

Rags to Riches

Software Engineering

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0 INDIVIDUAL CONTRIBUTIONS BREAKDOWN

0.1 Responsibility Matrix

	Team Members						
	Alejandro Aguilar	Arjun Ohri	Deep Patel	Kartik Patel	Elisa-Michelle Rodriguez	William He	Bryan Benalcazar
Project Management (10 points)	50%			50%			
Sec.1: CSR (9 points)	5 %	30 %	5 %	40 %	5 %	5 %	10 %
Sec.2: System Reqs (6 points)	10 %	15 %	50 %			25 %	
Sec.3: Functional Reqs Specification (30 points)	7%	20%	13%	17%	16%	13%	14%
Sec.4: UI Specs (15 points)	14.2%	14.3%	14.3%	14.3%	14.3%	14.3%	14.3 %
Sec.6: Plan of Work (5 points)	20 %	20 %	5 %	40 %	5 %	5 %	5 %

0.2 Responsibility Allocation Chart



1 CUSTOMER STATEMENT OF REQUIREMENTS

1.1 Problem Statement

Initiating Actor

Tabletop games have been a staple in entertainment even before the rise in technology. Nowadays, many favorites have been ported over to virtual systems and are still being enjoyed in their new form. The game should be modelled after these tabletop games, one such in mind is, *Monopoly*. Games like *Monopoly* are competitive by nature and allow for a user to be hooked into a game with other users. The turn-based system employed by these games naturally provides a moment of downtime for each user allowing the user to take in all the information they can and make the best decisions based on this information. The user should be able to join a queue and wait to be matched into a game against other users or be able to join a game with a group of friends through an invitation.

At the start of a game of *Rags to Riches*, each user should start with the same amount of capital so as to not provide any unfair advantages and be given background information on each of the companies relevant to the game. The game should be set in a detailed fantasy world with fantasy companies and products rather than our real world. This will

build on the entertainment factor of the game as users will be dropped in an unknown world to explore.

During the game, the users should be able to perform market orders on the various companies available. The user should be able to make informed decisions based on their opponent's decisions as well as the market trend information provided to the user. Once a user has enough influence over a certain company, they should be able to influence the company into making decisions that have a chance of benefitting the user or hurting other users. There should also be a chat system within the game to allow for users to communicate and interact with one another.

If a user goes bankrupt and is completely out of money, they automatically lose and are removed from the game. If a user reaches the amount of money set as the threshold for winning, they are awarded the win for the game. Each user should be shown a quick overview of the game and any achievements they may have unlocked before the game exits.

Achievements should be stored on user accounts and can be utilized as a way of tracking the user's progress in learning the fundamentals. Once a user hits a certain milestone of progress, they should receive a reward that will unlock new abilities or help them in future games. The user should be able to see their progress towards their next milestone/reward and the rewards should be valuable enough that the user would want to reach for those milestones.

Along with being able to see their own achievements, the user should be able to see where they stack up against other players of the game as well as see their lifetime stats. Additionally, the user should be provided with basic account management options relevant to most applications. Administrative tools, such as banning users, should be available for those user's with the correct privileges. The user should have the option of integrating their social media accounts with the game so that they can quickly make posts showing off achievements, bragging about a win, etc. By being able to share to social media the user will be able to get validation of their successes from their peers and utilize that to further their progress through future games.

The user should be able to access *Rags to Riches* quickly and easily. With the prevalence of smartphones these days, it makes sense to design an app for the game so that the user is able to play the game with only the minimal number of strokes. As a result of the game being on an app, the user will be able to play the game on-the-go rather than being tied

down to a computer. There is an estimated total of 107.7 million android users, by including the ability of sharing achievements via social media the app can become well known and easier to discover. With this increased ease-of-accessibility, *Rags to Riches* hopes to be an entertaining multiplayer turn-based game for the general public, those who do not have extensive knowledge of stock exchanges and investment management.

1.2 Glossary of Terms

Rags – A colloquial term for not having a lot of money. The user starts with “rags” and the objective is to make more money than their opponents.

Riches – A colloquial term for having a lot of money. A user turning their starting capital into “riches” is the objective of the game.

User Groups:

- **Player** – A basic user who participates in a game and has control over their account settings.
- **Opponent** – The opposing user who participates in a game. An “opponent” is also a “player”.
- **Administrator** – A user with additional privileges allowing for the management of basic users, including banning users from the game.

Game – A multiplayer turn-based game set in a fantasy world where the players manage their investments with the end goal of turning their “rags” into “riches”.

Turn – The time where a player can perform actions. Players are able to manage their investments during this time. Opponents can not perform actions at this time.

Bankrupt – A player has no more money remaining. When bankruptcy occurs, the player loses and is removed from the game.

Win – A player successfully turned their “rags” into “riches”. The player reached the threshold set for winning the game.

Loss – A player went into bankruptcy or another player won the game.

Capital – The amount of money each player starts with at the beginning of a game.

Stock – A type of security that signifies ownership in a corporation and represents a claim on part of the corporation's earnings and assets.

- **Ask Price** – Price at which trader will sell a stock
- **Bid Price** – Price at which a trader will buy a stock

Portfolio – An account of all the assets associated with a player in the game. Each player will have their own portfolio.

Investment – The purchase of stocks that are not to be consumed immediately but rather to be used in the future to create wealth.

Order – An investor must place an order to buy or sell an asset.

- **Buy** – An order to purchase an amount of stock.
- **Sell** – An order to sell an amount of stock.
- **Short** – A sell order performed using borrowed stocks.
- **Cover** – A buy order performed to return previously loaned stocks.
- **Limit** – An order that sets the maximum or minimum at which you can buy or sell stocks.
- **Stop** – An order that will only happen at a defined price called the stop price.

Influence – The greater the amount of stocks and percentage a user has in a company, the greater influence they have. Having a large influence in a company provides the user with a greater variety of decisions.

Decision – When it is the user's turn, they can make a decision. Decisions include but are not limited to the buying of stocks, selling of stocks, etc.

Milestone – A set goal that shows the player is making progress

Achievement – A milestone reached by the player resulting in a reward.

Reward – An item unlocked through an achievement.

2 SYSTEM REQUIREMENTS

2.1 Enumerated Functional Requirements

Identifier	Priority	Requirement
REQ-1	5	The system will allow new users to register accounts.
REQ-2	5	The system will allow returning users to login to their accounts.
REQ-3	5	The system will keep track of user account information.
REQ-4	3	The system will allow users to manage their account: <ul style="list-style-type: none">• Change password• Change contact info• Notification settings
REQ-5	1	The system will allow users to check their lifetime stats and achievements.
REQ-6	3	The system will allow administrators to manage user accounts.
REQ-7	4	The system will provide an initial tutorial interface for newly registered users.
REQ-8	4	The system will create a game based on a variety of settings.
REQ-9	4	The system will allow players to host a private game with custom settings: <ul style="list-style-type: none">• Time allowed per turn• Starting capital• Threshold for winning
REQ-10	4	The system will allow players to invite friends to their private games using a 4-character passcode.
REQ-11	4	The system will allow players to join a private game with their friends.
REQ-12	2	The system will allow players to join a queue for a public game with other players using default settings.
REQ-13	4	The system will allow players to view various game-related information, such as standings, player portfolios, and ownership percentage.

REQ-14	5	The system will automatically determine market data for the game.
REQ-15	5	The system will allow users to initiate market orders: <ul style="list-style-type: none"> • Buy • Sell • Short • Cover • Limit • Stop
REQ-16	3	The system will allow players to influence companies once they own a certain percentage of the company.
REQ-17	1	The system will allow players to communicate with each other inside of a game.
REQ-18	4	The system will recognize win and loss scenarios for the game.
REQ-19	1	The system will allow users to integrate their social media accounts to post messages to.
REQ-20	1	The system will provide a leaderboard for users to check how they stack up against other players.

2.2 Enumerated Nonfunctional Requirements

Identifier	Priority	Requirement
REQ-21	5	The system will be able to run on Android devices.
REQ-22	4	The system will be lightweight to provide fast performance even on low end devices.
REQ-23	3	The system will have a similar theme across the stock information page, the settings page, and the game page.
REQ-24	4	The system will securely store personal user information.
REQ-25	5	The system will store all data and information in a database with no storage being done on the user's device.
REQ-26	3	The system will allow the user to navigate the app in the fewest number of strokes possible.
REQ-27	3	The system will be active 24/7.

2.3 On Screen Appearance Requirements

Identifier	Priority	Requirement
REQ-28	3	Initial Landing page – This is shown on first boot. The game and its terms are explained here.
REQ-29	5	Registration page – Users will be able to create a new account.
REQ-30	5	Login page – Users will be able to login to an existing account
REQ-31	4	Home Page – Users will be able to create a game, join a game through an invite, or find an online game. They will also be able to manage their settings and achievements.
REQ-32	4	Settings page – Users will be able to change their password, their contact info, their notification settings, and volume.
REQ-33	4	Create A Private Game page – User can create a private game with custom settings: time allowed per turn, starting capital, threshold for winning, etc.
REQ-34	3	Join A Private Game page – User can enter a code given to them by a friend to join an existing private game.
REQ-35	5	Game Page – Users will be able to see their current assets, company information, current game standings, current market trends, each player's wealth, and a button to move on to the next player's turn.

3 FUNCTIONAL REQUIREMENTS SPECIFICATIONS

3.1 Stakeholders

A stakeholder is defined as a party that has an interest in a company, and can either affect or be affected by the business. For the majority of the time, the primary stakeholders in a typical corporation are its investors, employees, and customers. Stakeholders can be internal or external. Internal stakeholders are those parties whose interest in a company is tied to a direct relationship, such as employment, ownership, or investment. On the other hand, an external stakeholder are those who are not directly tied to the company yet are affected by the company's actions and business outcomes.

The target audience for Rags to Riches is students, novice investors, and anyone who wishes to gain a working knowledge of economics and the stock market. Even those with a greater understanding of the stock market who wish to sharpen and hone their skills and review some of the conceptual background can benefit from using this app. Users who wish to eventually dive in the real stock market will have benefitted from the utilization of the app and be armed with an experiential advantage over those who did not. Rags to Riches can be expanded to educate larger swaths of aspiring investors in the form of being used as an educational resource in high school and college level economic courses. The various features than the app offers will likely garner word of mouth awareness from those who use the app, who can encourage like minded individuals to also experiment around with it.

Rags to Riches is a non-profit, free application with the sole purpose of education. At no point are there plans to incorporate advertisements to generate revenue. Rags to Riches believes that advertisements are distracting and cumbersome, which detract from the user's experience. Because the app's sole purpose is that of education, cluttering the user's interface with ads will distract them from the best experience that can be provided, and perhaps hamper their overall education. Another strategy Rags to Riches strongly opposes is the inclusion of in app purchases or microtransactions. These "pay to win" strategies are potentially game breaking, unfair, and lessen the overall experience. Rags to Riches strives to provide a equal, balanced, enjoyable, and educational experience to all users.

3.2 Actors and Goals

- **Player** – Initiating Actor

- Goals:

- 1. To create an account
 2. To login into their account
 3. To create a private game
 4. To find and join a public game
 5. To check their achievements
 6. To perform market transactions in their game
 7. To view the portfolios and balances of players in their game
 8. To view the standings of their game
 9. To communicate with other players in their game
 10. To post achievements or progress updates to their social media account

- **Game Administrator** – Initiating Actor

- Goals:

- 1. To set the initial rules for the private game they create
 2. To manage the private game they create

- **Game** – Participating Actor

- **Stock Simulator** – Participating Actor

- **Account Database** – Participating Actor

- **Social Media** – Participating Actor

3.3 Use Cases

3.3.1 Casual Description

UC-1: Register

Allows a new user to register an account for the application. The user will be required to login using this information in the future.

Requirements: REQ-1, REQ-3, REQ-7

UC-2: Login

Allows a registered user to login to their account for the application. The system will retrieve all of the user's information and personal settings. The user will be automatically logged in to their account unless they have manually logged out.

Requirements: REQ-2, REQ-3

UC-3: ManageAccount

Allows a registered user to edit their account information, such as account password and email address, as well as manage their application settings.

Requirements: REQ-4

UC-4: FindPublicGame

Allows a registered user to join a queue for a public game. Once four players are found in the queue, they players are removed from the queue and placed in a game.

Requirements: REQ-8, REQ-12

UC-5: CreatePrivateGame

Allows a registered user to create a private game to be played with friends. A 4 character passcode is generated to invite other users to the game.

Requirements: REQ-8, REQ-9, REQ-10

UC-6: JoinPrivateGame

Allows a registered user to join a private game hosted by a friend by entering the 4-character code sent to them.

Requirements: REQ-10, REQ-11

UC-7: ViewMarketData

Allows a player to view information regarding the various companies and their market history to aid them in their decision-making process.

Requirements: REQ-13, REQ-14

UC-8: PlaceMarketOrder

Allows a player to place a market order to buy or sell stocks in the game. The order is placed during the user's turn and changes are reflected immediately.

Requirements: REQ-14, REQ-15

UC-9: ViewPortfolio

Allows a player to view the current assets of any player in the game. The user is able to see information regarding other user's influence in companies to aid them in their decision-making process.

Requirements: REQ-13, REQ-14

UC-10: ViewStandings

Allows a player to view the current standings of the players in the game based on net worth. The user is also able to see a brief overview of another player's assets.

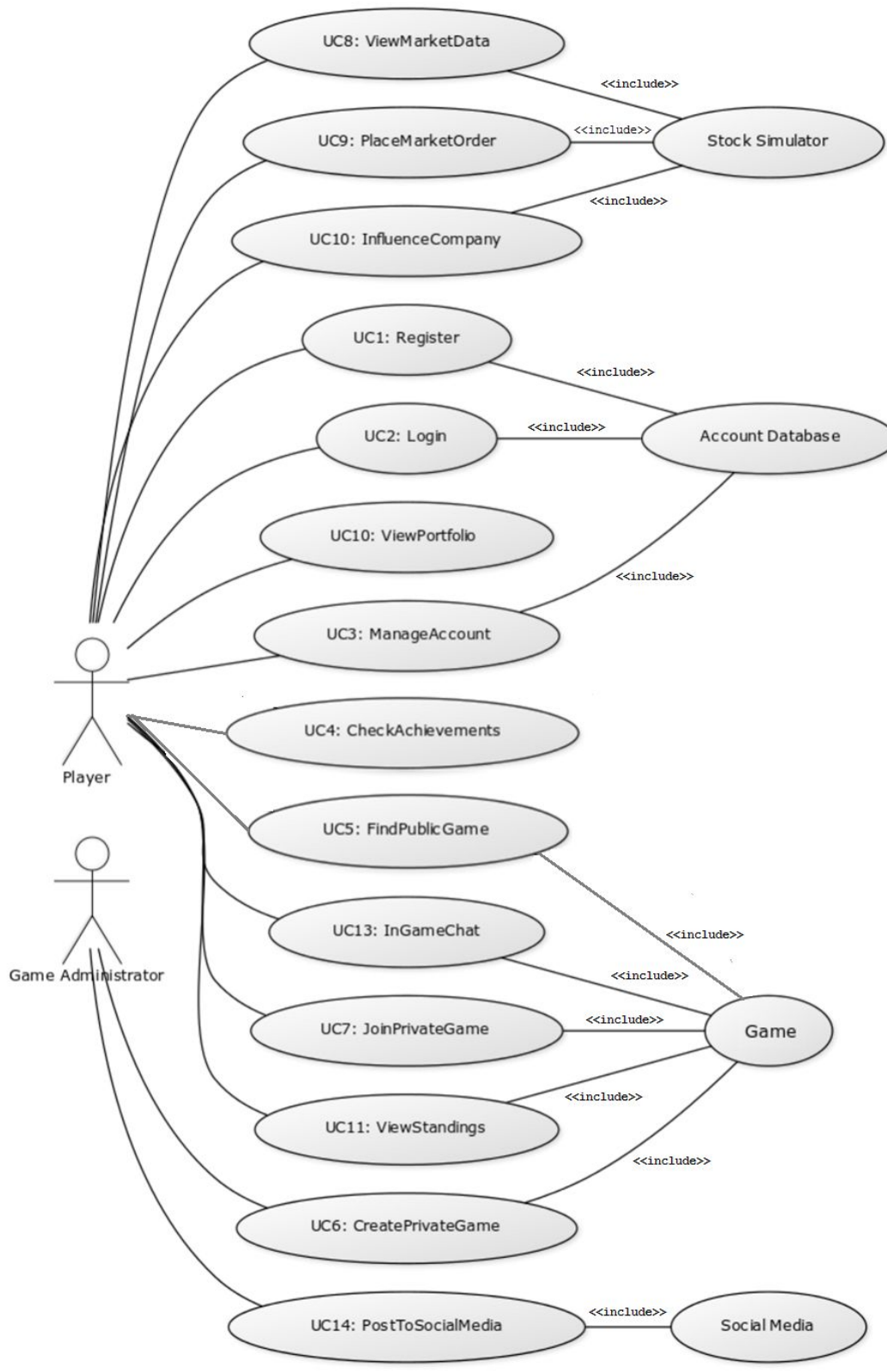
Requirements: REQ-13

UC-11: InfluenceCompany

Allows a player to influence a company once they own a certain percentage of the company. The user is able to perform additional actions based on this..

Requirements: REQ-13, REQ-14, REQ-16

3.3.2 Use Case Diagram



3.3.3 Traceability Matrix

REQ	PW	UC1	UC2	UC3	UC4	UC5	UC6	UC7	UC8	UC9	UC10	UC11
REQ-1	5	X										
REQ-2	5		X									
REQ-3	5	X	X									
REQ-4	3			X								
REQ-5	1											
REQ-6	3											
REQ-7	4	X										
REQ-8	4				X	X						
REQ-9	4					X						
REQ-10	4					X	X					
REQ-11	4						X					
REQ-12	2				X							
REQ-13	5							X		X	X	X
REQ-14	4							X	X	X		X
REQ-15	5								X			
REQ-16	3											X
REQ-17	1											
REQ-18	4											
REQ-19	1											
REQ-20	1											
Max PW		5	5	3	4	4	4	5	5	5	4	5
Total PW		14	10	3	6	12	8	9	10	9	4	12

3.3.2 Fully-Dressed Description

Use Case UC-1: Register	
Related Requirements:	REQ-1, REQ-3, REQ-7
Initiating Actor:	Player
Actor's Goal:	To create an account.
Participating Actors:	Account Database
Preconditions:	The user is not logged into an account.
Postconditions:	The user successfully registers an account and can use it to log in to the app from any compatible device. The user account database is updated with the new player's account information.
Flow of Events for Main Success Scenario:	
1.	-> The user is on the initial landing page.
2.	-> On the initial landing page, the player clicks the register option
3.	-> The player enters their desired account name, their password, and their password again to confirm it.
4.	<- If the user confirmed their password correctly, the user account database is updated with the new information and the system welcomes the new user.
Flow of Events for Account Name is taken or Passwords do not match:	
1a.	-> The user enters an account name that is already taken.
1b.	-> The user's password does not match the confirmation password.
2.	<- The user is provided with an error message explaining the situation and is encouraged to try again.

Use Case UC-5: FindPublicGame	
Related Requirements:	REQ-8, REQ-12
Initiating Actor:	Player
Actor's Goal:	To find and join a public game
Participating Actors:	Player, additional players, Queue system
Preconditions:	Players have valid accounts. Queue system functioning.
Postconditions:	Player is successfully processed through the queue and is placed into a public game against other online players.
Flow of Events for Main Success Scenario:	
1.	-> Player clicks the find public game option on the main screen.
2.	<- Player enters the queue that sorts players into online games on "first-come, first-served" basis.
3.	<- After being successfully processed through the queue, the player is placed into a public game where they play against other online players.
Flow of Events for Extensions (Alternate Scenarios): Queue System Down	
1.	-> Player clicks the find public game option on the main screen.
2.	<- The queue system is down or overloaded at the moment and is unable to place the player into a public game. The player receives an error message apologizing and explaining the situation.
The arrows on the left indicate the direction of interaction: -> Actor's action; <- System's reaction	

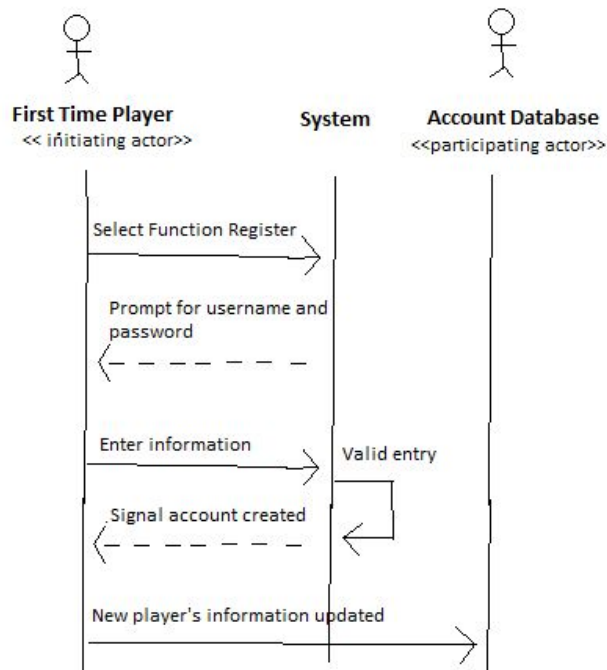
Use Case UC-6: CreatePrivateGame	
Related Requirements:	REQ-8, REQ-9, REQ-10
Initiating Actor:	Game Administrator
Actor's Goal:	To create a private game
Participating Actors:	Game Administrator and players
Preconditions:	The game administrator has a valid account.
Postconditions:	The game presents a 4 digit code that the game administrator can share with other players who then use the code to join the private game.
Flow of Events for Main Success Scenario:	
1.	-> Game administrator creates a game from the home screen.
2.	-> Game administrator changes the settings of the game, such as number of players and starting currency amount and chooses the private game option.
3.	<- Game presents the 4 digit code that the game administrator can share.
Flow of Events for Different Sharing Method:	
1.	-> Game administrator creates a game from the home screen.
2.	-> Game administrator changes the settings of the game, such as number of players and starting currency amount and chooses the private game option.
3a.	<- Game administrator chooses the share the 4 digit code by using a social media such as Twitter or facebook and system shares it through this medium.

Use Case UC-8: PlaceMarketOrder	
Related Requirements:	REQ-14, REQ-15
Initiating Actor:	Player
Actor's Goal:	To perform market transactions in their game
Participating Actors:	Players, Stock Information Database
Preconditions:	Each player that has a valid account has its own capital to buy stocks.
Postconditions:	Each player is presented with the option of buying more stocks if capital is available. Also, each player is able to sell their current stocks in order to buy more. Also, given the other market orders, each player can perform a short, cover, limit, and stop during each turn in the game.
Flow of Events for Main Success Scenario:	
1.	-> Player with valid account enters new game, given a capital, and time limit for each turn.
2.	-> Each player in the game at their respective turn with their given capital chooses to place a market order within their given time limit for their turn.
3.	<- The system performs the market transaction and updates the information on the player's screen.
Flow of Events for Market Transaction Error:	
1.	-> Player tries to place a market order that exceeds the amount of money they have.
2.	<- The system can not perform this transaction and returns an error.

Use Case UC-9: ViewPortfolio	
Related Requirements:	REQ-13, REQ-14
Initiating Actor:	Player
Actor's Goal:	To view the portfolios of players in their game.
Participating Actors:	Player, Desired Player in current game, Account Database
Preconditions:	The player and desired players both have valid accounts and are both present in the same current game session
Postconditions:	The player is presented with the portfolio of the player they desired to view in their current game, which displays their information about their current stocks, achievements, and statistics.
Flow of Events for Main Success Scenario:	
1.	-> Player enters a valid game session
2.	-> Player clicks on their desired player in a session, and clicks on "View Portfolio".
3.	<- The player is presented with the portfolio of their chosen player. When they are finished viewing it, they press the x icon in the top right.
Flow of Events for Account Database Malfunction:	
1.	-> Player enters a valid game session
2.	-> User clicks on desired player and then upon "View Portfolio"
3.	<- The Account Database is down and cannot bring up that player's portfolio information. The player receives a message of the error

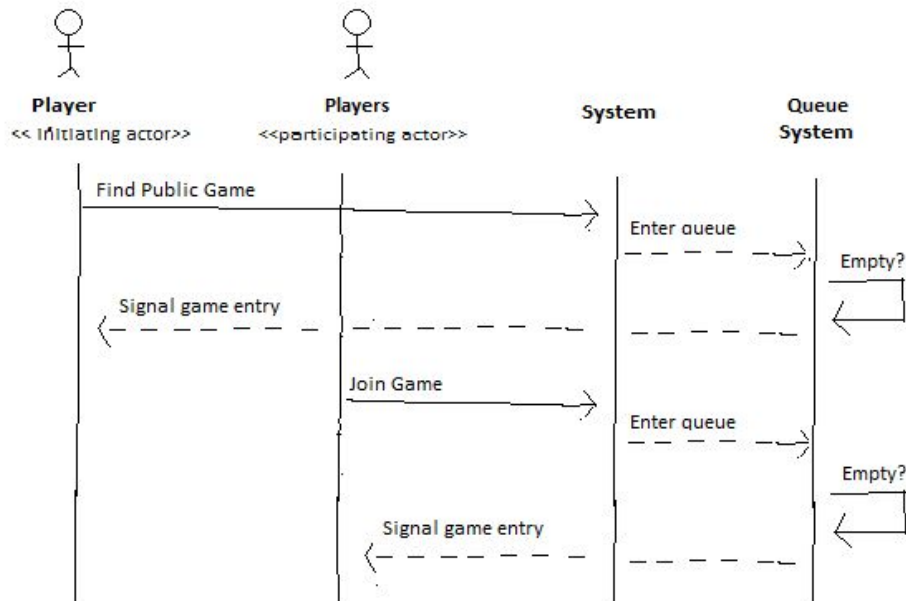
3.4 System Sequence Diagram

UC-1: Register



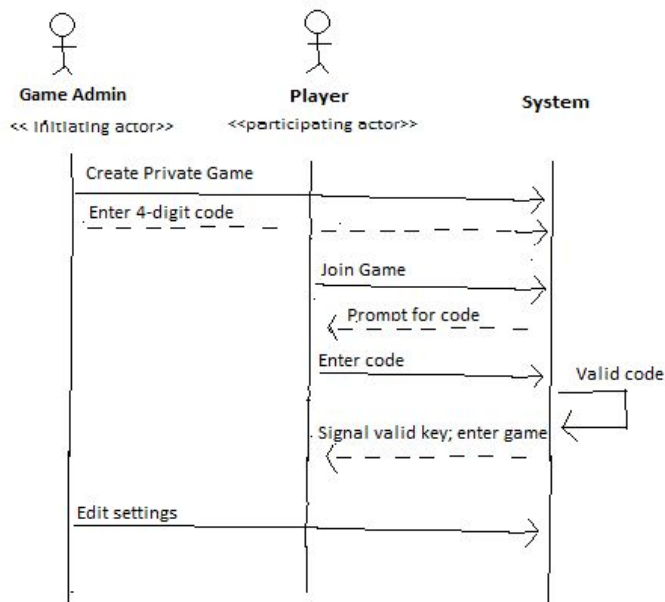
Main Success Scenario

UC-5: FindPublicGame



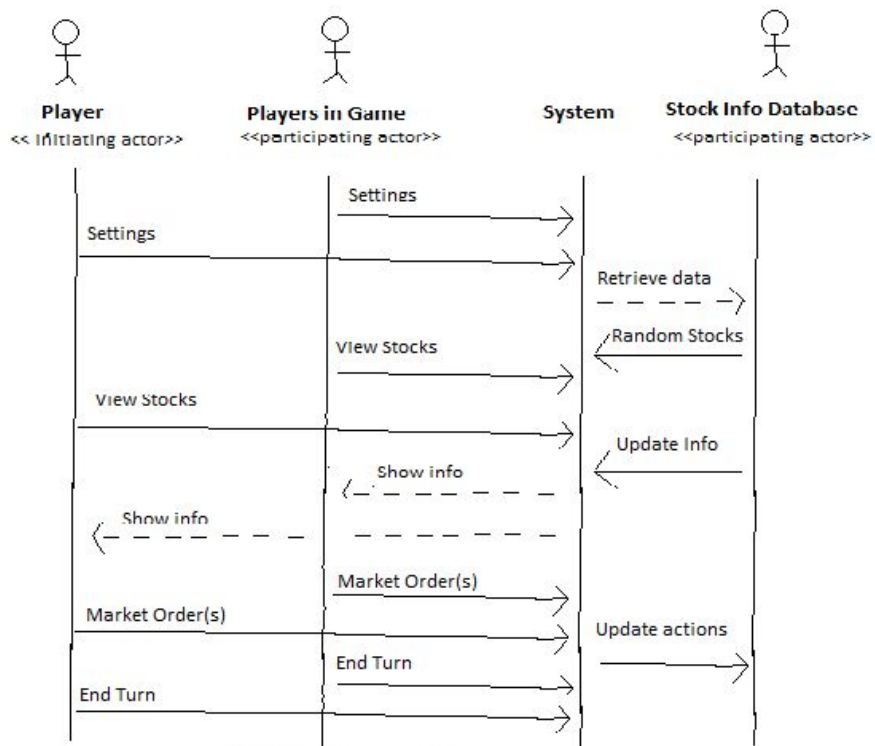
Main Success Scenario

UC-6: CreatePrivateGame



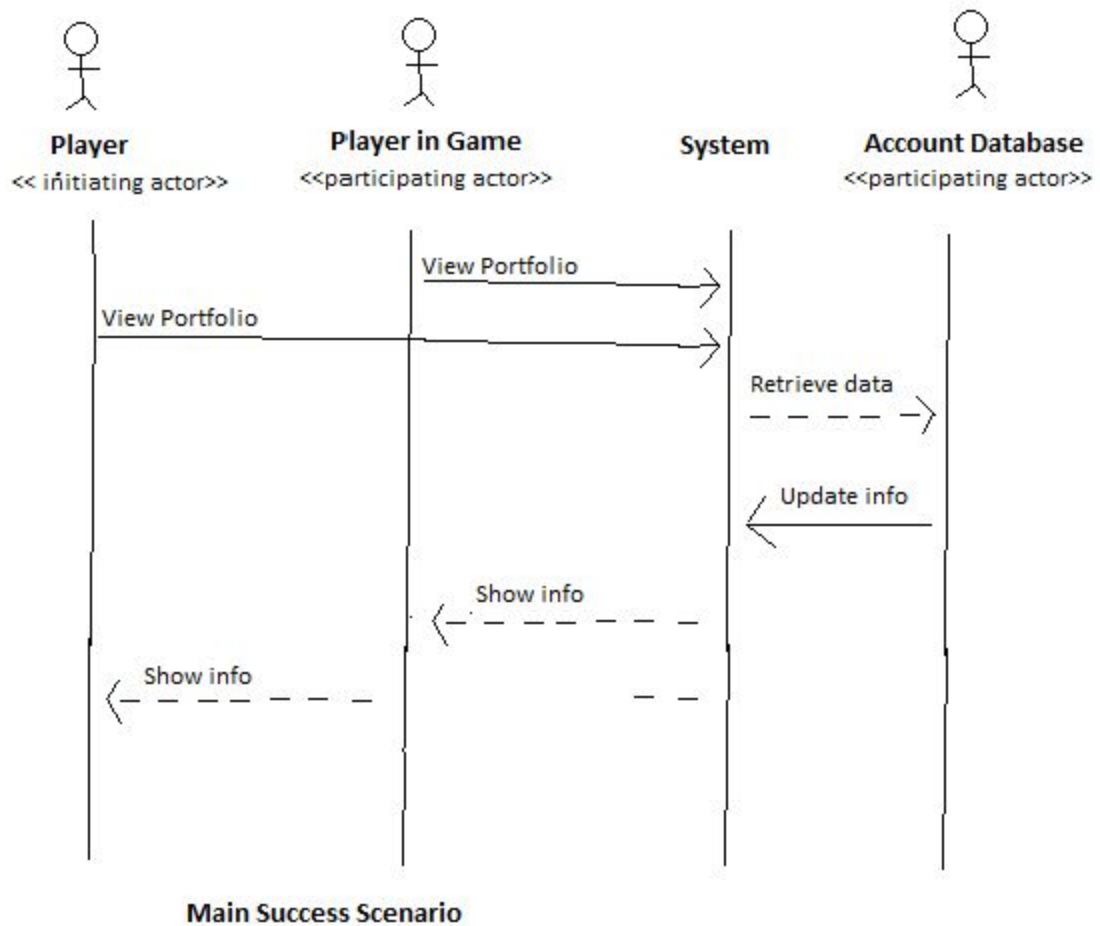
Main Success Scenario

UC-8: PlaceMarketOrder



Main Success Scenario

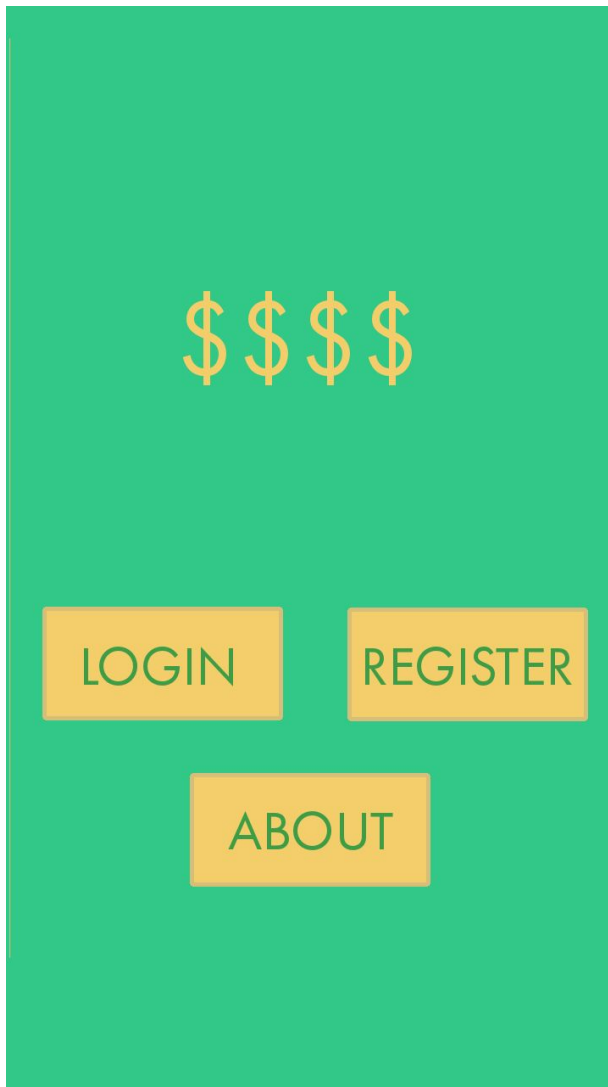
UC-9: ViewPortfolio



4 User Interface Specification

4.1 Preliminary Design

Initial Landing Page:

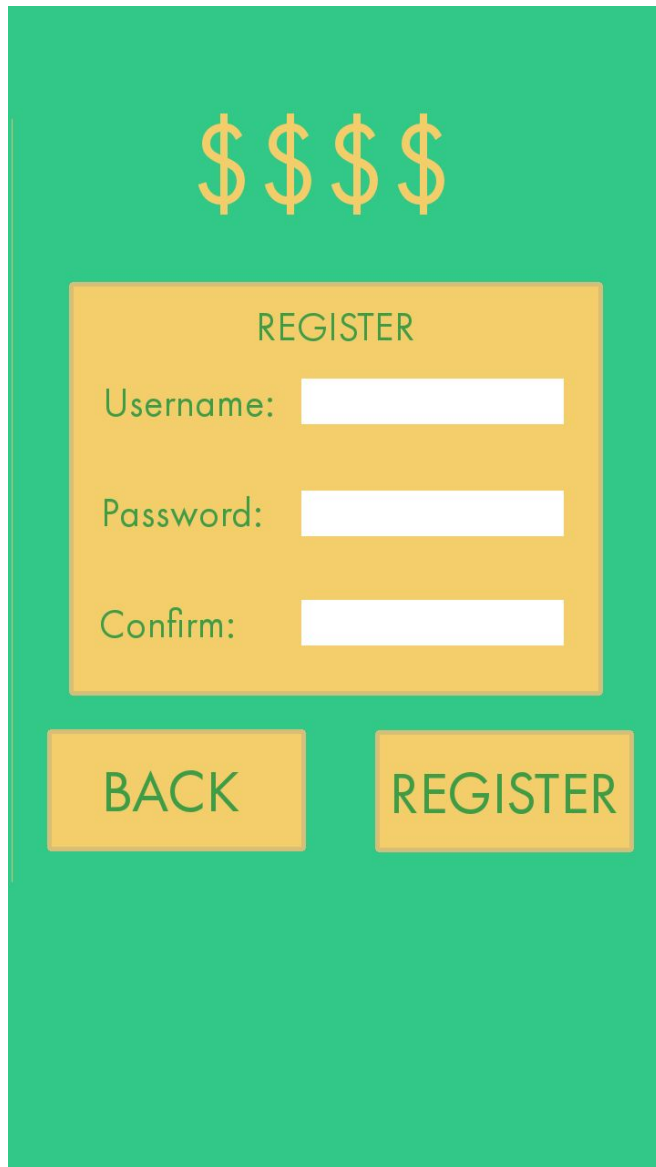


Pressing login brings you to login page.

Register brings you to the register page.

About shows you terms and conditions and privacy policy.

Register Page:

The image shows a registration form on a green background. At the top, there are four yellow dollar signs (\$\$\$\$). Below them is a yellow rectangular box containing the word "REGISTER" in green. Inside this box are three input fields: "Username:", "Password:", and "Confirm:", each followed by a white text input field. Below the yellow box are two yellow buttons: "BACK" on the left and "REGISTER" on the right, both in green text.

REGISTER

Username:

Password:

Confirm:

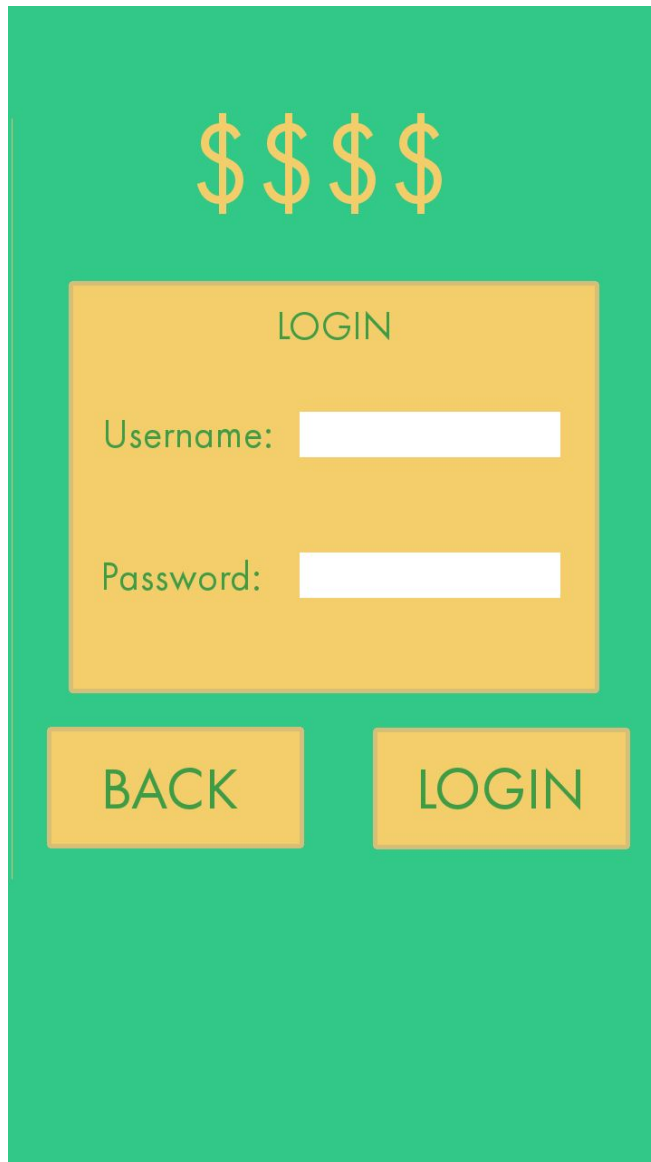
BACK REGISTER

Enter a username and password in the fields.

If password and confirm are the same, the "Register" button registers the user with password and username.

Back returns to start.

Login Page:

The image shows a login page with a green background. At the top, there are four yellow dollar signs (\$\$\$\$). Below them is a yellow rectangular box containing the word "LOGIN" in green. Inside this box are two input fields: "Username:" followed by a white text box, and "Password:" followed by a white text box. Below the yellow box are two yellow buttons: "BACK" on the left and "LOGIN" on the right, both in green text.

\$\$\$

LOGIN

Username:

Password:

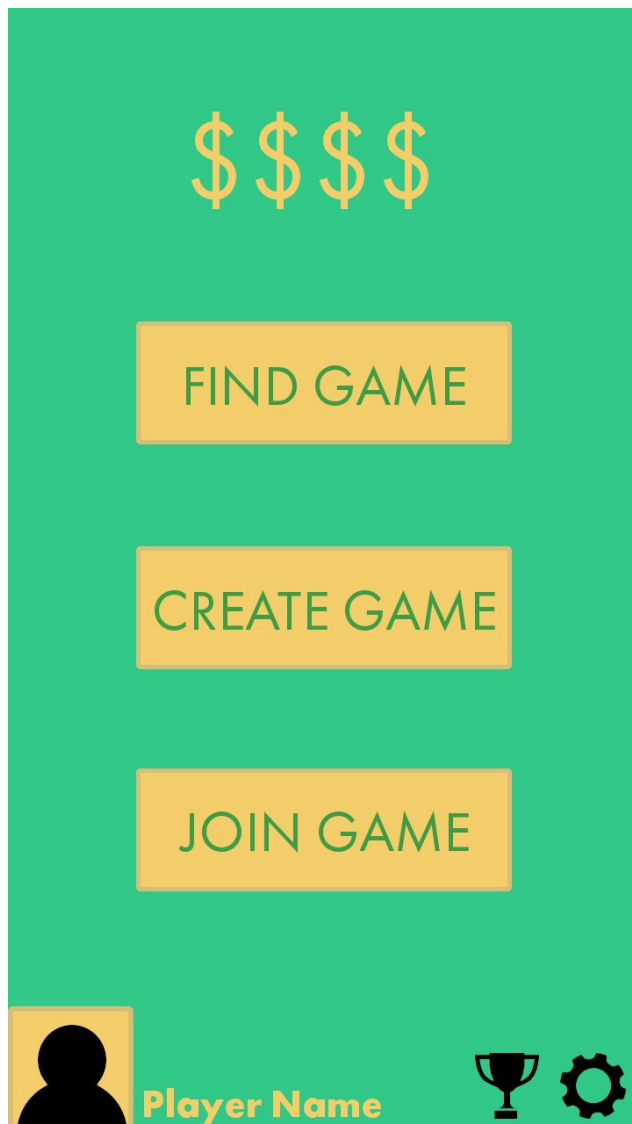
BACK LOGIN

Enter a username and password.

Pressing login either logs you in if valid or says wrong password if not.

Back returns you to start screen.

Home Page:

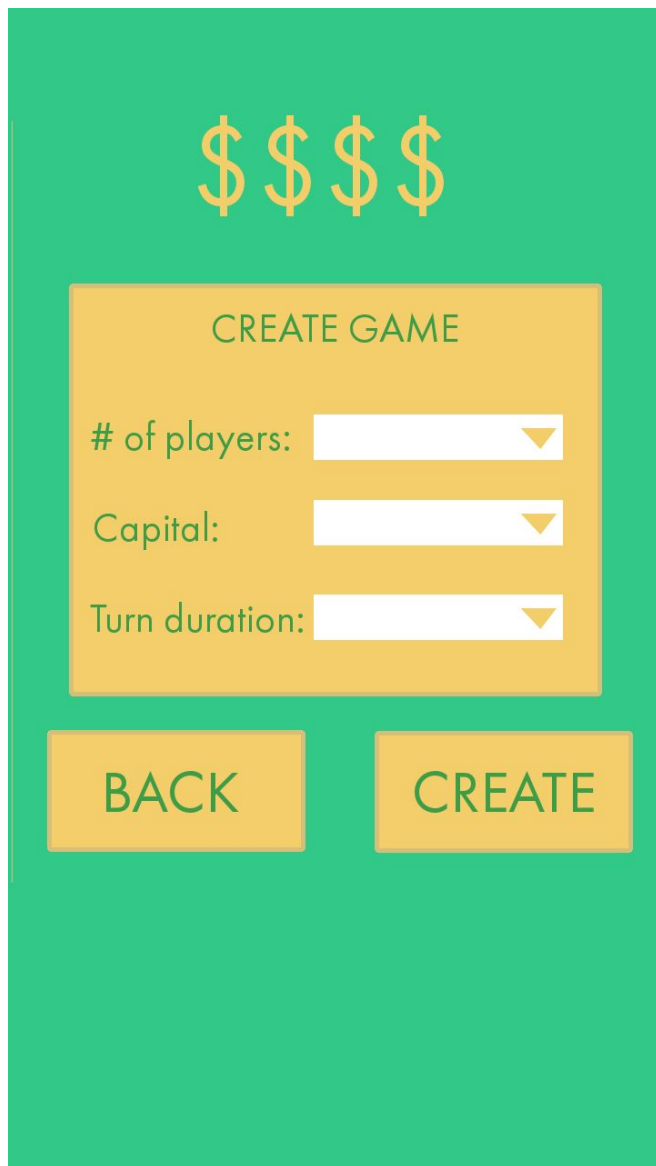


Initial home page

Gives users the option to Find game, Create game, and Join game

Or click on the icons to go to achievements or settings.

Create Game Page:

The image shows a mobile app interface for creating a game. At the top, there are four yellow dollar signs (\$\$\$\$) on a green background. Below this is a yellow box with the title "CREATE GAME" in green. Inside this box are three dropdown menus: "# of players:", "Capital:", and "Turn duration:". Below the yellow box are two yellow buttons: "BACK" and "CREATE".

CREATE GAME

of players:

Capital:

Turn duration:

BACK CREATE

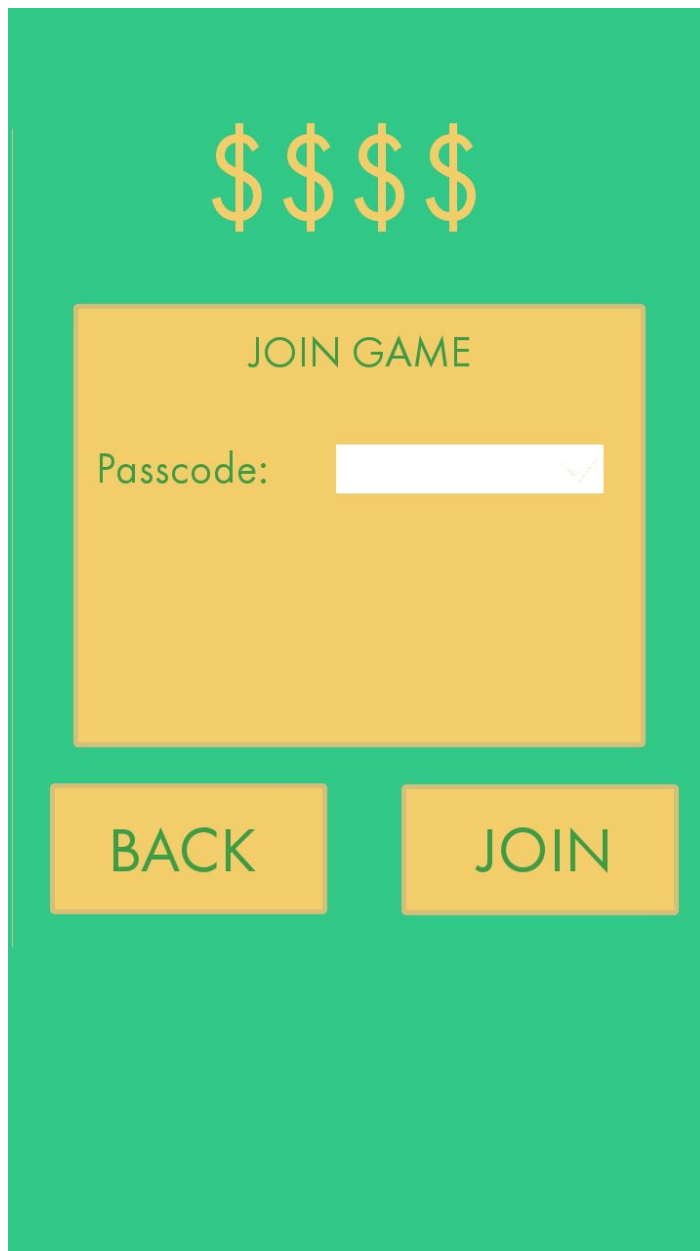
Allows users to select 1-4 players to join

Capital and game duration can also be selected to creator's choice

Hitting "Create" button will prompted creator with a four digit code

That they can share with friends

Join Game Page:

The image shows a mobile app interface for joining a game. It has a green background. At the top, there are four yellow dollar signs (\$\$\$\$). Below them is a yellow rounded rectangle containing the text "JOIN GAME" in green. Underneath this is the label "Passcode:" in green, followed by a white text input field with a green checkmark icon on the right. At the bottom of the green area are two yellow buttons: "BACK" on the left and "JOIN" on the right, both in green text.

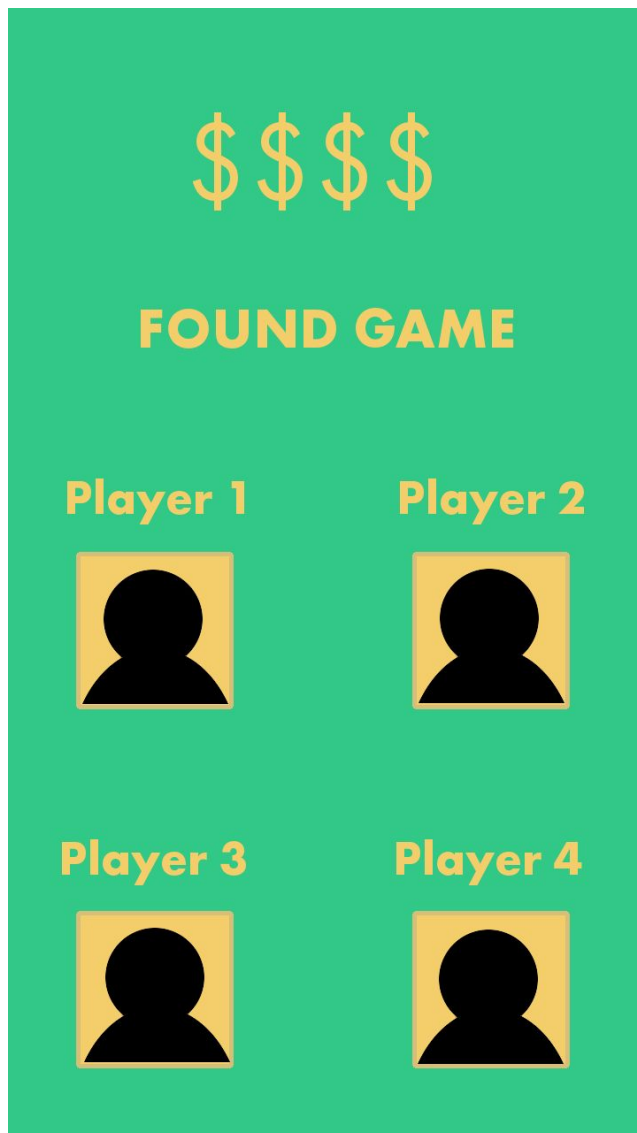
JOIN GAME

Passcode:

BACK JOIN

At this point, the user is asked to enter a passcode in order to join a game that was created by another user. Once passcode is entered the user is prompted to the specific game given the passcode.

Found Game Page:



After selecting the option, to join a public game, the user will be processed through a queue. After a short time, this screen will appear, indicating that the player has successfully been processed, other online players have been found, and the public will commence shortly. The player's names and pictures are displayed here as well.

View Portfolio Page:


QUIT

NEXT TURN

Player 1's Portfolio

⌚ 0:43

Company	Quantity	Value



STANDINGS

PORTFOLIO

While in a public or private game, the player can view their own portfolio or an opponent's portfolio. The above screen is shown, displaying all of the player's stocks, quantities, and values that they own. They can also view the player standings. They can return at any point by clicking the top left, a timer is present allowing them to know when the turn is finished.

4.2 User Effort Estimation

A) Register

Login Page

- a) Press "Register" button
- b) Fill out text boxes with correct information
- c) Press "Register" button to submit (will bring you to main menu)

Data Entry

- a) Press on "Username" text field
- b) Press any keys for username (6-8 characters)
- c) Press the enter key to move to the next text field
- d) Press any keys for password (6-8 characters)
- e) Press the enter key to move to the next text field
- f) Press the same keys as previous text field to confirm password (6-8 characters)

B) Log In

Login Page

- a) Press on "Login" button
- b) Enter Username and Password
- c) Click "Login" button to enter main menu

Data Entry

- a) Press on "Username" text field
- b) Press any keys for username (6-8 characters)
- c) Press the enter key to move to the next text field
- d) Press any keys for password (6-8 characters)

C) Create a Private Game

Main Menu

- a) Press "Create Game" in the middle of the main menu
- b) Enter specifications, number of players, starting currency
- c) A screen with a four digit number will be prompted
- d) Select sharing method (i.e Facebook, Contacts, private message)
- e) Select Start game

Data Entry

- a) Press on "# of players" text field
- b) Press one key (numbers 1-4)
- c) Press the enter key to move to the next text field
- d) Enter up to 6 numbers(6 digits)
- e) Enter turn duration

D) Join Public Game

Main Menu

- a) Click "Join Public Game", at the bottom of the page in main menu
- b) Player is placed into queue that will process them and place them into an online game

E) Place Market Orders

In Game

- a) Press desired stock
- b) A page will be prompted showing stock trends
- c) At the bottom left select buy
- d) Select amount of shares, and press the confirm button

F) Manage Account

Main Menu

- a) Click on Settings “gear” at bottom right of home screen
- b) Two prompts will appear:
 - 1) Change username - enter old username, new desired username
 - 2) Change password - enter old password, enter new password twice

Data Entry

- a) Press on “Username” text field
- b) Press specific keys for current username (6-8 characters)
- c) Press the enter key to move to the next text field
- d) Press any keys for new user name (6-8 characters)
- e) Press the enter key to move to the next text field
- f) Press specific keys for password (6-8 characters)
- g) Press the enter key to move to the next text field
- h) Press the any keys for new password (6-8 characters)
- i) Press the enter key to move to the next text field
- j) Press the same keys as previous text field to confirm password (6-8 characters)

G) View Portfolio

In Game

- a) Press on avatar, or an opponent's' avatar
- b) New screen will be prompted, select View Portfolio”. This brings up information about the clicked upon user. (Current stocks, achievements, statistics)

5 PROJECT MANAGEMENT

5.1 Plan of Work

Our plan of work will be dividing into three sub teams, each responsible for a “mini project”. This stack organization is much more effective than a chain organization in that it allows less dependency on other teams and less communication overhead. In turn, this allows for more creative software development.

Our team size is appropriate to develop such an app with this many functionalities. Every member of our team has their own particular strengths, therefore each subgroup will focus on development on a particular functionality of the project. A smaller team would not be able to design and implement a project of this breadth and one that includes this number of features.

The main objective for the next few weeks is to develop the core components of our project. We want to make sure that we have a base build of our project before branching off and developing the additional features. The additional features are to make the game more enjoyable for the user and even though that is important, we need to make sure the barebones version of our app will function first. Each group will be working on the most important aspects of their sections of the project. The specific short term goals of each group are outlined below.

5.2 Group 1: Alejandro and Arjun

The first group in our team will focus on various portions of the project having to do with the user account creation and management, achievements, and social media integration.

User Interfaces: Landing page, Login page, Create Account page, Settings page

Short Term Goals: The plan is to make a skeleton of the framework that will be the account page, settings page, and login page. As well as setup a database that will hold account information securely.

5.3 Group 2: Elisa-Michelle and Bryan

The second group in our team will focus on various portions of the project having to do with creating and joining a private game, joining a public game, leaderboards, and the chat system.

User Interfaces: Create Room page, Join Room page, Leaderboards page, Waiting Room page, and chat UI.

Short Term Goals: The plan is to have basic game creation implemented along with an invitation system for other players.

5.4 Group 3: Kartik, Deep, and William

The third group in our team will focus on various portions of the project having to do with virtual stock simulation, market transactions, and the end-game scenarios .

User Interfaces: User Portfolio page, User Performance pages, Transaction page, and Achievements page, Game page

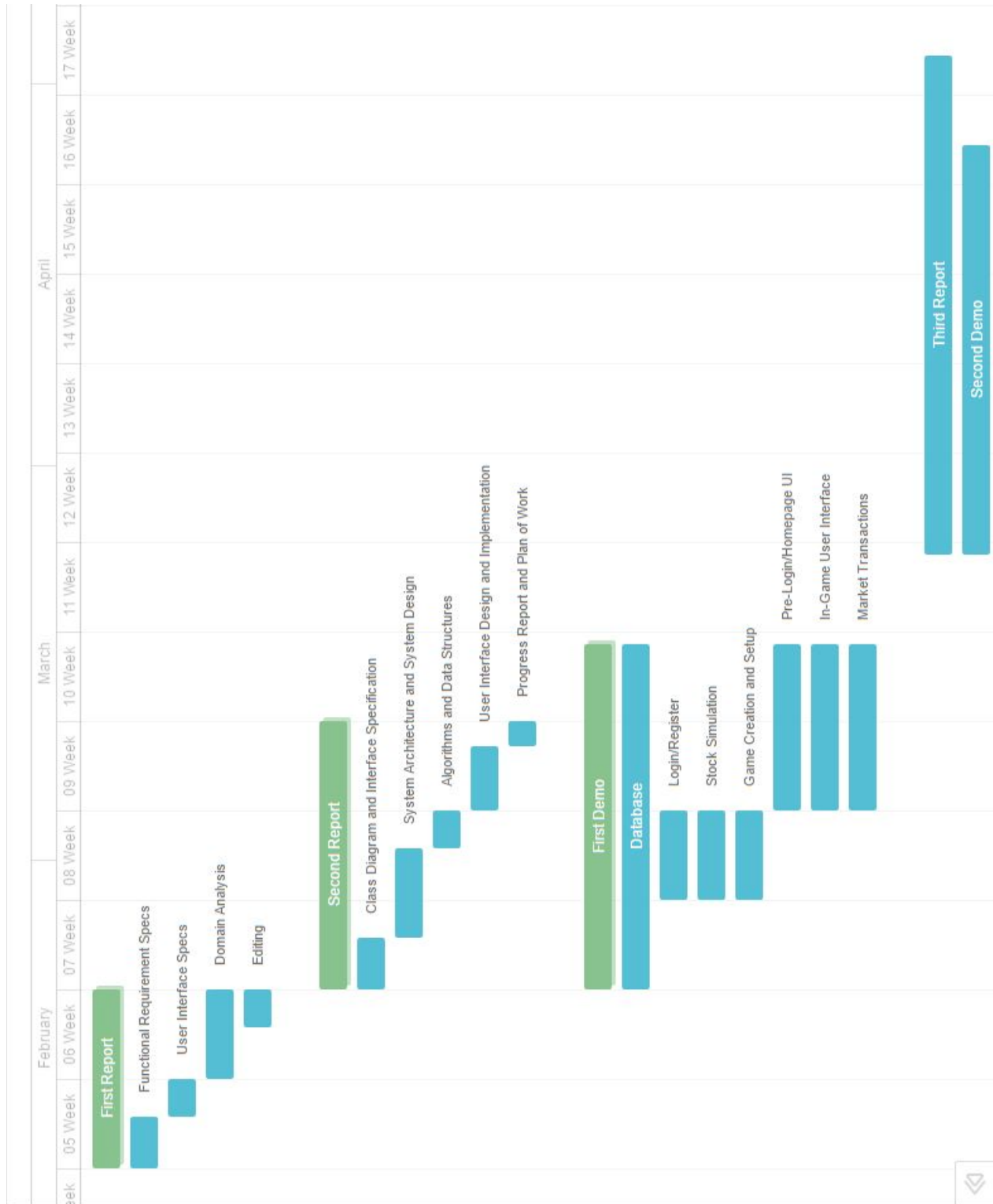
Short Term Goals: The plan is to focus on the storing previous stock information for stock simulations as well as storage and retrieval of user portfolios.

5.5 Measure of Success

The success of the application in educating the user will be determined quantitatively by the user's wealth at the end of the game. If the user was able to increase their wealth from their starting capital, then they demonstrated that they were able to understand and apply good investment strategies.

Furthermore, the amount of achievements a user has gotten also demonstrates the degree to which they understand the investment concepts. If a user is able to reach one of the achievements we have laid out for them, then they will have reached that "checkpoint" of understanding the material, and hopefully continue to reach higher and higher achievements until they have a complete grasp of investment strategies.

5.6 Gantt Chart



6 REFERENCES

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