



# Bank Project

## CS 611 Final Project

George Padavick, Shilpen Patel, Justin DiEmannuele, Matt Gilgo

# Requirements Specification



- **Generic Requirements:**
  - There will be two types of users interfacing with the bank: a Customer and Manager that will each have secure login credentials.
  - Users should be able to easily navigate the functionalities of the Bank through an easy to use Graphical User Interface (GUI)
- **Customer Requirements:**
  - Must be able to create/delete checking, savings, trading, and loan accounts
  - Must be able to manipulate each type of account
- **Manager Requirements:**
  - Must be able to see who the customers are and see what transactions the customers have made
  - Must be able to maintain and manipulate the stock market
- **Account Requirements:**
  - There should be four types of accounts: Savings, Checking, Loans, and Brokerage accounts
- **Stock Market Requirements:**
  - The Bank Manager would like the bank to offer brokerage services to customers who have accounts that satisfy certain metrics.
  - Customers with brokerage accounts should be able to trade stocks in the stock market and see realized and unrealized gains
- **Persistence Requirement**
  - if bank service goes down, the user information/money should not go away

# Database Design

- Five tables developed to retain information needed for application
  - Users - all users including Customers and Managers
  - Accounts - stores all accounts include savings, checking, stocks, and loan accounts
  - Transactions - log of all transactions in the database including withdrawals, deposits, stock trades
  - Stocks - master list of stocks, allows manager to update stock prices
  - Stocks owned - manages stock trading capability by tracking the current shares for each user

users		accounts		transactions		stocks		stocks_owned	
PK	<u>user_id</u>	PK	<u>account_id</u>	PK	<u>transaction_id</u>	PK	<u>stock_id</u>	PK	<u>stock_instance_owned_id</u>
	user_type		user_id		transaction_type		stock_ticker		account_id
	username		account_type		transaction_amount		stock_price		stock_id
	password		balance		timestamp				cash_balance
			currency_name		account_id				stock_buy_price
			currency_symbol						num_shares

# GUI Design

- Preliminary GUI layouts were generated using powerpoint to map out what the user should be able to see and how the user experience will flow
- Finalized GUI's are shown:

The image displays four overlapping GUI window mockups for a financial system, each with a standard macOS-style title bar (red, yellow, green buttons).

- Login Window:** Features two input fields labeled "Username" and "Password". At the bottom, there are two buttons: "Login" and "Create User".
- Account Creation Portal:** Includes a "Create Manager" button at the top. Below it are several form fields: "Account Currency" (dropdown menu showing "USD"), "Account Type" (dropdown menu showing "C"), "Deposit Ammount" (text input), "Account Fee" (displaying "\$1.0"), and "Account to charge" (dropdown menu showing "0"). A "Create Account" button is at the bottom.
- Manager Account Portal:** Shows a "Bank Balance" (displaying "\$"), a "User Selection" dropdown menu (showing "1 C mattg"), and a vertical list of buttons: "See User Transactions", "See User Stocks", "See User Information", "See All Transactions", "See All Stock Holdings", and "See All Users Information".
- Customer Account Portal:** Features a "Select Account:" dropdown menu (showing "0"), a "Balance:" label, a "Withdrawal/Deposit Amount" text input, and "Deposit" and "Withdrawal" buttons. Below these are buttons for "See Transactions", "Open New Account", and "Stock Portal".
- Stock Market Interface:** Displays "Equity \$" and "Stock" labels. It includes a dropdown menu (showing "BTC"), a "Number of Shares" text input, a "Bank Account" dropdown menu (showing "ex user 1"), and "Buy" and "Sell" buttons. At the bottom are buttons for "See Buys/Sells" and "See Portfolio".





# Demo