Project:Stock Trading System (STS)
Team No.:Team 6
Class:CSE 3310; Fall 2010 Module:System Requirements Analysis (SRA) Deliverable:SRA Document

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Revision History

Version number	***Date***	***Originator***	***Reason for change***	***High level description of changes***
1.0	10/07/2010	Team 6	Initial draft	
1.1	12/9/2010	Team 6	Final Draft	

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1. Introduction and Project Overview

Group 6 Software Solutions has been employed by Students of UTA (SUTA) to design and implement a software application for a small brokerage company with multiple locations across the United States. This web-based application should allow their customers to perform various stock related activities such as checking stock prices and news, buying and selling stocks. SUTA would like to have the system up and operational during the first week in December of 2010 just in time for the 2011 trading year. In addition to the minimum set of requirements listed below, they are open to any recommendations in functionality as well as look & feel of the application.

2. Objectives

2.1 BUSINESS OBJECTIVES

The following is a list of business objectives:

Objective 1: System will require registration and will be password protected.

Objective 2: “Account Setup” functionality must be supported that includes the following customer data:

- First Name, Middle Name {Optional}, Last Name
- Home and Mailing Addresses
- E-mail Address
- Social Security Number
- Two Phone Numbers
- Marital Status
- Beneficiary Name, Beneficiary SSN, and Beneficiary Relationship

Objective 3: “Account Maintenance” functionality must be supported that allows user to close account and edit personal information and includes the following customer data:

- First Name, Middle Name {Optional}, Last Name
- Home and Mailing Addresses
- E-mail Address
- Social Security Number
- Two Phone Numbers
- Marital Status
- Beneficiary Name, Beneficiary SSN, and Beneficiary Relationship

Objective 4: “Cash Management” functionality must be supported that allows user to withdraw and deposit money and includes the following customer data:

- Transaction type
- Amount
- Account Number

Objective 5: “Quotes” functionality must be supported that displays the following quotes:

- Current
- Past
- Watched

Objective 6: “Transaction” functionality must be supported that includes the following types:

- Buying stock
    - Market Price
    - Good-till-Cancel
- Selling Stock
    - Market Price
    - Stop Loss
    - Good-till-Cancel

2.2 SYSTEM OBJECTIVES

The following is a list of system objectives:

Objective 1: System will be Web-based.

Objective 2: MySQL will be used as the database.

Objective 3: GoDaddy will be used for webhosting.

Objective 4: System will use PHP.

Objective 5: System will support Internet Explorer.

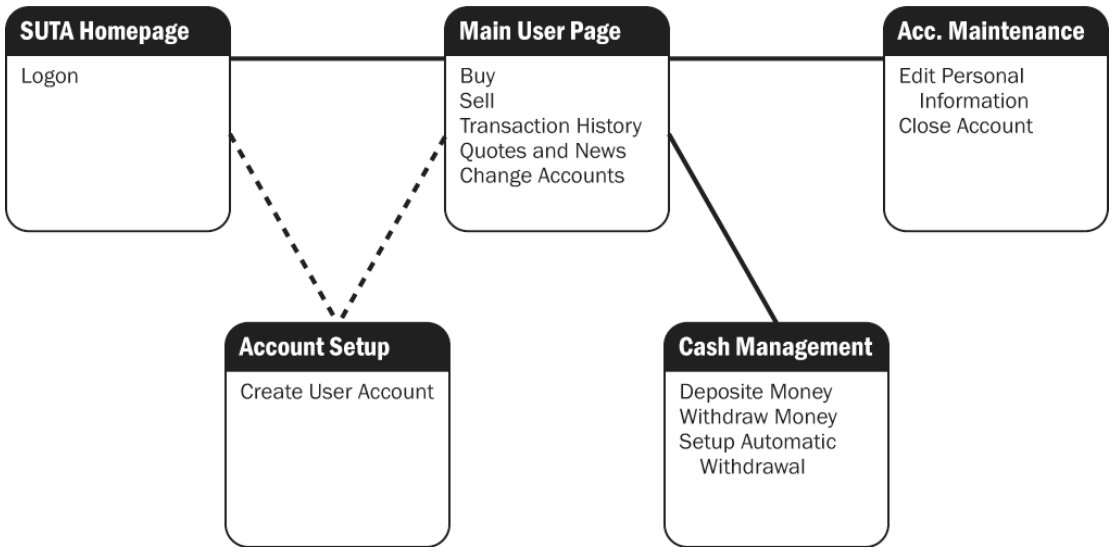
Objective 6: User interface will be intuitive.

3. Project Context Diagram

3.1 CONTEXT DIAGRAM

The context diagram displays all high-level components.

3.2 CONTEXT DIAGRAM UML



4. Systems Requirements

4.1 Requirements Overview

The following are the requirements for each component of our system.

4.2 "Quotes" Requirements

Requirement Title:	Quotes
Sequence No:	001
Short description:	Display currently owned stock quotes, previously owned stock quotes, watched stock quotes and quote lookup
Description:	The system will display all currently owned stock quotes by querying a database on a regular basis. The system will display all previously owned stock quotes by querying a database on a regular basis. The system will display all watched stock quotes by querying a database on a regular basis. User will proceed to add/remove quotes from his/her watched list by providing the following fields: - Action: {Click Button: Add or Remove} - Stock Symbol:{Stock Symbol to be Added only} All quotes will be updated in real time as the user uses the page. An add/remove confirmation will be automatically generated and displayed on the screen. The system will automatically move a stock to the current list when it is bought from the watch list. The system will automatically move a stock to the previous list when it is sold from the current list. The system will automatically move a stock to the current list when it is bought from the history list. The system will automatically move a stock to the current list when it is bought initially.
Pre-Conditions:	- The user must logon before performing this function - The database must be loaded at user login
Post Conditions:	- The quotes database will be saved when the user logs off
Other attributes:	- Make sure multiple click does not yield multiple adds - A link to symbol look up will be provided in case the user does not know the stock symbol.

4.3 “LOGIN AND SECURITY” REQUIREMENTS

Requirement Title:	Log on
Sequence No:	001
Short description:	Log on to the system
Description:	User will enter user name and password then press submit. If the user does not have an account, a link to create account will be provided. If the user name and password fields are not provided, the user will be notified to fill in the appropriate fields. The user name is checked against the list of user names in the database. If the user name is a match to one in the database, then the password will also be checked. If the user name or password, the user will be asked to verify and resubmit their user name and password.
Pre-Conditions:	-There must not be a user currently logged in to the system from that computer.
Post Conditions:	-The user will be taken back to the main user screen when he successfully logs in
Other attributes:	-The user will only be allowed up to four attempts to login. The system will offer to reset password after the fourth attempt.

4.4 "ACCOUNT SET UP" REQUIREMENTS

Requirement Title:	Account Setup
Sequence No:	001
Short description:	Functionality to set up a user account
Description:	User will proceed to setup his account by providing the following: - First Name, Last Name - SSN - Date of Birth - Street Address, City, State, Zip Code - Phone 1, Phone 2 - Email - Marital Status - Beneficiary Name, Beneficiary SSN, and Beneficiary Relationship The system will assign an account number automatically. A confirmation page will be displayed to make sure all the information is entered correctly. The user will be able to press cancel at any point during the account setup process.
Pre-Conditions:	- The user must not have an account. - The user must have a valid bank account. - The user must be 18 years of age.
Post Conditions:	- A confirmation page will be displayed or an error message displayed to show whether or not the account setup was successful.
Other attributes:	- Will check that each input field has valid data if being changed (won't allow letters in the phone number field etc) - Error message will be displayed if changes were not completed - Confirmation message will be displayed if the changes were completed

4.5 "ACCOUNT MAINTENANCE" REQUIREMENTS

Account maintenance requirements follow in sequence for editing personal information and closing accounts.

4.5A "ACCOUNT MAINTENANCE" REQUIREMENT 1 EDIT PERSONAL INFO

Requirement Title:	Account Maintenance
Sequence No:	001
Short description:	Edit Personal Account Information
Description:	"Account Maintenance" page will display an option to "Edit Personal Information". Once the user selects "Edit Personal Information" the user will have the option to change the following fields: First Name, Last Name, SSN, Date of Birth, Street Address, City, State, Zip Code, Phone 1, Phone 2, Email, Marital Status, Beneficiary Name, Beneficiary SSN, and Beneficiary Relationship. Once the user is finished changing the fields the user can either choose to confirm or cancel the changes. If "Confirm" is selected the changes will be save to the database a conformation message will be displayed and user will be taken back to the "Main User" page. If "Cancel" is selected no changes will be saved and the user will be taken back to the "Account Maintenance" page.
Pre-Conditions:	- User must logon before performing this function. - User must select "Edit Personal Information" button
Post Conditions:	- User must have filled out the appropriate field in which they chose to edit - User must confirm their changes - After conformation changes will be saved to the database and user will be returned to the main user page
Other attributes:	- Will check that each input field has valid data if being changed (won't allow letters in the phone number field etc) - Error message will be displayed if changes were not completed - Conformation message will be displayed if the changes were completed

4.5B "ACCOUNT MAINTENANCE" REQUIREMENT 2 CLOSE ACCOUNT

Requirement Title:	Account Maintenance
Sequence No:	002
Short description:	Close Account
Description:	"Account Maintenance" page will display an option to "Close Account". Once the user selects the option to "Close Account" the system will ask the user if he wishes to sell all stocks. If the user confirms, the system will sell all stocks at market price. If user cancels the system will display message "You must sell all stocks to close account" The system will then refund all money to user's bank account and display a conformation. User will be asked to "confirm" or "cancel" closing account. If "Confirm" is selected the user will be deleted from the database, a confirmation message will be displayed and user will be logged out and taken to "thank you" page. If "Cancel" is selected user will be taken back to the "Account Maintenance" page.
Pre-Conditions:	- User must logon before performing this function. - User must select "Close Account" button
Post Conditions:	- System will sell stocks - System will refund accounts - User must confirm their changes - After conformation user will be deleted from database and logged out - If user cancels, user will still have account but will have no stocks or cash in account
Other attributes:	- Error message will be displayed if function cannot be completed - Conformation message will be displayed if the functions were completed - System will not re-use account numbers

4.6 "CASH MANAGEMENT" REQUIREMENTS

Requirement Title:	Cash Management
Sequence No:	001
Short description:	Credits and Debits to Cash Account
Description:	User will proceed to deposit and withdraw cash from account by providing the following fields: - Action: {Button: Deposit or Withdraw} - Amount:{Amount to be deposited or withdrawn} - Account Number: {Bank Account number to be credited to or debited from} Above information together with today's date and customer's account number is packaged and sent to the server upon pressing the "Submit" button. An order confirmation will be automatically generated and displayed on the screen. Customer will be encouraged to print or write down this screen. User can press cancel to ignore this deposit or withdrawal. A cancel confirmation message will be displayed. The system will withdraw money from the account when a stock is bought. The system will deposit money into the account when a stock is sold.
Pre-Conditions:	- The user must logon before performing this function - The user must have cash in his account before he/she can buy stock
Post Conditions:	- An order confirmation number will be issued or an error message displayed in case credit/debit did not take place
Other attributes:	- Make sure multiple click does not yield multiple transactions - US Currency Only - Must verify to see if sufficient funds exist to proceed with deposit - Must verify to see if sufficient funds exists to proceed with withdrawal - Must verify to see if sufficient funds exists to proceed with purchase of stock - User must be notified if he/she is required to make a deposit when a stock is sold - A print functionality will be provided (to print order confirmation)

4.7 "INFRASTRUCTURE MANAGEMENT" REQUIREMENTS

Requirement Title:	Infrastructure Management
Sequence No:	001
Short description:	Requirements for the back-office administration such as maintaining Database and Web hosting.
Description:	The system will use GoDaddy for web hosting. The system will use MySQL for the database.
Pre-Conditions:	Group 6 has a GoDaddy Account.
Post Conditions:	The system will have a working website.
Other attributes:	The system will not take into consideration Networking Issues.

4.8 "Transaction Management" Requirements

Transaction management requirements follow in sequence for purchasing and selling stocks.

4.8a "Transaction Management" Requirement 1 purchase stock

Requirement Title:	Trade
Sequence No:	001
Short description:	Purchase Stock
Description:	User will proceed to purchase stocks by providing the following fields: -Stock symbol (In case they do not know the stock symbol, a link to look up symbol will be provided) -Order Type (Buy Now or good-till-cancel) -Price (Applicable for good-till-cancel orders only) Above information is packaged together with the current date and customer account number and sent to the server upon pressing the "Buy" button. An order confirmation number will be automatically generated and displayed on the screen with an option to print or email a confirmation to the customer. Customers will be informed to check the status of their order by going to the "Order Status" page, a link will be provided.
Pre-Conditions:	-User must logon before performing this function -The most current stock quote that the customer is requesting to purchase will be displayed before purchase
Post Conditions:	-An order conformation number will be displayed or an error message if the order did not take place -User will be informed with a message to select order status to see the status of the order -Market orders will be canceled at the end of the trading day if they are not filled -Users transaction history will be updated
Other attributes:	-Make sure multiple clicks do not yield multiple transactions -US stocks only -Must verify to see if sufficient funds exits to proceed with purchase -A print and email function will be provided for conformation -A link to symbol look up will be provided

4.8B "TRANSACTION MANAGEMENT" REQUIREMENT 2 SELL STOCK

Requirement Title:	Sell
Sequence No:	001
Short description:	Sell Stock
Description:	User will proceed to sell stocks by providing the following fields: -Number of shares to sell -Stop-Loss Price if (user wishes to use this option) A pop up will ask user to confirm transaction upon pressing the "sell" button. Above information is packaged together with the current date and customer account number and sent to the server upon pressing the "yes" button. An order confirmation number will be automatically generated and displayed on the screen with an option to print or email a confirmation to the customer. Display message will give the detail of the transaction or let the customer know the transaction is still pending. Customers will be informed to check the status of their order by going to the "Order Status" page, a link will be provided.
Pre-Conditions:	- User must logon before performing this function - The most current stock quote that the customer is requesting to sell will be displayed before purchase
Post Conditions:	- An order conformation number will be displayed or an error message if the order did not take place - User will be informed with a message to select order status to see the status of the order - Requests to sell will be canceled at the end of the trading day if they are not filled - Users transaction history will be updated
Other attributes:	- Make sure multiple clicks do not yield multiple transactions - US stocks only - Must update balance to account for the stocks sold - A print and email function will be provided for confirmation

5. Software Processes and Infrastructure

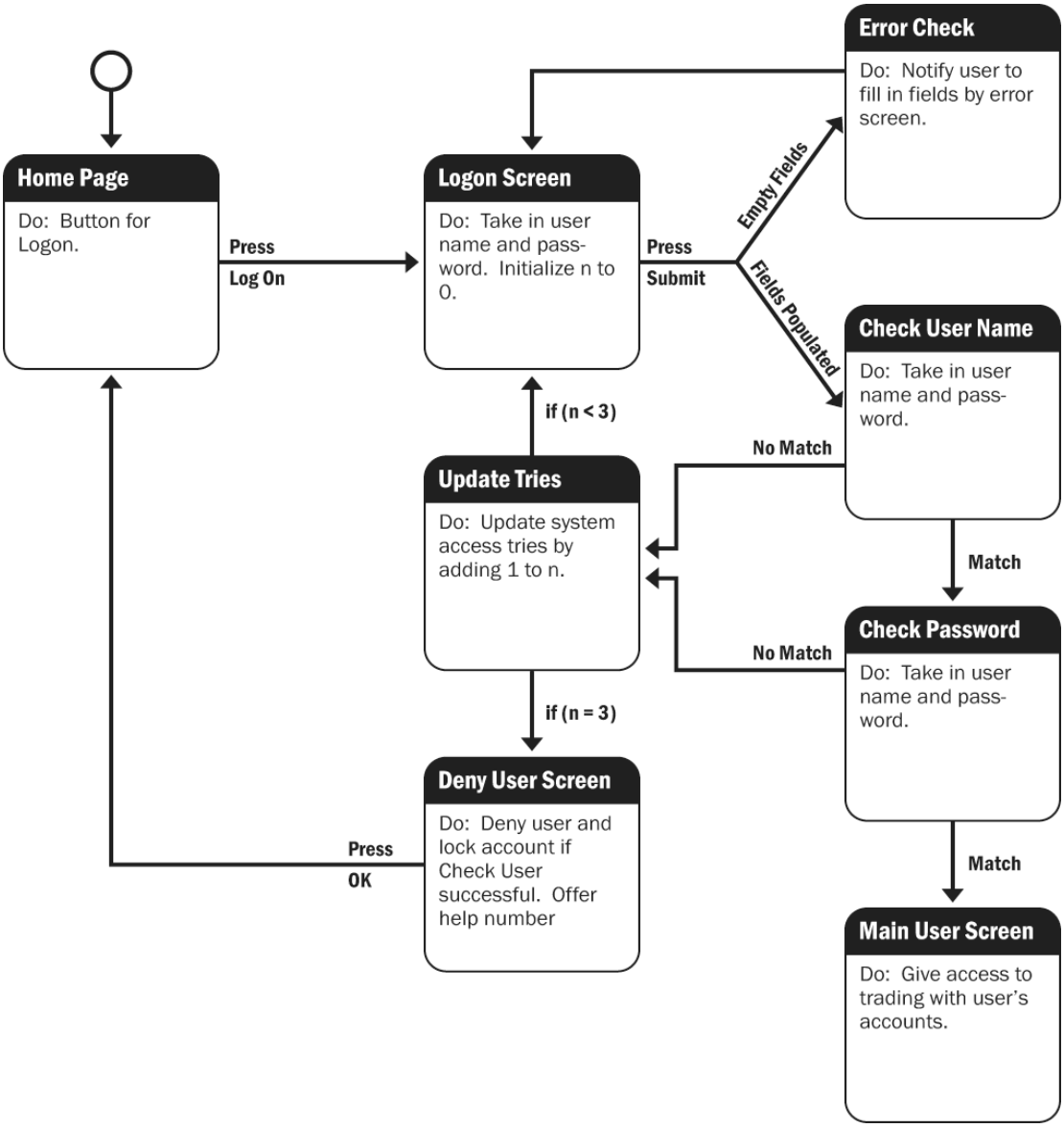
5.1 Hardware and Infrastructure

This system will use Go Daddy for webhosting.

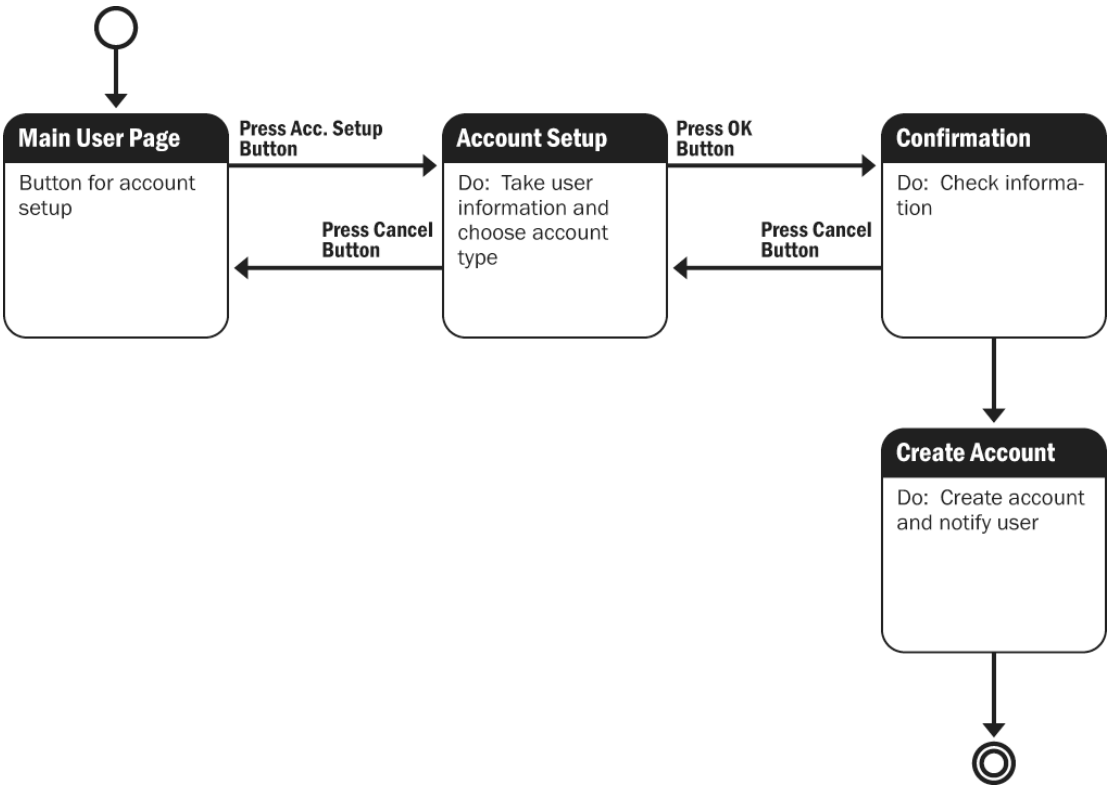
5.2 UML Diagrams

UML diagrams for the system's components.

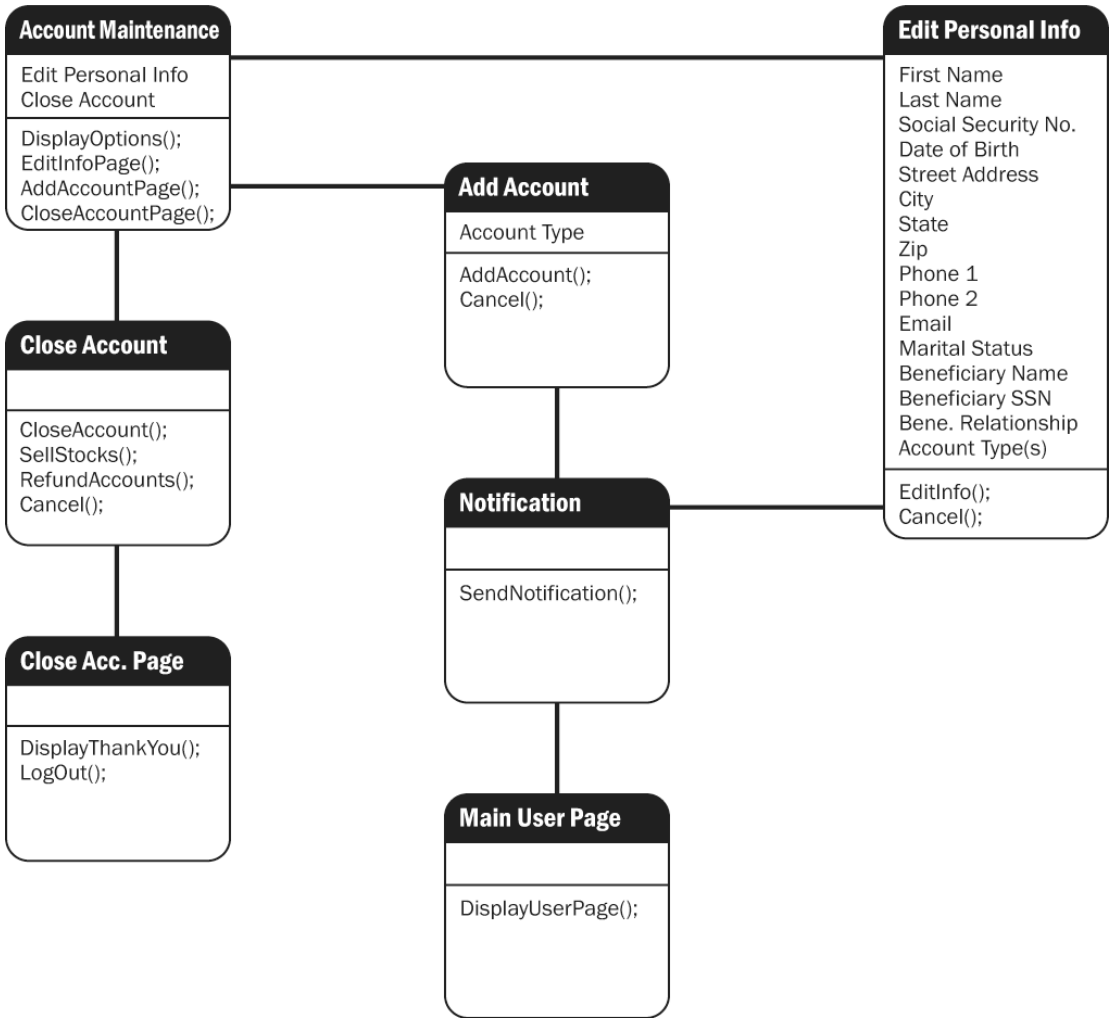
5.3 Logon UML



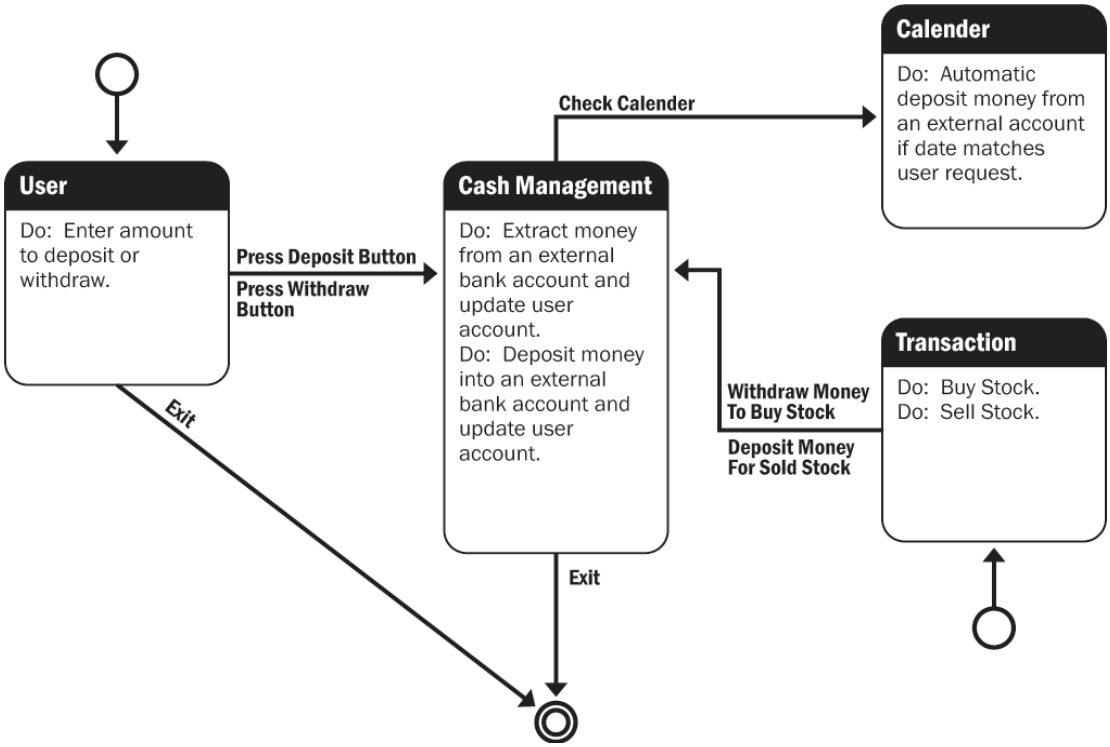
5.4 ACCOUNT SETUP UML



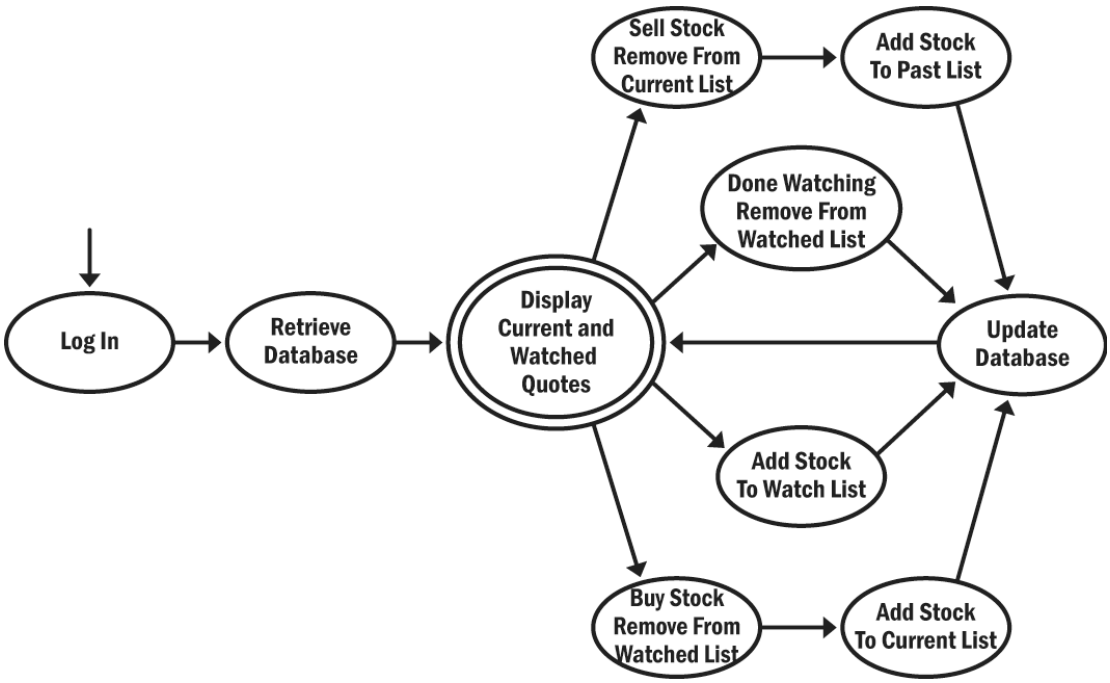
5.5 ACCOUNT MAINTENANCE UML



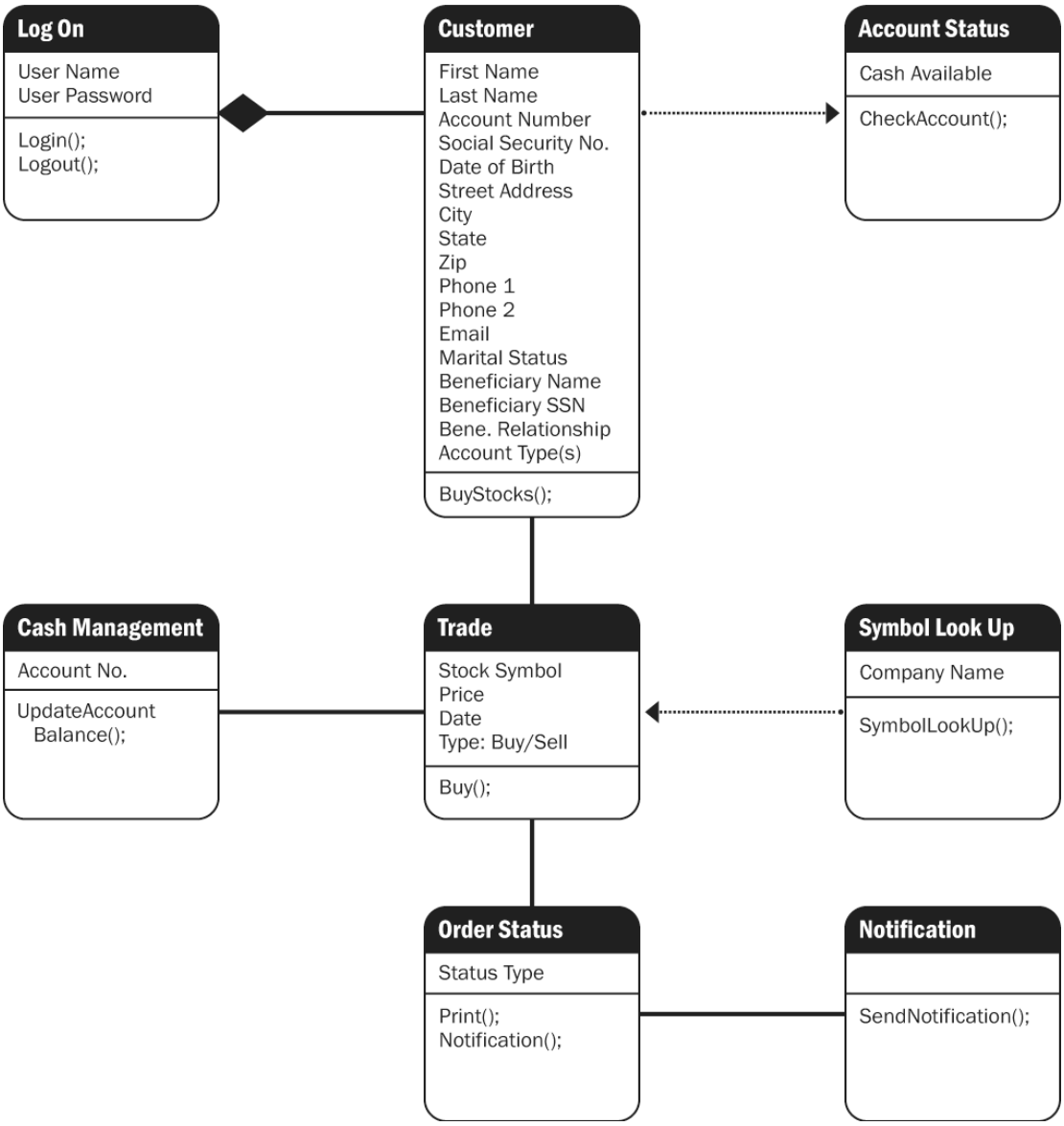
5.6 CASH MANAGEMENT UML



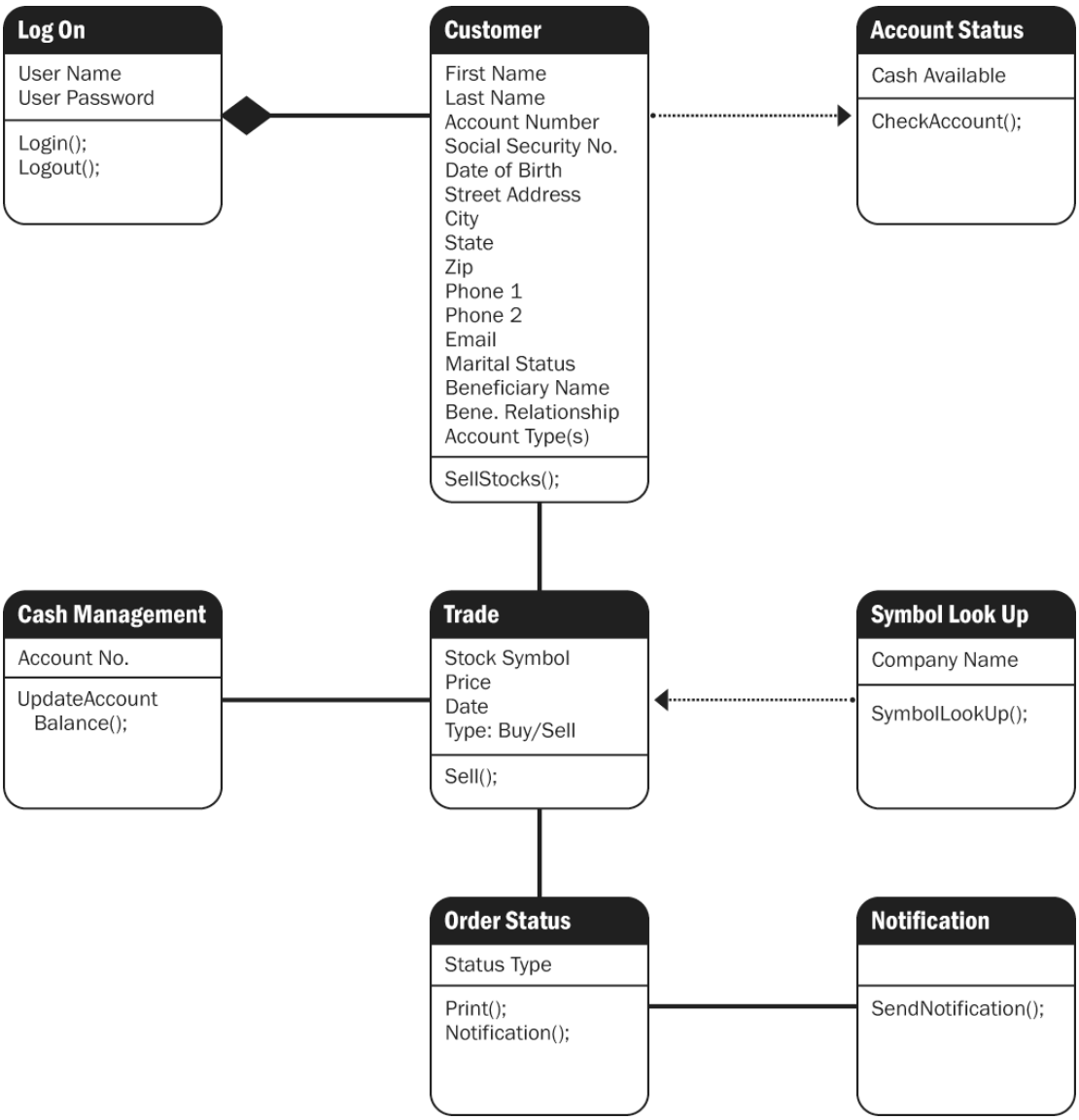
5.7 QUOTES UML



5.8 BUY STOCKS UML



5.9 SELL STOCKS UML



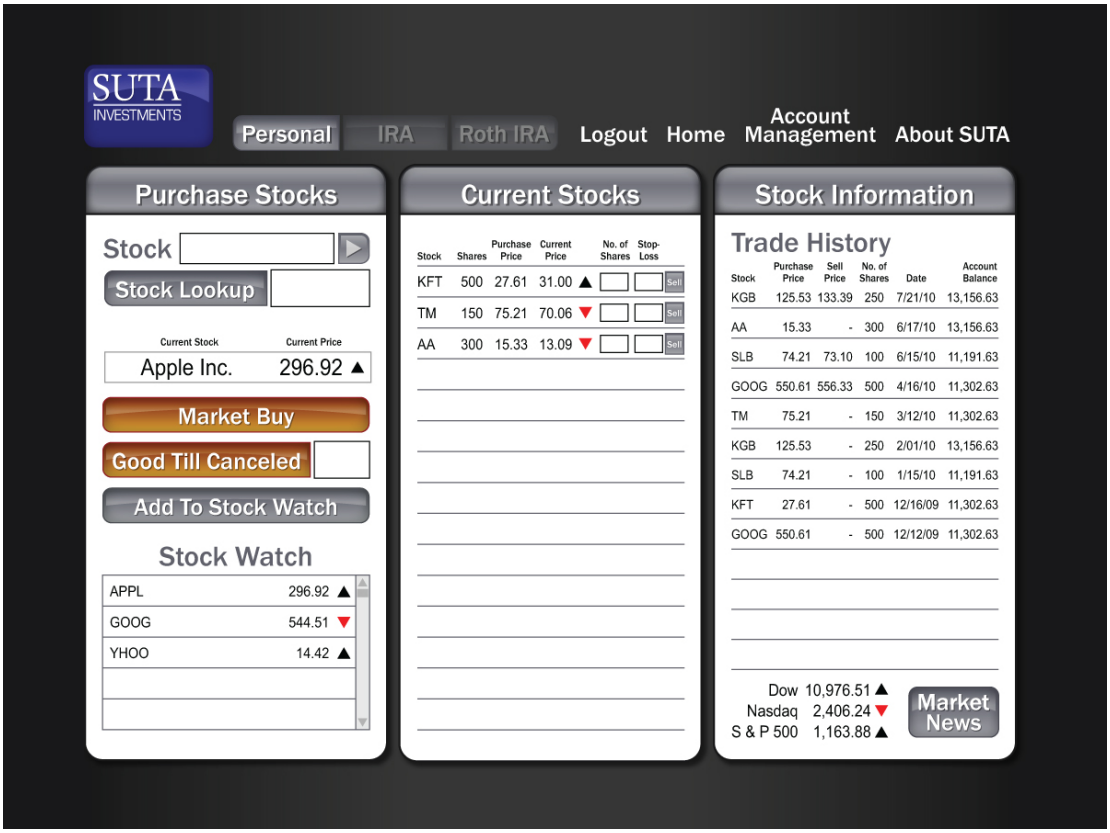
5.10 CONCEPTUAL DATA MODEL - DATABASE

Not required.

5.11 SCREEN SHOTS

Complete Screen shots provided in Section 4 of the binder in the User Manual.

5.12 Main User Page Screen Shot



5.13 Test Plan

Test plan is in Section 3 of the binder.

6. Assumptions and Constraints

6.1 ASSUMPTIONS

The following is a list of assumptions:

- Only US stock markets are considered.
- Only people older than 18 can open an account.
- Ignore any network issues.
- Ignore any contract negotiation and legal concerns.
- Ignore post project maintenance issues.
- Ignore tax reporting to IRS.

6.2 CONSTRAINTS

The following is a list of constraints:

- Team lacks database expertise; training is in progress
- Team consists of full time students and students with full time jobs.

6.3 OUT OF SCOPE MATERIAL

The following is a list of “out of scope” material:

- Post Project maintenance is not covered

7. Delivery and Schedule

Task/Milestone Description	Anticipated Start Date	Anticipated End Date	Status	Comments
Prepare Requirements and UML diagram	9-15-2010	10-14-2010	Completed	
SRA document (Includes project objectives, Requirements and UML diagrams)		10-14-2010	Completed	Deliverable will be the SRA document. All stakeholders agree on the content of the SRA by signing in section 8.
Presentation of SRA		10-14-2010	Completed	Our group presents first on the second day of presentations.
Web page design and Navigation		11-15-2010	Completed	
Database Design		11-15-2010	Completed	
Test Data Entry		12-1-2010	Completed	
Test Plan Delivery		12-9-2010	Completed	
External Documentation (i.e. User Manual)		12-9-2010	Completed	
Final Milestone: project delivery		12-9-2010	Completed	

8. Stakeholder Approval Form

Stakeholder Name	Stakeholder Role	Stakeholder Comments	Stakeholder Approval Signature and Date
Bahram Khalili	Development Mgr		
Kapil Vyas	Project Assistant		
James Faucher	Developer		
Shawn Gieser	Developer		
Rebeka Halbert	Developer		
Mark Madolora	Developer		

Appendix:

None