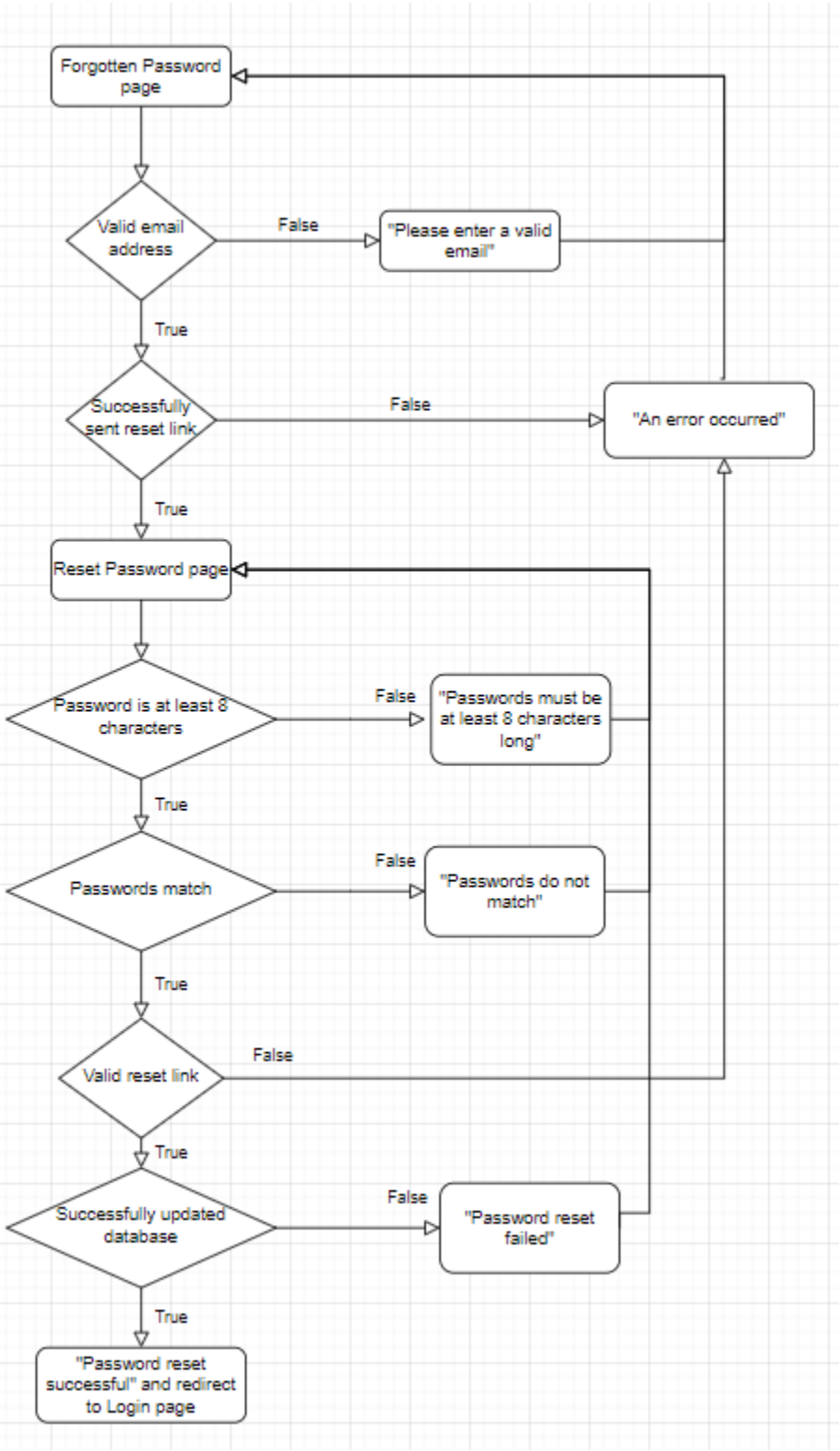




e) Functionality: Login



f) Functionality: Reset Password



Black-box Testing

Functionality: Register

S. No	Action	Inputs	Expected Output	Actual Output	Test Result	Comment
1	Launch	172.21.148.171:3000/register	Landing page	Landing page	Pass	
2	Successful Registration	Email: tester@gmail.com Username: tester123 Password: tester1232 Confirm Password: tester1232	User has registered with the website	User has registered with the website	Pass	
3	Verify error message when username is taken	Email: tester1@gmail.com Username: tester123 Password: tester123 Confirm Password: tester123	“Username is taken”	“Username is taken”	Pass	
4	Verify error message when email is taken	Email: tester@gmail.com Username: tester1234 Password: tester1234 Confirm Password: tester1234	“Email exists”	“Email exists”	Pass	
5	Verify error message when email is invalid	Email: tester Username: tester12345 Password: tester12345 Confirm Password: tester12345	“Email is invalid”	“Email is invalid”	Pass	
6	Verify error message when password is too short	Email: tester12@gmail.com Username: tester123 Password: test1 Confirm Password: test1	“Password should at least be 8 characters long”	“Password should at least be 8 characters long”	Pass	
7	Verify error message when password mismatch	Email: tester123@gmail.com Username: tester123 Password: test1234 Confirm Password: test1235	“Password mismatch”	“Password mismatch”	Pass	

Functionality: Reset Password

S. No	Action	Inputs	Expected Output	Actual Output	Test Result	Comment
1	Launch	Click “Forgotten Password” from Login page	Land on Forgotten Password page	Land on Forgotten Password page	Pass	
2	Email sent	Email: ezrakohsh@gmail.com	“Password reset link has been sent to your email”	“Password reset link has been sent to your email”	Pass	
3	Error message when email is not sent	Email: test@gmail.com	“An error occurred”	“An error occurred”	Pass	
4	Error message when email address is incomplete	Email: tester@	“Please enter a part following ‘@’. ‘tester@’ is incomplete .”	“Please enter a part following ‘@’. ‘tester@’ is incomplete .”	Pass	
5	Error message when email address is invalid	Email: tester	“Please include an ‘@’ in the email address. ‘tester’ is missing an ‘@’.”	“Please include an ‘@’ in the email address. ‘tester’ is missing an ‘@’.”	Pass	
6	Launch	Click on reset link in email inbox	Land on Reset Password page	Land on Reset Password page	Pass	
7	Successfully reset password	New Password: test1234 Confirm Password: test1234	“Password reset successful” then	“Password reset successful” then	Pass	

			redirect to Login page	redirect to Login page		
8	Error message when password is too short	New Password: test Confirm Password: test	“Password should be at least 8 characters long.”	“Password should be at least 8 characters long.”	Pass	
9	Error message when passwords do not match	New Password: test1234 Confirm Password: test1235	“Passwords do not match”	“Passwords do not match”	Pass	
10	Error message when server does not respond	New Password: test1234 Confirm Password: test1234	“Password reset failed”	“Password reset failed”	Pass	
11	Error message when reset password link is not valid	New Password: test1234 Confirm Password: test1234	“An error occurred”	“An error occurred”	Pass	

Functionality: Login

S.No	Action	Inputs	Expected Output	Actual Output	Test Result	Comment
1	Launch	Click Login from navigation bar	Land on Login page	Land on Login page	Pass	
2	Successful Login	Username: ezra Password: testtest	Land on Home page with full navigation bar	Land on Home page with full navigation bar	Pass	
3	Error message when username or password is wrong	Username: test Password: test	“Invalid username or password”	“Invalid username or password”	Pass	

Functionality: Transaction Log

S. No	Action	Inputs	Expected Output	Actual Output	Test Result	Comment
1	GET request	172.21.148.171:3000 /my-transactions	Existing transaction logs from logged in user	Existing transaction logs from logged in user	Pass	
2	POST request	Stocks: AAPL Transaction Type: BUY Quantity: 20 Price: 183	The transaction is appears in the Transaction List	The transaction is appears in the Transaction List	Pass	
3	POST request	Stocks: AAPL Transaction Type: SELL Quantity: 20 Price: 183	“Failed to log transaction. Please try again.”	“Failed to log transaction. Please try again.”	Pass	Assumes there are no transactions.
4	POST request	Stocks: AAPL Transaction Type: BUY Quantity: Price: 183	“Please enter values for Stock, Transaction Type, Quantity, and Price.”	“Please enter values for Stock, Transaction Type, Quantity, and Price.”	Pass	
5	POST request	Stocks: AAPL Transaction Type: BUY Quantity: 20 Price:	“Please enter values for Stock, Transaction Type, Quantity, and Price.”	“Please enter values for Stock, Transaction Type, Quantity, and Price.”	Pass	
6	POST request	Stocks: AAPL Transaction Type: Quantity: 20 Price: 183	“Please enter values for Stock, Transaction Type, Quantity, and Price.”	“Please enter values for Stock, Transaction Type, Quantity, and Price.”	Pass	
7	POST request	Stocks: Transaction Type: BUY Quantity: 20 Price: 183	“Please enter values for Stock, Transaction Type, Quantity, and Price.”	“Please enter values for Stock, Transaction Type, Quantity, and	Pass	

				Price.”		
8	DELETE request	Delete button clicked in Transaction List. Followed by a confirmation “OK”.	Transaction removed from the list.	Transaction removed from the list.	Pass	
9	DELETE request	Delete button clicked in Transaction List. Followed by a confirmation “OK”.	“Delete failed”	“Delete failed”	Pass	Assumes there is a Transaction Type: SELL, where deleting the existing BUY would result in total quantity < 0.
10	PUT request	Edit button clicked in Transaction List. Followed by the Save button.	Transaction edited.	Transaction edited.	Pass	
11	PUT request	Edit button clicked in Transaction List. From: Stocks: **AAPL** Transaction Type: BUY Quantity: 20 Price: 183 To: Stocks: **V** Transaction Type: BUY Quantity: 20 Price: 183	Transaction edited.	Transaction edited.	Pass	
12	PUT request	Edit button clicked in Transaction List. From: Stocks: **AAPL** Transaction Type: BUY Quantity: 20 Price: 183 To: Stocks: **V** Transaction Type: BUY Quantity: 20	“Failed to edit transaction. Please try again.”	“Failed to edit transaction. Please try again.”	Pass	Assumes there is an existing Transaction Type: SELL for Stock: AAPL, where the total quantity < 0.

		Price: 183				
13	PUT request	Edit button clicked in Transaction List. From: Stocks: AAPL Transaction Type: **BUY** Quantity: 20 Price: 183 To: Stocks: AAPL Transaction Type: **SELL** Quantity: 20 Price: 183	“Failed to edit transaction. Please try again.”	“Failed to edit transaction. Please try again.”	Pass	
14	PUT request	Edit button clicked in Transaction List. From: Stocks: AAPL Transaction Type: SELL Quantity: **20** Price: 183 To: Stocks: AAPL Transaction Type: SELL Quantity: **21** Price: 183	“Failed to edit transaction. Please try again.”	“Failed to edit transaction. Please try again.”	Pass	Assumes: Stocks: AAPL Transaction Type: BUY Quantity: 20 Price: 183
15	PUT request	Edit button clicked in Transaction List. From: Stocks: **AAPL** Transaction Type: BUY Quantity: 20 Price: 183 To: Stocks: **V** Transaction Type: BUY Quantity: 20 Price: 183	Transaction edited.	Transaction edited.	Pass	Assumes: Stocks: V Transaction Type: BUY Quantity: 20 Price: 183
16	PUT request	Edit button clicked in Transaction List.	Transaction edited.	Transaction edited.	Pass	Assumes: Stocks: V

		From: Stocks: **AAPL** Transaction Type: BUY Quantity: 20 Price: 183 To: Stocks: **V** Transaction Type: **SELL** Quantity: 20 Price: 183				Transaction Type: BUY Quantity: 20 Price: 183
17	PUT request	Edit button clicked in Transaction List. From: Stocks: **AAPL** Transaction Type: SELL Quantity: **20** Price: 183 To: Stocks: **V** Transaction Type: SELL Quantity: **21** Price: 183	“Failed to edit transaction. Please try again.”	“Failed to edit transaction. Please try again.”	Pass	Assumes: Stocks: V Transaction Type: BUY Quantity: 20 Price: 183
18	PUT request	Edit button clicked in Transaction List. From: Stocks: AAPL Transaction Type: BUY Quantity: 20 Price: **183** To: Stocks: AAPL Transaction Type: BUY Quantity: 20 Price: **283**	Transaction edited.	Transaction edited.	Pass	
19	PUT request	Edit button clicked in Transaction List. From: Stocks: AAPL Transaction Type:				

		BUY Quantity: 20 Price: 183 To: Stocks: AAPL Transaction Type: BUY Quantity: 21 Price: 183				
20	PUT request	Edit button clicked in Transaction List. From: Stocks: AAPL Transaction Type: BUY Quantity: 20 Price: 183 To: Stocks: AAPL Transaction Type: SELL Quantity: 20 Price: 183	Transaction edited.	Transaction edited.	Pass	Assumes: Stocks: AAPL Transaction Type: BUY Quantity: 20 Price: 183

Functionality: Profile Page

S. No	Action	Inputs	Expected Output	Actual Output	Test Result	Comment
1	Navigate to My Profile page	172.21.148.171:3000/my-profile	User's profile information, such as Risk Tolerance Level, Investment Goals, email, username, and profile picture is displayed correctly.	User's profile information, such as Risk Tolerance Level, Investment Goals, email, username, and profile picture is displayed correctly.	Pass	
2	Update Risk Tolerance Level	Select a risk tolerance level from the drop down menu, “Most Optimized” and click update	“Successfully updated risk tolerance” will be displayed and user will be redirected back to the profile page with updated risk tolerance level.	“Successfully updated risk tolerance” will be displayed and user will be redirected back to the profile page with updated risk tolerance level.	Pass	
3	Invalid Risk Tolerance Level	Click on Update Risk Tolerance Level without selecting any option	An error message “Please select an item in the list” will be prompted.	An error message “Please select an item in the list” will be prompted.	Pass	
4	Update Investment Goals	Select a investment goal, “Retirement Planning” from the drop down menu and click update	“Successfully updated investment goals” will be displayed and user will be redirected back to the profile page with updated investment goals.	“Successfully updated investment goals” will be displayed and user will be redirected back to the profile page with updated investment goals.	Pass	
5	Enter Invalid Investment Goals	Click on Update Investment Goals without selecting any option	An error message “Please select an item in the list” will be prompted.	An error message “Please select an item in the list” will be prompted.	Pass	
6	Update Email	Enter “test@gmail.com” and click Update Email	“Successfully updated email” will be displayed and user will be redirected back to the profile page with updated email	“Successfully updated email” will be displayed and user will be redirected back to the profile page	Pass	

				with updated email		
7	Enter Invalid Email	Enter “test” and click Update Email	An error message “Please include an ‘@’ in the email address. ‘Test’ is missing an ‘@’. “ will be prompted.	An error message “Please include an ‘@’ in the email address. ‘Test’ is missing an ‘@’. “ will be prompted.	Pass	
8	Enter Empty Email	Click Update Email without entering anything	An error message “Please fill out this field” will be prompted.	An error message “Please fill out this field” will be prompted.	Pass	
9	Update Username	Enter “testtitans”	“Successfully updated username” will be displayed and the user will be redirected back to the profile page with updated username.	“Successfully updated username” will be displayed and the user will be redirected back to the profile page with updated username.	Pass	
10	Enter Existing Username	Enter existing username “Jai”	An error message “Failed to update username” will be displayed.	An error message “Failed to update username” will be displayed.	Pass	
11	Update Password	Enter correct current password and “password123” for new password and confirm password	“Successfully updated password” will be displayed.	“Successfully updated password” will be displayed.	Pass	
12	Enter Empty Password	Click Update password without entering anything	An error message “Please fill out this field” will be prompted.	An error message “Please fill out this field” will be prompted.	Pass	
13	New password and Confirm password mismatch	Enter correct current password and “password123” for new password and “password12” for confirm password.	An error message “New Password and Confirm Password must match” will be displayed.	An error message “New Password and Confirm Password must match” will be displayed.	Pass	
14	Enter Password length <8	Enter correct current password and “pass” for new password and confirm password	An error message “Password must contain at least 8 characters” will be displayed.	An error message “Password must contain at least 8 characters” will be displayed.	Pass	
15	Enter	Enter wrong	An error message “Failed	An error message	Pass	

	wrong current password	password and click Update password	to update password. Please check your current password.” will be prompted	“Failed to update password. Please check your current password.” will be prompted		
16	Update Profile Picture	User uploads a new profile image	The profile picture is updated, and the user is redirected back to the profile page with updated picture	The profile picture is updated, and the user is redirected back to the profile page with updated picture	Pass	

Functionality: Stock

S. No	Action	Inputs	Expected Output	Actual Output	Test Result	Comment
1	Navigate to Stocks Page	http://172.21.148.171:3000/stocks	The list of top-50 blue-chip stocks is displayed.	The list of top-50 blue-chip stocks is displayed.	Pass	
2	Look at a specific stock “AAPL”	User clicks on a “AAPL” stock from the list.	Displays detailed information about “APPL”, including a chart.	Displays detailed information about “APPL”, including a chart.	Pass	
3	Select one of the top 3 news at current time	From Recent News, select the news “ChatGPT: Everything you need to know about the AI-powered chatbot” .	It will open up a new site,	A new site was opened “https://finance.yahoo.com/news/chatgpt-everything-know-ai-powered-210339686.html”	Pass	The information displayed would not be the same as it is real-time information hence what I clicked might not be the same later on.
4	Hover over the “AAPL” stock’s chart.	Hover over the stock data chart for “AAPL”.	Relevant date and closing price would be displayed.	In this case, “(Jul 2023, 189.77)”	Pass	
5	Attempt to close the stock “AAPL”	User clicks the close button on the stock modal.	The modal closes, and the user is back on the Stocks page.	The modal closes, and the user is back on the Stocks page.	Pass	
6	User Interaction with Stock List	User hovers over a stock in the list	The stock's background color changes to indicate interactivity	The stock's background color changes to indicate interactivity	Pass	

Functionality: Optimize

S. No	Action	Inputs	Expected Output	Actual Output	Test Result	Comment
1	Navigate to Optimize Page	http://172.21.148.171:3000/optimise	A blank page telling you your pre-selected risk tolerance level. A button that allows you to start the optimization process	A blank page telling you your pre-selected risk tolerance level. A button that allows you to start the optimization process	Pass	
2	Press the Button “Generate Optimized Portfolio”	User clicks on the Button “Generate Optimized Portfolio”	Displays detailed information about the top stocks to purchase, what percentage of each stock to purchase and the reasoning behind the same using financial metrics	Displays detailed information about the top stocks to purchase, what percentage of each stock to purchase and the reasoning behind the same using financial metrics (however takes about 40 seconds to load).	Pass	
3	Hover over the “Optimal Portfolio Allocation” Pie Chart	Hover over the “Optimal Portfolio Allocation” Pie Chart	Your optimized portfolio with percentage allocations of how much each stock you should buy will be displayed. Moreover, a detailed reasoning will be provided along it	Your optimized portfolio with percentage allocations of how much each stock you should buy will be displayed. Moreover, a detailed reasoning will be provided along it	Pass	
4	Hover over the	Hover over the	The change	The change in	Pass	

	“Historical Stock Prices for our Chosen Stocks” line chart	“Historical Stock Prices for our Chosen Stocks” line chart	in stock prices in the past 15 years for the top 10 stocks found using sentiment analysis will be displayed. There will be an option to download the chart.	stock prices in the past 15 years for the top 10 stocks found using sentiment analysis will be displayed. There will be an option to download the chart.		
5	Hover over the “Portfolios in terms of Risk and Return” scatter plot chart	Hover over the “Portfolios in terms of Risk and Return” scatter plot chart	.A scatter plot with 10,000 points each representing a portfolio in terms of its sharpe ratio (expected return / expected volatility) will be displayed. Higher sharpe ratio portfolios will be color coded to lighter green on an index. There will be an option to download the chart.	A scatter plot with 10,000 points each representing a portfolio in terms of its sharpe ratio (expected return / expected volatility) will be displayed. Higher sharpe ratio portfolios will be color coded to lighter green on an index. There will be an option to download the chart.	Pass	