Fortune

A Cryptocurrency Trading Game

Sprint 3 Planning Document

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Sprint Overview

In Sprint 2 we focused our time and efforts on creating the "core" gameplay implemented into our application. While we got a lot of work accomplished on the basics of the game, there are still a few loose ends from Sprint 2 that we need to finish up. In addition to refinement of our work from Sprint 2, we are also going to be adding additional features to the game, such as friends and achievements, to wrap the whole project up and look impressive for the final presentation.

Scrum Master: Ryan Huff

Meeting Plan: MWF 10:30am EDT via Zoom

<u>Risks And Challenges:</u>

One risk we have this sprint is that many of the features being implemented modify the database schema and other design implementations that, if we aren't careful, will potentially cause other features already implemented to stop working altogether. Therefore we need to make sure that the application still functions even after adding new features and to be especially attentive when merging stories together.

One challenge we have is that there aren't any stories relating to refinement and debugging of the application. This is troublesome, as we need time to both implement new features of this sprint and also make sure our game is presentable at the final presentation.

Current Sprint Details

Achievements

User Story # 40: Track Achievements

As a user, I would like to have a trophy system to keep track of my achievements and have some major goals to look forward to in this game

#	Description	Estimated Time	Owner
0	Dependency on User Story # 42: Profile Page	0 hr	Blake
1	Create the achievements tab on the profile page	1 hr	Sam
2	Come up with list of achievements	1 hr	Sam (+ Group)
3	Store list of achievements with achievement IDs in database	3 hr	Sam
4	Create ProfileAchievement table in the database to track what achievements a player has achieved.	3 hr	Sam
5	Write a method on the backend to determine if a player has accomplished any achievements and update their ProfileAchievement table if applicable	3 hr	Sam
6	Create a friendly UI and cool icons that make user's experience navigating to the achievements page enjoyable	2 hr	Sam
7	Write unit tests to ensure a player is only granted an achievement when they have surpassed all the criteria for that achievement	2 hr	Sam

Acceptance Criteria:

- Given a player clicks the achievements tab on the profile page, then they will be navigated to the achievements page
- Given the database is correctly with achievements, when a player navigates to the achievements page, a list of all achievements will appear.
- Given a player has achieved some achievement, there will be some UI indication (the achievement will have a check mark next to it).
- Given a player has achieved a particular achievement, that achievement ID will exist under their ProfileAchievement page in the database.
- Given a player newly achieves an achievement, that achievement ID will be added to their ProfileAchievement page in the database.

User Story # 41: Generate Goals

As a user, I would like to be given a set of goals that I can accomplish every week to motivate me to come back to the game from time to time.

#	Description	Estimated Time	Owner
0	Dependency on User Story # 42: Profile Page	0 hr	Blake
1	Create the weekly goals tab in the profile page	1 hr	Sam
2	Come up with weekly goals	1 hr	Sam (+ Group)
3	Store list of weekly goals with goal IDs in database	3 hr	Sam
4	Create ProfileGoal table in the database to track what goals a player has achieved.	3 hr	Sam
5	Write a method on the backend to determine if a player has accomplished any goals and update their ProfileGoal table if applicable	3 hr	Sam
6	Create a friendly UI and cool icons that make user's experience navigating to the goals page enjoyable	2 hr	Sam
7	Write unit tests to ensure a player is only granted a goal when they have surpassed all the criteria for that goal	2 hr	Sam

Acceptance Criteria:

- Given a player clicks the goals tab on the profile page, then they will be navigated to the goals page
- Given the database is correctly with goals, when a player navigates to the goals page, a list of all goals will appear.
- Given a player has achieved some goal, there will be some UI indication (the goal will have a check mark next to it).
- Given a player has achieved a particular goal, that goal ID will exist under their ProfileGoal page in the database.
- Given a player newly achieves a goal, that goal ID will be added to their ProfileGoal page in the database.

Profile

User Story # 42: Profile Page

As a user, I would like to have a page that displays my profile's details.

#	Description	Estimated Time	Owner
1	A profile button should be added to the menubar dropdown	15 min	Blake
2	Clicking the profile button should navigate to a profile page	30 min	Blake
3	The page should have the username as a title and a button that takes the player to the play page.	15 min	Blake
4	The page should have a tabbing system to account for the things that will be added with a sample tab "options"	2 hr	Blake
5	The page should be manually tested to verify that it is navigated to and has the username as a title.	30 min	Blake

Acceptance Criteria:

- Given the username dropdown exists, when I click the profile button, I should be redirected to /profile/:userId
- Given I am redirected to the profile page, I should see my username in the top left corner.
- Given I am on the profile page, when I click on different tabs, I should see different rendered subpages.

User Story # 43: Change Username

As a user, I would like to be able to change my username

#	Description	Estimated Time	Owner
0	Dependency on User Story # 42: Profile Page	0 hr	Blake
1	Create a text box that allows the user to enter a new username	15 min	Blake
2	Create a button that says "Change Username"	5 min	Blake
3	Setup redux action handler	1 hr	Blake
4	Create a change username endpoint that updates the username in the backend	2 hr	Blake
5	Create black box integration tests	1 hr	Blake

Acceptance Criteria:

- Given I am on the profile page, when I click the options tab, I should see a text box with placeholder text "New Username" and a button "Change Username"
- Given I am trying to change my username, when I give valid info, I should see my name update in the top left corner.
- Given I am trying to change my username, when I give an empty string, I should see an error that says "Please enter a username".
- Given I am trying to change my username, if the username already exists, I should see an error that says "Username already exists".

User Story # 44: Change Password

As a user, I would like to be able to change my password

#	Description	Estimated Time	Owner
0	Dependency on User Story # 42: Profile Page	0 hr	Blake
1	Create a text box that allows the user to enter a new password and a box for old password	15 min	Blake

2	Create a button that says “Change Password”	5 min	Blake
3	Setup redux action handler	1 hr	Blake
4	Create a change password endpoint that updates the hashed password in the backend	2 hr	Blake
5	Create black box integration tests	1.5 hr	Blake

Acceptance Criteria:

- Given I am on the profile page, when I click the options tab, I should see a text box with placeholder text “New Password”, a text box with placeholder text “Old Password”, and a button “Change Password”
- Given I am trying to change my password, when I give valid info, I should see a success message.
- Given I am trying to change my password, when I give an empty string in either new or old password, I should see an error that says “Please enter your [new/old] password”.

User Story # 45: Other Profile

As a user, I would like to see other player’s public details.

#	**Description**	**Estimated Time**	**Owner**
0	Dependency on User Story # 42: Profile Page	0 hr	Blake
1	Adapt profile api call to have appropriate permissions per player	2 hr	Blake
2	Page should adaptively display information as available	1hr	Blake
3	If a user does not exist, should display an error message.	45 min	Blake
4	Create permissions tests and integration tests	2 hr	Blake

Acceptance Criteria:

- Given I navigate to /profile/:userId, I should see the username associated with the userId.
- Given I navigate to a userId that isn’t my own, I should not see the options tab.
- Given I navigate to a userId that isn’t my own, I should not see the achievements tab.

Friends

User Story # 46: Add Friends

As a user, I would like to be able to add friends, so that I can compete with them and compare our progress

#	Description	Estimated Time	Owner
1.	Conceptually create a new table that is used to indicate that two users are friends	30 mins	Ryan
2.	Implement the new table into our ORM	30 mins	Ryan
3.	Create option in menu bar that opens up a modal for sending and accepting friend requests	1hr	Ryan
4.	Create backend API endpoint for sending and accepting a friend request	1 hr	Ryan
5.	Update Redux store to call on send/accept friends endpoint	1 hr	Ryan
6.	Test that the backend response works and returns an error when adding a user that does not exist.	1 hr	Ryan
7.	Test frontend UI displays friends correctly and displays an error when adding a user that does not exist.	1 hr	Ryan

Acceptance Criteria:

- Given a registered user account, when I add a friend, it will send them a friend request.
- Given a pending friend request, when I press accept, it will add that user to my friends list.
- Given that error handling is properly implemented, when a user sends a friend request to a user that does not exist, an error is sent from the backend and an error message is displayed to the user.

User Story # 47: Friends List

As a user, I would like to be able to view and manage my friends list

#	Description	Estimated Time	Owner
0	Dependency on User Story # 42: Profile Page	0 hr	
1.	Create a table within the friends tab on the profile page that paginates	30 mins	Ryan
2.	Create backend API endpoint for getting a user's friends from the database	1 hr	Ryan
3.	Add to the Redux store to call the endpoint on the frontend	1 hr	Ryan
4.	Parse data received by the backend and render table with user's friends	30 mins	Ryan
5.	Handle the case when a user does not have any friends associated to their profile	30 mins	Ryan
6.	Manually test that tables paginate, correct data appears in the tables, and the "no friends" message displays.	1 hr	Ryan
7.	Manually test that the backend sends correct data from the database.	1 hr	Ryan

Acceptance Criteria:

- Given a navigable profile page, when I go to the friends tab, it will display a table with all my friends.
- Given a user has no in-game friends, when the user visits the friends tab it will say "This user has no friends." and link to the modal for adding friends.
- Given a user has too many friends to display on a single page, when the table is displayed it will be paginated.

User Story # 48: Invite Friends to Game

As a user, I would like to invite my friends directly by selecting their usernames

#	Description	Estimated Time	Owner
1.	Create a new table for game invites and add to our ORM	30 mins	Ryan
2.	Create API endpoint to create game invite entries in	1 hr	Ryan

	the database after an invitation is sent		
3.	Create a component for the create game page to add and remove friends being invited to the game.	1.5 hr	Ryan
4.	Use Redux store to call on API endpoint to tell backend to add game invite entry to backend	30 mins	Ryan
5.	Implement an API endpoint to get game invites for displaying invitations	1 hr	Ryan
6.	Render pending requests onto the select a game page with the option to accept or reject invites.	1 hr	Ryan
7.	Create backend endpoints for sending, accepting, and rejecting invites	1 hr	Ryan
8.	Create a GameProfile database entry if a user accepts a game, and delete a request if a user rejects a game.	1 hr	Ryan
9.	Manually test that the component on the create a game page works and they select a game cards display properly	1 hr	Ryan

Acceptance Criteria:

- Given a “create a game page”, when the page is rendered, it will display all my friends that I can invite to the game.
- Given pending invites, when the “select a game” page is visited, the pending invites will come up as cards with accept/reject on them.
- Given the option to accept an invite, when the player chooses accept, they will be added to the game.
- Given the option to reject an invite, when the player chooses reject, the game invite will be deleted.

Leaderboards

User Story # 49: Current Leader

As a user, I would like to see the current leader of any particular game in a window on the game screen.

#	Description	Estimated Time	Owner

1.	Research and create a “Current Leader” box component to be displayed in the game screen to display the current leader	1.5 hr	Akash
2.	Fetch data on current leader of the game from the leaderboard page, insert information into “Current Leader” box on game screen	2 hr	Akash
3.	Write tests to ensure that current leader of the game displayed on game screen corresponds to the #1 rank of the leaderboard for that game	1.5 hr	Akash

Acceptance Criteria:

- Given a game, as a player, if I have the greatest net value score in that game, I should be the current leader of that game.
- Given a game, when I navigate to the game screen, there should be a modal window displaying the current leader of that game.
- Given the current leader of the game, when I navigate to the leaderboard table, the user with rank #1 in the leaderboard table should correspond to the current leader of the game.

User Story # 50: Filter Leaderboard

As a user, I would like to filter the leaderboard by friends.

#	Description	Estimated Time	Owner
1.	Dependency on User Story #46: Friend’s List	0 hrs	Akash
2.	Create dropdown option on leaderboard page with button “filter by friends”, “filter by game”, “filter by global”	2 hrs	Akash
3.	For “fitler by friends”, fetch the user’s friends list data from the backend	1.5 hrs	Akash
4.	Write scripts to filter leaderboard such that only the user_IDs that exist on a particular user’s friends list are displayed on that user’s leaderboard	1.5 hrs	Akash
5.	For “filter by game” option, the leaderboard should revert back to its original format of users by game	1 hr	Akash
6.	For “filter by global”, write scripts to fetch data of	1.5 hrs	Akash

	all players among all games. Sort and display.		
7.	Write black box integration tests to test “filter by friends”, “filter by game”, and “filter by global”	1 hr	Akash

Acceptance Criteria:

- Given a game, when I navigate to the leaderboard page, there should be an option to “filter leaderboard by friends”.
- Given a filled leaderboard, when I filter the leaderboard by friends on the leaderboard page, the leaderboard table should resort itself so that the only usernames and scores displayed are those users in which you are “friends” within the game.
- Given a game’s leaderboard, when the leaderboard table is filtered by friends on the leaderboard page and I choose the option to revert back to the game leaderboard, then I should expect to see the players of the game leaderboard again.

User Story # 51: Leaderboard Page Push Notifications System

As a developer, I would like to lay out the architecture and code for notifications to be processed in the leaderboard.

#	Description	Estimated Time	Owner
1.	Research and create a service worker that manages the notifications in the leaderboard page. Register the service worker	2.5 hrs	Akash
2.	Handle push event, trigger push message to display notification using the service worker	1.5 hrs	Akash
3.	Manual testing to see if notifications appear when prompted by the developer	30 mins	Akash

Acceptance Criteria:

- Given a working notification service worker, when I trigger a notification to display in the leaderboard, it should appear.
- Given other services on the page running, when a notification appears, it should not interrupt the other services and functions on the page.
- Given a notification popup service, when a notification appears, it should not remain there for longer than 5 seconds.

Notifications

User Story # 52: Popup Notification System

As a user, I would like to have a notification popup bar where users can get notified of any new updates, friend requests, and game invitations

#	Description	Estimated Time	Owner
1	Integrate with websockets on the server to send users the notifications	2 hrs	Tyler
2	Integrate with websockets on the client to receive notifications	1 hr	Tyler
3	Display a UI notification when a notification is received	1 hr	Tyler
4	Create authentication mechanism to allow private per-user messages over websockets	4 hrs	Tyler
5	Create a hook to send a notification when a user receives a friend request	1.5 hr	Tyler
6	Create a hook to send a notification when a user receives an invitation	1.5 hr	Tyler
7	Research sending socket.io messages to select individual users and authentication	2 hrs	Tyler
8	Test notification hooks actually create notifications	1 hr	Tyler

Acceptance Criteria:

- Given a user receives a notification, the client should display a toast or popup
- Given a friend request is made to a user, the user receiving the friend request should get a notification
- Given a friend is invited, the user receiving the invite should get a notification

User Story # 53: Price Change Notification

As a user, I would like to receive in-app notifications for large movements in crypto price.

#	Description	Estimated Time	Owner
1	Create endpoint for users to create pricing alerts	2 hrs	Tyler
2	Create page/form on the client to allow users to create price alerts for coins	3 hrs	Tyler
3	Create page on the client to view price alerts that users are subscribed to	3 hr	Tyler
5	Create endpoint to fetch a user's price alert subscriptions	1 hr	Tyler
6	Integrate with real-time data service to send notifications upon price updates	2 hrs	Tyler
7	Error handling on backend	1 hr	Tyler
8	Test error handling on backend	1 hr	Tyler
9	Test fetching a user's price alert subscriptions returns only their own subscriptions	1 hr	Tyler

Acceptance Criteria:

- Given the price alert form is implemented correctly, a user should be able to fill out this form to create a price alert.
- Given a user creates a price alert at a price, the user should receive a notification when the price hits that strike price
- Given the price alert endpoint is created correctly, the form should display and notify the user of any errors in their input.
- Given the backend endpoint is implemented correctly, it should insert an alert into the database for later use by the real-time data service

User Story # 54: Notification Widget

As a user, I would like to see a widget that displays notification history throughout the game.

#	Description	Estimated Time	Owner
1	Create page on frontend to display a user's received notifications	3 hrs	Tyler
2	Create endpoint on backend to fetch a user's	1 hr	Tyler

	notifications		
3	Paginate a user’s notifications on the client	1 hr	Tyler
4	Paginate a user’s notifications on the server	1 hr	Tyler
5	Write tests to ensure users can only see their own notifications	1 hr	Tyler

Acceptance Criteria:

- Given a user has received a notification, the notification should appear in the notification history.
- Given a user has more than a couple notifications, the notifications should be paginated
- Given the GET notification endpoint is correct, users should only be able to see their own notifications and not the notifications of others.

Chat

User Story # 55: Game Chat

As a user, I would like to chat with other players who are in the same game session with me.

#	Description	Estimated Time	Owner
1	Research and implement the group chat component on the frontend.	3 hours	Raziq
2	Implement database tables to store messages.	45 minutes	Raziq
3	Create an API endpoint to update the database table when a user sends a new message.	1.5 hour	Raziq
4	Integrate the send message API to the frontend.	1 hour	Raziq
5	Test the database is updated properly when the endpoint is used.	30 minutes	Raziq
6	Create API endpoints to get chat messages in the database. These endpoints need to be optimized to minimize the size of data transfer.	2 hours	Raziq
7	Test correct result is returned when the endpoint is used.	30 minutes	Raziq

8	Research and implement a websocket to automatically call the get message API from the frontend every time a new message is added into the database.	3 hours	Raziq
9	Create a notification mechanism to notify users of new messages when they are in the game room.	30 min	Raziq

Acceptance Criteria:

- Given the chat feature is implemented, when I open the component, I will be able to see the conversation between all players in the chat.
- Given the chat feature is implemented, when I open the component, I will be able to send a message to all players in the chat.
- Given the chat component is implemented, when I enter a message into the component, all players in the chat should be able to see it..
- Given the badge is implemented, when I receive a new message, I will be notified about it with a badge or other method.
- Given the chat component is implemented, when I click on it, the component should open/close.

User Story # 56: Admin Page

As a user, I would like to have an admin page to manage players and enforce game policies

#	Description	Estimated Time	Owner
1	Dependency on User Story # 50: Popup Notification	-	-
2	Set up a new page.	30 mins	Raziq
3	Implement a component to broadcast a message to a specific user or all users. This should utilize the API from User Story # 50.	1 hour	Raziq
4	Create an API endpoint to remove a player account.	1.5 hour	Raziq
5	Test that the API removes a player correctly.	30 minutes	Raziq
6	Implement database tables to store report tickets and admin accounts. Also, add a seeded admin account in the database.	1 hour	Raziq
7	Implement a component to view all reports that were	3 hours	Raziq

	made by players. The list should be paginated and the admin should be able to sort it by the status of the report.		
8	Implement an API endpoint to get all reports from the database.	1.5 hours	Raziq
9	Test that the API returns correct reports.	30 mins	Raziq
10	Implement a modal window to view an individual report, mark it as processed, and send a warning to the reported account or remove the account from the game. The warning feature should utilize the API from User Story # 50.	1.5 hours	Raziq
11	Create an API endpoint to update the status of a report.	1.5 hours	Raziq
12	Test that the API updates the status of a report correctly.	30 mins	Raziq
11	Integrate the created APIs to the frontend	2 hour	Raziq

Acceptance Criteria:

- Given the admin page was implemented, when I open it, the page will not return if I am not an admin.
- Given the admin page was implemented, when I open it, I can access the reports that are sent to the admin by players.
- Given the admin page was implemented, when I open it, I can broadcast a notification to all users.
- Given the admin page was implemented, when I open it, I can send a notification to a specific user.
- Given the report popup window was implemented, when I open it, I can see the details of the report.
- Given the report popup window was implemented, when I open it, I can send a warning to the reported account.
- Given the report popup window was implemented, when I open it, I can remove the reported player account.

User Story # 57: Reporting Players

As a user, I would like to report players who make any form of communication abuse.

#	Description	Estimated Time	Owner
1	Dependency on User Story # 53: Game Chat	-	-
2	Dependency on User Story # 54: Admin Page	-	-
3	Implement a report button.	15 minutes	Raziq
4	Implement a modal window to show the details of a report and ask confirmation from the user. If the report button cannot be associated with a message in the chat component from User Story # 53, this window will also ask the user to select the message to be reported.	1.5 hours	Raziq
5	Create an API endpoint to create a new report ticket in the database.	1.5 hour	Raziq
6	Test that the API updates the database correctly	30 minutes	Raziq
7	Integrate the API to the frontend.	1 hour	Raziq

Acceptance Criteria:

- Given the report button was implemented, when I click on it, a popup window will appear on my screen.
- Given the report popup window was implemented, when it was opened, I will see the details of my report and confirmation buttons.
- Given the report feature is done correctly, when I send a report, an admin will be able to see it from their page.

End Step

User Story # 58: Interface Correction

As a developer, I would like to make an intuitive, straightforward, and interactive interface.

#	Description	Estimated Time	Owner
1	Do field testing (ask friends and family to use the app, do not give help or ask leading questions), note any confusions about the interface	4 hrs	Blake
2	Correct confusing UI elements.	3 hrs	Blake

Acceptance Criteria:

- Given an intuitive interface, when a new player plays their first game, they will know how to buy and sell cryptocurrencies with relative ease.
- Given a straightforward interface, the layout of the application will make sense in terms of where to register for an account and how to begin playing.
- Given an interactive interface, when the user interacts with different aspects of the application, the UI will be visibly updated in some form in response.

(Additional acceptance criteria will be added with any found interface concerns during field testing.)

User Story # 59: Navigation Correction

As a developer, I would like the players to be able to navigate through the application and execute trades seamlessly.

#	Description	Estimated Time	Owner
1	Do field testing (ask friends and family to use the app, do not give help or ask leading questions), note any confusions about navigation	2 hrs	Ryan
2	Correct confusing navigation elements	2 hrs	Ryan

Acceptance Criteria:

- Given a brand new visitor to the application, when they visit the landing page, they will know where to register for an account based on visual cues on the landing page.
- Given a newly registered account, the new user will be redirected to the page and be notified of the button where they can create a new game.
- Given a newly registered account, the user will be notified of the menu and the fact they can access their account information there.

(Additional criteria will be added with any found navigation concerns during field testing.)

User Story # 60: Color Correction

As a developer, I would like to use a pleasing color scheme that will add to the aesthetic of the application. The color palette that I plan to use can be viewed here https://coolors.co/4aa7d6-2a628f-13293d-79b473-db504a.

#	Description	Estimated Time	Owner
1	Edit styling so the above colors are used.	2 hrs	Ryan

Acceptance Criteria:

- Given the corrected coloring, when I look at any “confirmation” buttons or “good” indicators, the color #79B473 (light green) should be used.
- Given the corrected coloring, when I look at any “cancel” buttons or “bad” indicators, the color #DB504A (light red) should be used.
- Given the corrected coloring, when I look at any jumbotrons or stylized elements that are neither good nor bad, the color #4AA7D6 (light blue) should be used.

User Story # 61: Security Correction

As a developer, I would like to secure the sensitive data that is stored in the database.

#	Description	Estimated Time	Owner
1	Code review all backend routes (again) for security	3 hrs	Blake
2	Correct any vulnerabilities	2 hrs	Blake

Acceptance Criteria:

- Assuming a vulnerability is found in backend routes, when an outside source attempts to access a route with sensitive user data, the route will not be accessible.
- Assuming a vulnerability is found in API requests, when an outside source tries to make a malicious request (such as purposefully sending erroneous request parameters), the backend will not respond to those requests.
- Assuming a vulnerability is found in backend routes, when requests with sensitive data are sent to the backend from the frontend, the data will be encrypted.

(Additional acceptance criteria will be filled in with any additional security vulnerabilities found)

User Story # 62: Responsive Application

As a developer, I would like the application to be responsive to all requests made by the user.

#	Description	Estimated Time	Owner
1.	Stress test the frontend by clicking many buttons,	1 hr	Ryan

	different parts of the UI, etc. in rapid succession.		
2.	Stress test the backend by sending many different requests to the API, such as registering for multiple accounts at a time.	1 hr	Ryan
3.	Implement preventative measures into the API to prevent multiple request from trying to be fulfilled	2 hrs	Ryan

Acceptance Criteria:

- Given a suite of frontend stress tests, when the UI is overloaded with inputs, the application will continue to run smoothly and will not crash.
- Given a suite of backend stress tests and preventative measures, when the API is overloaded with requests, the API will not crash.
- Given an overload of requests, when the API tries to handle too many requests (an arbitrary amount, preferably discovered during initial stress testing), it will send an error rather than trying to fulfill every request.

Remaining from Sprint 2

User Story # 13: Landing Page

As a player, I would like to see a landing page that includes the current prices of several cryptocurrencies.

#	Description	Estimated Time	Owner
~~1~~	~~Create a component where pricing information about different cryptocurrencies can reside and can dynamically update based on an arbitrary choice of coins~~	~~3 hrs~~	~~Ryan~~
~~2~~	~~Fetch data from the database to serve the current prices of ten arbitrary coins~~	~~2 hrs~~	~~Ryan~~
~~3~~	~~Connect that data onto the created module to display onto the landing page~~	~~2 hrs~~	~~Ryan~~
~~4~~	~~Sort the listed coins based on price over a base currency (such as USD)~~	~~1 hr~~	~~Ryan~~
5	Create tests to ensure that an arbitrary number of information components are displayed on the landing page	1 hr	Ryan
6	Create automated tests to ensure displayed data matches current data.	1 hr	Ryan
7	Update implementation to using a common Redux store between different pages	1 hr	Ryan

Acceptance Criteria:

- ~~Given current ticker data in the database, when the landing page is visited, it should display a price.~~
- ~~Given multiple tickers in the database, when a coin price is displayed, it should display the most recent price.~~
- ~~Given multiple tickers per coin in the database, when multiple coins are displayed, they should be sorted by price in descending order.~~
- ~~Given a functional connection to the database and correct data, when I navigate to the landing page, the current price of ten arbitrary coins will be displayed.~~

- ~~Given a set of data for different coins, when the landing page gets populated with coins, it will display in order of price based on a base currency.~~
- ~~Given an arbitrary set of coins, the layout of the page will be modified based on the number of coins in that set.~~
- Given a functional module for coin information, a suite of tests will ensure that data displayed matches current data.

User Story # 14: Landing Page Graphs

As a player, I would like to see a landing page that shows graphs of historical data of cryptocurrencies.

#	Description	Estimated Time	Owner
1	~~Create a module to graph historical data based on data from our database~~	~~4 hrs~~	~~Ryan~~
2	~~Create a backend module to request the relevant data from the database to use in our graphing module~~	~~2 hrs~~	~~Ryan~~
3	~~Ensure proper error handling when given bad or incomplete data from the database~~	~~2 hrs~~	~~Ryan~~
4	~~Add the created module onto the landing page dynamically based on an arbitrary number of coins~~	~~1 hr~~	~~Ryan~~
5	Create tests to check for error handling and displaying a blank graph if errors persist.	30 mins	Ryan

Acceptance Criteria:

- ~~Given historical cryptocurrency data in the database, when the landing page is visited, it will display a graph of historical data for each cryptocurrency on the page.~~
- ~~Given data from the database, when a graphing module is created, it will be able to display data selected from our database.~~
- ~~Given a working backend module, when erroneous data is passed to it, it will handle the data appropriately and retry requesting data. If error persists after an arbitrary number of tries, it will display a blank graph.~~

User Story # 15: Joining the Global Timed Game

As a player, I would like to be able to join the global timed game.

#	Description	Estimated Time	Owner
1	For development purposes, create an entry for the global timed game in the database each time the development server is run, via migration scripts.	1 hr	Ryan
2	When a user selects the global timed game option on the select a game page, create a GameProfile database entry for that user, if not yet already created	1 hr	Ryan
3	Once the global timed game is completed, automatically create a new global timed game and add it to the database.	2 hr	Ryan
4	Test that the creation of global timed game is automated and creates a game	1 hr	Ryan

- Given a freshly started database during development, when the development server is started, a new global timed game will be added to the database.
- Given a completed global timed game, a new global timed game will be created automatically.
- Given a player has already joined a session of a global timed game, once they click on the global timed game option on the select a game page a new GameProfile database entry will not be created for them.

User Story # 18: Navigating Current Active Games

As a player, I would like to be able to navigate to any of my currently active games.

#	Description	Estimated Time	Owner
7.	Write an API test to ensure that correct results are returned when the user filters games.	30 mins	Raziq
9.	Write a test to ensure that only games on the requested page are returned by the API.	30 mins	Raziq
10.	Write an API test to ensure that correct results are returned when the user sorts games according to date and title.	1 hour	Raziq

Acceptance Criteria:

- ~~Given a button for an active game was successfully rendered, when I click on it, I will be redirected to the correct game page.~~
- ~~Given a search bar was successfully implemented, entering a string into it will allow me to only view active games that contain the string in their name.~~
- ~~Given a button for an active game was successfully rendered, if the name of the game is too long, the name will be truncated.~~
- ~~Given a button for an active game was successfully created, when I hover my cursor on that button, a tooltip displaying the game's full name will appear.~~
- ~~Given that the sorting feature was successfully implemented, when I select an option, my list of games will be sorted according to that option.~~
- ~~Given that the pagination feature works, when I have more than a threshold amount of games, the games will be separated into several pages.~~
- ~~Given that the pagination feature works, when I have more than a threshold amount of game pages, only a constant number of pages will be shown in the page bar at a time.~~

User Story # 19: Joining Private Games

As a player, I would like to be able to join a private game that has been created.

#	Description	Estimated Time	Owner
6.	Write a test to ensure that the user was added into the game properly.	30 mins	Raziq

Acceptance Criteria

- ~~Given that a button was successfully created, clicking on it will display a popup page.~~
- ~~Given that a popup page was successfully rendered, clicking on the 'X' button or anywhere outside of the page will close it.~~
- ~~Given that a textbox was successfully created, when I enter a correct game code, I will be redirected to the correct game page and be added into the game.~~
- ~~Given that a textbox was successfully created, when I enter an incorrect game code, I will get an error message.~~

User Story # 21 Coin table graphs

As a player, I would like to see a time series graph displaying the historical price of a cryptocurrency on the game page.

#	Description	Estimated Time	Owner

1	Create a backend api for historical data based on a given time span	1 hr	Ryan
2	Create graphs for each coin	1 hr	Ryan
3	Combine historical data with live data to continuously update the graph for whatever the selected time span is.	2 hrs	Ryan
4	Create deeply-rendered black box visual tests	1 hr	Ryan

Acceptance Criteria:

- Given the coin data, when I view the table, it should create a graph for each coin.
- Given the user selects a time interval from the toolbar (hour, day, week, etc), the graph reflects that coin's price over that interval.
- Given a graph is created, it should accurately represent the price history of a coin.
- Given a coin has not enough price history to fill the graph, it should truncate the left side so that the price history lines up with other graphs' timelines.

User Story # 23: Get Coins by game ID (filtered)

As a player, I would like to modify the time span of crypto data to display (min/hr/day/month/yr), so that I may modify the data view to fit my buying and selling needs.

#	Description	Estimated Time	Owner
1	Frontend: Send time span and above sort by categories	2 hr	Blake

Acceptance Criteria:

- Given a game ID, time span, and sort by categories, when I send this to the backend, it should return the matching coins.
- Given a set of returned coins, it should be assigned to the proper redux store variables.
- Given the code compiles, it should be tested for error states.

User Story # 25: Liquefy endpoint

As a player, I would like to be able to liquefy all current assets immediately.

#	Description	Estimated Time	Owner

1	“Liquefy” endpoint, which sells all of a users’ coins	3 hrs	Blake
2	Create black box integration tests	1 hr	Blake

Acceptance Criteria:

- Given the user sees the liquify button, they should be able to click and exchange all coins for cash.
- Given the user liquifies assets, the backend should compute the request accurately.
- Given the backend returns 200 (OK), the frontend should update to display updated data.

User Story # 26: Navigate to Leaderboard

As a player, I would like to be able to navigate to the leaderboard for the current game.

#	Description	Estimated Time	Owner
1	~~Create “Leaderboard” game page that can be accessed by players~~	2 hrs	Akash

Acceptance Criteria:

- ~~Given any game, when I navigate to the game screen, there should be a button that is labelled “Leaderboard”.~~
- ~~Given the button labelled “Leaderboard”, when I click the button, I should be navigated to the game’s leaderboard page.~~
- Given any game, when I navigate to that game’s leaderboard page, it should call a get highscores api.

User Story # 28: Serve Live Cryptocurrency Prices

As a developer, I would like to serve live cryptocurrency prices (and potentially other cryptocurrency statistics) to the user with websockets.

#	Description	Estimated Time	Owner
1	Debug client socket.io connection problems in production	2 hrs	Tyler

Acceptance Criteria:

- Given serving live cryptocurrency prices is implemented correctly, when a user accesses a websocket endpoint, then the user should receive new price data in real-time.

- Given serving live cryptocurrency prices is implemented correctly, it should integrate with the service that fetches the data from external APIs.
- Given serving live cryptocurrency prices is implemented correctly, when the server is serving a websocket the server should also be able to handle other connections to the server.

User Story # 38: See Players Usernames and Net Values

As a player, I would like to see players' usernames and current net values on the leaderboards.

#	Description	Estimated Time	Owner
1	~~Create table to display leaderboard page information~~	3 hrs	Akash
2	Create SQL queries to fetch users net worth along with their usernames, sort by decreasing net worth to be placed in hiscores page	7 hrs	Akash
3	~~Display current leader of hiscores~~	30 min	Akash
4	Create tests to ensure correct values for hiscores leaderboard are displayed based on games	2 hrs	Akash
5	~~Ensure smooth UI on leaderboard page~~	1 hr	Akash

Acceptance Criteria:

- ~~Given any game, when I navigate to the leaderboard page, players' usernames and current net values on the leaderboard should be displayed.~~
- ~~Given a leaderboard, players should be sorted by their net values in descending order.~~
- ~~Given more than 25 players in the game, the leaderboard should be paginated.~~

User Story # 39: Leaderboard Notifications

As a player, I would like to receive in-app notifications if there are any significant movements in the leaderboard.

#	Description	Estimated Time	Owner
0	Dependency on User Story #62	0 hrs	Akash
1	Write scripts to notify user if there are any large movements on the leaderboard	3 hrs	Akash

Acceptance Criteria:

- Given the player is on the game screen, when second place surpasses first, a small popup should appear that notifies the user.
- Given the player is on the game screen, when the player gets a movement notification, it should not interrupt gameplay.
- Given the player is on the game screen, when the player gets a movement notification, it should disappear within 5 seconds.

Remaining Backlog

Green = On this Sprint
Yellow = Remaining from Sprint 2
~~Strikethrough~~ = Completed in a Previous Sprint

Functional Requirements

1. General

As a player,

a. I would like to see a landing page that includes the current prices of several cryptocurrencies.
b. I would like to see a landing page that shows graphs of historical data of cryptocurrencies.
c. I would like to have a play page that displays the different types of games that I could play.
~~d. I would like to have a dedicated game screen for every game that I join.~~
e. I would like to have a guest player option (optional).
f. I would like to have a notification popup bar where users can get notified of any new updates, friend requests, and game invitations (optional).
g. I would like to have a trophy system to keep track of my achievements and have some major goals to look forward to in this game (optional).
h. I would like to be given a set of goals that I can accomplish every week to motivate me to come back to the game from time to time (optional).
i. I would like to backtest trading bots to test my cryptocurrency trading models (if time permits and obtaining real-time cryptocurrency data is not feasible).

As a developer,

a. I would like to have an admin page to manage players and enforce game policies.
~~b. I would like to create a service/daemon to fetch live cryptocurrency data.~~
~~c. I would like to parse the raw data from (potentially) several APIs.~~
~~d. I would like to integrate historical cryptocurrency prices into the platform.~~
e. I would like to serve live cryptocurrency prices (and potentially other cryptocurrency statistics) to the user with websockets.
~~f. I would like to calculate a player's net worth, so that a player can see an accurate representation of their standing compared to others.~~

2. Player account

As a player,

- ~~a. I would like to be able to register for a Fortune account.~~
- b. I would like to have a page that displays my profile's details.
- c. I would like to see other player's public details.
- d. I would like to be able to upload a profile picture (optional).
- ~~e. I would like to be able to log in and log out from my account.~~
- f. I would like to be able to change my username (optional).
- g. I would like to be able to change my password (optional).
- h. I would like to be able to add friends, so that I can compete with them and compare our progress (optional).
- i. I would like to be able to view and manage my friends list (optional).
- j. I would like to link my account to Facebook, so that I can find my friends who also play this game easily (optional).
- k. I would like to be able to register with my Google account so that the registration process could be done quicker (optional).

3. Creating a game

As a player,

- ~~a. I would like to create a private group game through the play page.~~
- ~~b. I would like a choice of game title.~~
- ~~c. I would like a choice of duration of the game.~~
- ~~d. I would like a choice of which cryptocurrencies (BTC, ETH, etc) are to be traded during the game.~~
- ~~e. I would like a choice of initial cash amount each player has.~~
- ~~f. I would like a shareable link to give to other players to invite them.~~
- ~~g. I would like a 4-digit code to give to other players to invite them.~~
- h. I would like to invite my friends directly by entering their usernames (optional).

4. Joining / navigating to a game

As a player,

- ~~a. I would like to be added to the global indefinite game, so that I can play and compete with strangers.~~
- b. I would like to be able to join the global timed game.
- c. I would like to be able to join a private game that has been created.
- d. I would like to be able to navigate to any of my currently active games.

5. Playing a game

As a player

- ~~a. I would like to see the title of the game.~~

b. ~~I would like to see a button that reveals the 4 digit code to join the game.~~

c. ~~I would like to see my current cash within the current game.~~

d. ~~I would like to see my current net worth.~~

e. ~~I would like to see the time remaining in a game.~~

f. I would like to see a time series graph displaying the historical price of a cryptocurrency on the game page.

g. I would like to be able to switch the cryptocurrency that is being displayed in the graph (if api permits different exchanges).

h. I would like to modify the time span of crypto data to display (min/hr/day/month/yr), so that I may modify the data view to fit my buying and selling needs.

i. ~~I would like to be able to buy and sell mock cryptocurrency and have it attached to my account.~~

j. I would like to obtain more money if my net balance goes to zero (go into debt) (optional)

k. I would like to be able to liquefy all current assets immediately.

l. I would like to be able to view data about a currency (Price, history, % change, amount, min/max price on various exchanges)

m. I would like to have an option to buy coins from an exchange that offers the lowest price and sell coins to an exchange that offers the highest price at any given time. (if api permits different exchanges)

n. I would like to see the current leader of the game.

o. I would like to be able to navigate to the leaderboard for the current game.

p. I would like to filter the leaderboard by friends (optional).

q. I would like to see players' usernames and current net values on the leaderboards.

r. I would like to receive in-app notifications for large movements in crypto price.

s. I would like to receive in-app notifications if there are any significant movements in the leaderboard.

t. I would like to see a widget that displays notification history throughout the game (optional).

u. I would like to chat with other players who are in the same game session with me (optional).

v. I would like to report players who make any form of communication abuse (optional).

Non-Functional Requirements

1. **Architecture**
   a. ~~As a developer, I would like to employ a client-server architecture for Fortune.~~
   b. ~~As a developer, I would like to develop the frontend with React and the server in Python with Flask.~~
   c. ~~As a developer, I would like to store user and cryptocurrency data with a hosted PostgreSQL database.~~
   d. ~~As a developer, I would like to deploy Fortune through Amazon Web Services in order to integrate our frontend and backend easily.~~
2. **Design**
   a. As a developer, I would like to make an intuitive, straightforward, and interactive interface.
   b. As a developer, I would like the players to be able to navigate through the application and execute trades seamlessly.
   c. As a developer, I would like to use a pleasing color scheme that will add to the aesthetic of the application. The color palette that I plan to use can be viewed here https://coolors.co/4aa7d6-2a628f-13293d-79b473-db504a.
3. **Security**
   a. As a developer, I would like to secure the sensitive data that is stored in the database.
   b. ~~As a developer, I would like to only allow authenticated users to access some routes in Fortune.~~
4. **Performance**
   a. As a developer, I would like the application to be responsive to all requests made by the user.
   b. As a developer, I would like the application to be able to properly handle any raised errors.