

P2 - Runtime Terrors

Darla Drenckhahn

Patrick Lee

Garrett Olsen

Daniel Stephenson

Falkyn Worm

Omega Chess Recap

- Omega Chess is played on a 10x10 board and four “Wizard” squares at each corner.
- It has the same rules as chess except for the behavior of Pawns. The pawn can only move forward and in its initial position it can move one, two or three squares forward.
- There are two additional pieces in Omega Chess, the Champion and the Wizard.
- The Champion is like the Knight. It can move one square orthogonally forward, backward or to either side. It can also jump over these squares and also jump two square diagonally in all four directions.
- The Wizard can move one square diagonally in all four directions, or it can move as a Knight would, but three squares in one direction instead of two.

Kanban Board Start of P2

The Kanban board displays the following issues and tasks across its columns:

- Backlog (Mega...)**
 - Filter by Epic Issues
 - 20-runtimerrors #6 e System (P2)
 - Filter by Epic Issues
 - 20-runtimerrors #5 Management System (P2)
 - Filter by Epic Issues
 - 20-runtimerrors #7 on System (P2)
 - Filter by Epic Issues
 - 20-runtimerrors #9 ation System (P2)
 - Filter by Epic Issues
- Product Backlog (Epics...)**
 - cs414-f20-runtimerrors #14 Create a new match
 - Match Management System
 - Filter by Epic Issues
 - Epic
 - cs414-f20-runtimerrors #37 Matchmaking class
 - Create a new match
 - 3 Task
 - cs414-f20-runtimerrors #54 Pull sender info from invite
 - Create a new match
 - 1 Task
 - cs414-f20-runtimerrors #57 Set sender as player 1
 - Create a new match
 - 1 Task
 - cs414-f20-runtimerrors #16 Accept/decline a match from a list to play
 - Invitation System
 - Filter by Epic Issues
 - Epic
 - cs414-f20-runtimerrors #47 Notification of
- Icebox**
 - 1 Issue - 1 Story Point
 - cs414-f20-runtimerrors #65 Alert users of finished games if they are not in the match.
 - Result Alert
 - 1 Task
- Backlog**
 - 20 Issues - 23 Story Points
 - cs414-f20-runtimerrors #69 Update system
 - Sprint 1 (P2)
 - Game/Match
 - Filter by Epic Issues
 - Epic
 - cs414-f20-runtimerrors #70 Send match move to the server.
 - Sprint 1 (P2)
 - Update system
 - 2 Task
 - cs414-f20-runtimerrors #71 Create a method to receive match move data on the server.
 - Sprint 1 (P2)
 - Update system
 - 2 Task
 - cs414-f20-runtimerrors #85 Automatically update clients if they are open with a move
 - Sprint 1 (P2)
 - Update system
 - 2 Task
 - cs414-f20-runtimerrors #12 Unregister
 - Sprint 1 (P2)
 - Registration System
- In Progress**
 - 16 Issues - 25 Story Points
 - cs414-f20-runtimerrors #105 Pawn class
 - Sprint 1 (P2)
 - Piece Classes
 - 2 Task
 - cs414-f20-runtimerrors #106 Rook class
 - Sprint 1 (P2)
 - Piece Classes
 - 2 Task
 - cs414-f20-runtimerrors #107 Knight class
 - Sprint 1 (P2)
 - Piece Classes
 - 2 Task
 - cs414-f20-runtimerrors #108 Bishop class
 - Sprint 1 (P2)
 - Piece Classes
 - 2 Task
 - cs414-f20-runtimerrors #109 Abstract Piece Class
 - Sprint 1 (P2)
 - Piece Classes
 - 1 Task

Kanban Board Middle of P2 (Sprint 1)

The Kanban board is organized into columns representing different stages of the workflow. Each column has a header indicating the number of issues and story points. The tasks are categorized into Epics, Tasks, and Deliverables. The board is divided into several sections, each with a specific focus.

- Planned MegaEpics** (0 Story Points):
 - cs414-f20-runtimerrors #77: Friend system
- Unplanned Epics** (2 Issues - 0 Story Points):
 - cs414-f20-runtimerrors #79: Friends page
 - cs414-f20-runtimerrors #78: Friend invite system
- Product Backlog (MegaE...** (7 Issues - 0 Story Points):
 - cs414-f20-runtimerrors #90: Game/Match
 - cs414-f20-runtimerrors #4: Registration System
 - cs414-f20-runtimerrors #6: Archive System
 - cs414-f20-runtimerrors #5: Match Management System
 - cs414-f20-runtimerrors #7: Invitation System
 - cs414-f20-runtimerrors #9: Notification System
 - cs414-f20-runtimerrors #8: Graphical Interface
- Product Backlog (Epics/T...** (62 Issues - 64 Story Points):
 - cs414-f20-runtimerrors #14: Create a new match
 - cs414-f20-runtimerrors #37: Matchmaking class
 - cs414-f20-runtimerrors #54: Pull sender info from invite
 - cs414-f20-runtimerrors #57: Set sender as player 1
 - cs414-f20-runtimerrors #16: Accept/decline a match from a list to play
 - cs414-f20-runtimerrors #47: Notification of Acceptance/Declining
 - cs414-f20-runtimerrors #40: Create a list of incoming invites per user
- Icebox** (9 Issues - 10 Story Points):
 - cs414-f20-runtimerrors #65: Alert users of finished games if they are not in the match.
 - cs414-f20-runtimerrors #139: P2 Deliverables
 - cs414-f20-runtimerrors #146: Source Code
 - cs414-f20-runtimerrors #144: Kanban Board Weekly
 - cs414-f20-runtimerrors #148: Output of Scrum Ceremonies
 - cs414-f20-runtimerrors #145: Design Artifacts Updates
 - cs414-f20-runtimerrors #142: User Stories and Tasks
 - cs414-f20-runtimerrors #140: Development Manual
- Backlog** (8 Issues - 10 Story Points):
 - cs414-f20-runtimerrors #185: Add attributes to class diagram
 - cs414-f20-runtimerrors #186: Revise the class diagram to use appropriate connections
 - cs414-f20-runtimerrors #187: Refactor CRC Cards
 - cs414-f20-runtimerrors #182: Rename "System classes to "Utility"
 - cs414-f20-runtimerrors #69: Update system
 - cs414-f20-runtimerrors #70: Send match move to the server.
 - cs414-f20-runtimerrors #71: Create a method to receive match move data on the server.
 - cs414-f20-runtimerrors #85: Automatically update clients if they are open with a move
- In Progress** (3 Issues - 5 Story Points):
 - cs414-f20-runtimerrors #147: Traceability Link Matrix
 - cs414-f20-runtimerrors #172: Server-side Turn Utility
 - cs414-f20-runtimerrors #173: Turn Utility Class
- Review/QA** (1 Issue - 1 Story Point):
 - cs414-f20-runtimerrors #183: Associate user stories to tasks.

Kanban Board End of P2 (Sprint 2)

Repos (1/1) Labels Milestones Assignees Epics Releases Estimates Authors

Find Issues (7+)

New Issue +

1 Issue - 0 Story Points

New Issues

cs414-i20-runtimerrors... #275 Update and rename DesignArtifacts.end to deliverables/DesignArtifacts.m d

1 Issue - 0 Story Points

Unplanned MegaEpics

cs414-i20-runtimerrors #77 Friend system

Filter by Epic Issues

MegaEpic

2 Issues - 0 Story Points

Unplanned Epics

cs414-i20-runtimerrors #79 Friends piage

Filter by Epic Issues

Epic

cs414-i20-runtimerrors #78 Friend invite system

Filter by Epic Issues

Epic

6 Issues - 0 Story Points

Product Backlog (MegaE...)

cs414-i20-runtimerrors #10 Game/Match

Filter by Epic Issues

MegaEpic

cs414-i20-runtimerrors #6 Archive

Filter by Epic Issues

MegaEpic

cs414-i20-runtimerrors #7 Invitations

Filter by Epic Issues

MegaEpic

cs414-i20-runtimerrors #9 Notifications

Filter by Epic Issues

MegaEpic

cs414-i20-runtimerrors #8 Graphical Interface

Filter by Epic Issues

MegaEpic

cs414-i20-runtimerrors #197 Match Continue

Filter by Epic Issues

MegaEpic

47 Issues - 56 Story Points

Product Backlog (Epics/T...)

cs414-i20-runtimerrors... #249 Server Requests - Match/Board Game/Match

Filter by Epic Issues

Epic

cs414-i20-runtimerrors... #239 Enable the server/client to handle requests with process type 'get board data'

Server Requests - Match/Board

Task

cs414-i20-runtimerrors #71 Enable the server/client to handle requests with process type 'match move'

Server Requests - Match/Board

Task

cs414-i20-runtimerrors... #247 Enable the server/client to handle requests with process type 'get turn'

Server Requests - Match/Board

Task

cs414-i20-runtimerrors #70 Send match move to the server.

Server Requests - Match/Board

Task

cs414-i20-runtimerrors #85 Automatically update clients if they are open with a move

Server Requests - Match/Board

Task

cs414-i20-runtimerrors... #228 Enable the server/client to handle requests with process type 'get possible moves'

Server Requests - Match/Board

Task

cs414-i20-runtimerrors #16 Accept/decline a match from a list to play

Invitations

Filter by Epic Issues

Epic

0 Issues - 0 Story Points

Icebox

2 Issues - 2 Story Points

Backlog

cs414-i20-runtimerrors #139 P2 Deliverables

Filter by Epic Issues

Epic

cs414-i20-runtimerrors #141 Upload PDF of Presentation

P2 Deliverables

Task

1 Issue - 3 Story Points

In Progress

cs414-i20-runtimerrors #140 Development Manual

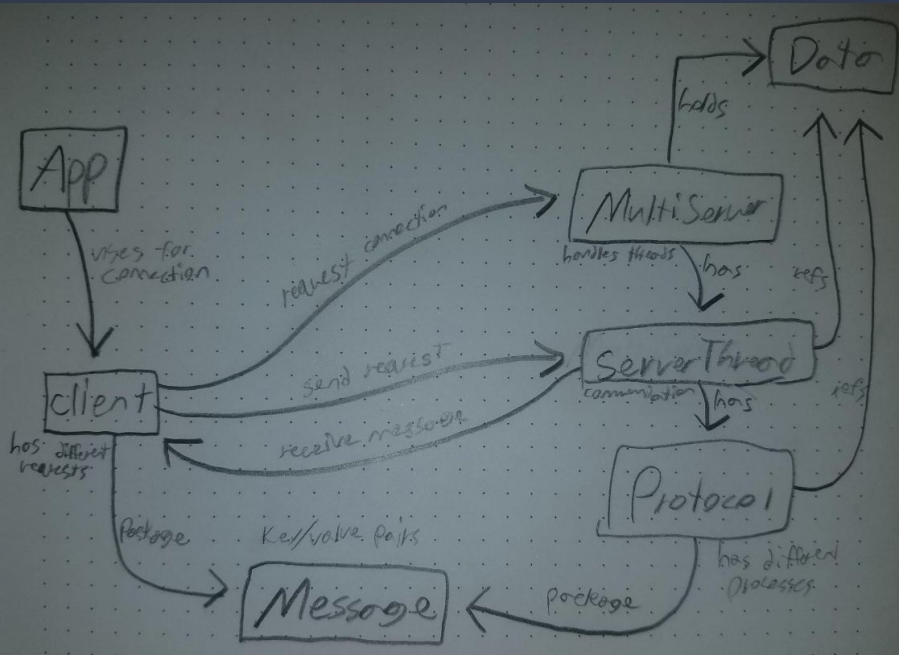
P2 Deliverables

Task

0 Issues - 0 Story Points

Review/QA

Server Setup



The **MultiServer** was made using java sockets. It waits for new connections to pair with a new **ServerThread**.

The **App** uses a **Client** class as its interface to the **MultiServer** and calls request methods based on user input.

The **Client** establishes a connection with the **MultiServer** and gets assigned a **ServerThread**. It has requests that it can send to the **ServerThread** on behalf of the **App**.

The **ServerThread** reads the content of requests and sends responses back to the **Client** according to the **Protocol**.

The **Protocol** accesses the **Data** in order to fulfill requests.

Both the **Client** and the **Protocol** package messages to be sent using a custom **Message** class, which is essentially a String-to-String HashMap that is capable of being turned into a string and back.

Current Supported Requests

Register

Unregister

Login

Get Profile Data

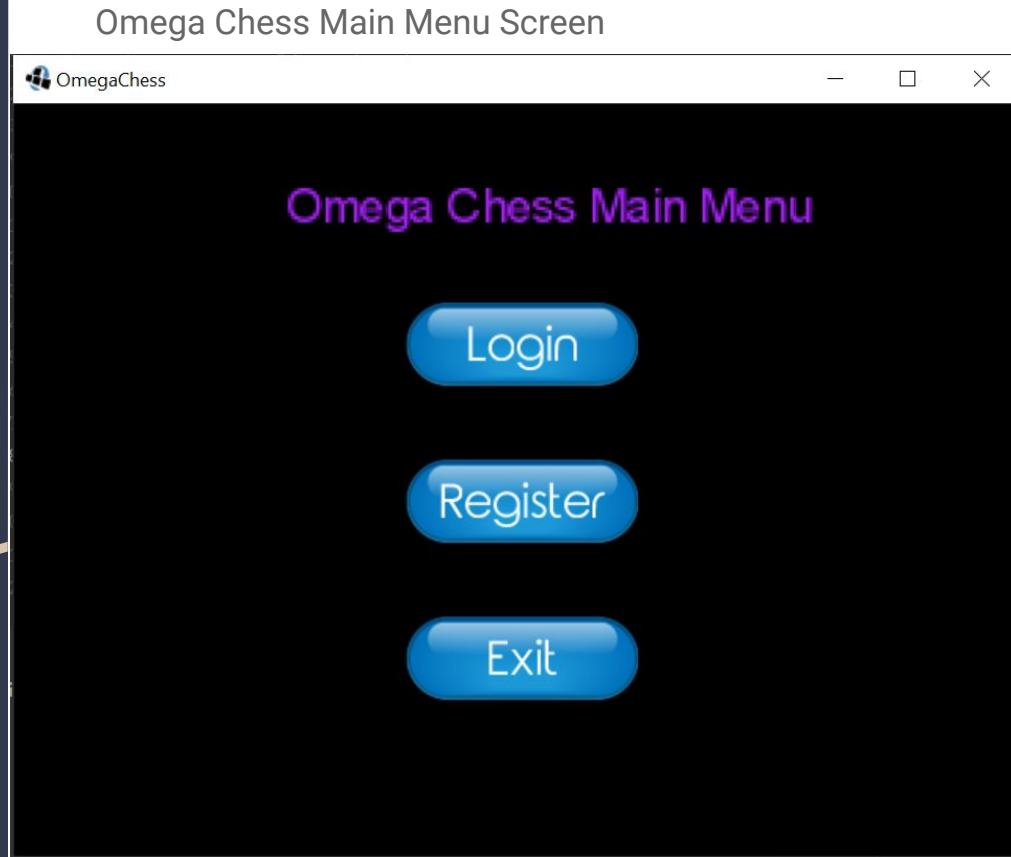
Send Invite

Get Sent Invites

Get Received Invites

Get Notifications

Graphics – Main Menu Screen



Graphics – Register Screen

Omega Chess Register Screen

OmegaChess

Register To Play Omega Chess!

Email:

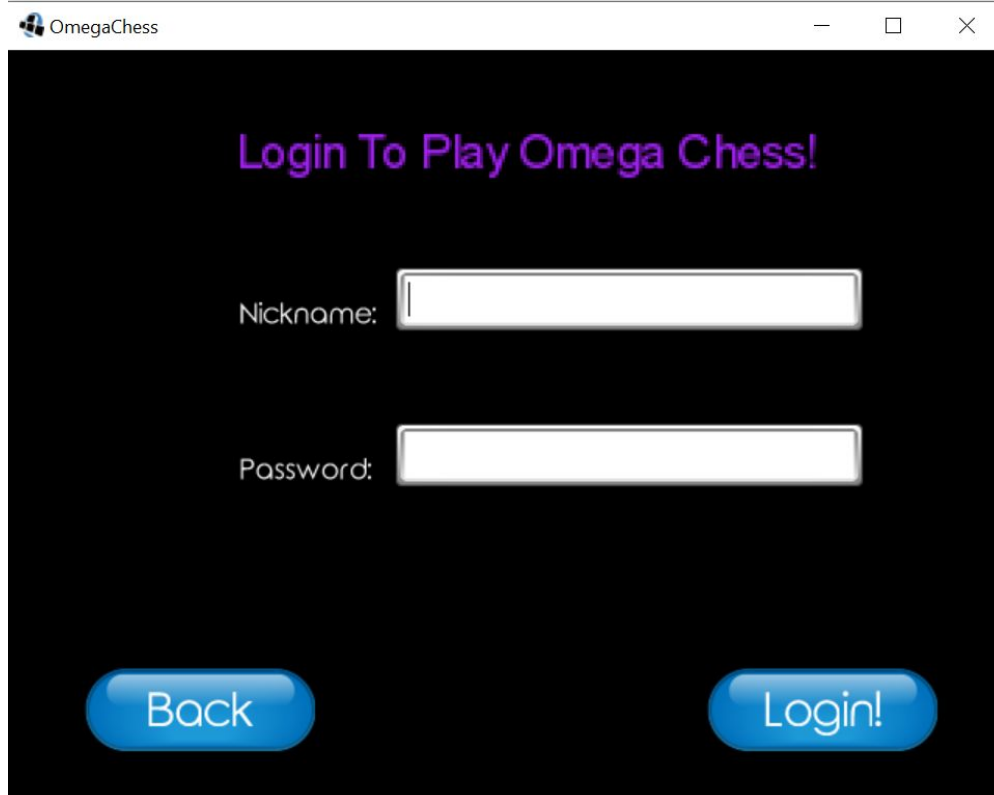
Nickname:

Password:

[Back](#) [Register!](#)

Graphics – Login Screen

Omega Chess Login Screen



The image shows a login window titled "Omega Chess Login Screen". The window has a title bar with the "OmegaChess" icon and standard minimize, maximize, and close buttons. The main content area has a black background. At the top, the text "Login To Play Omega Chess!" is displayed in a purple, sans-serif font. Below this, there are two input fields. The first is labeled "Nickname:" and the second is labeled "Password:". Both labels are in a light gray font. The input fields are white rectangles with thin black borders. At the bottom of the window, there are two blue, rounded rectangular buttons. The left button is labeled "Back" and the right button is labeled "Login!". Both buttons have a slight gradient and a white border.

OmegaChess

Login To Play Omega Chess!

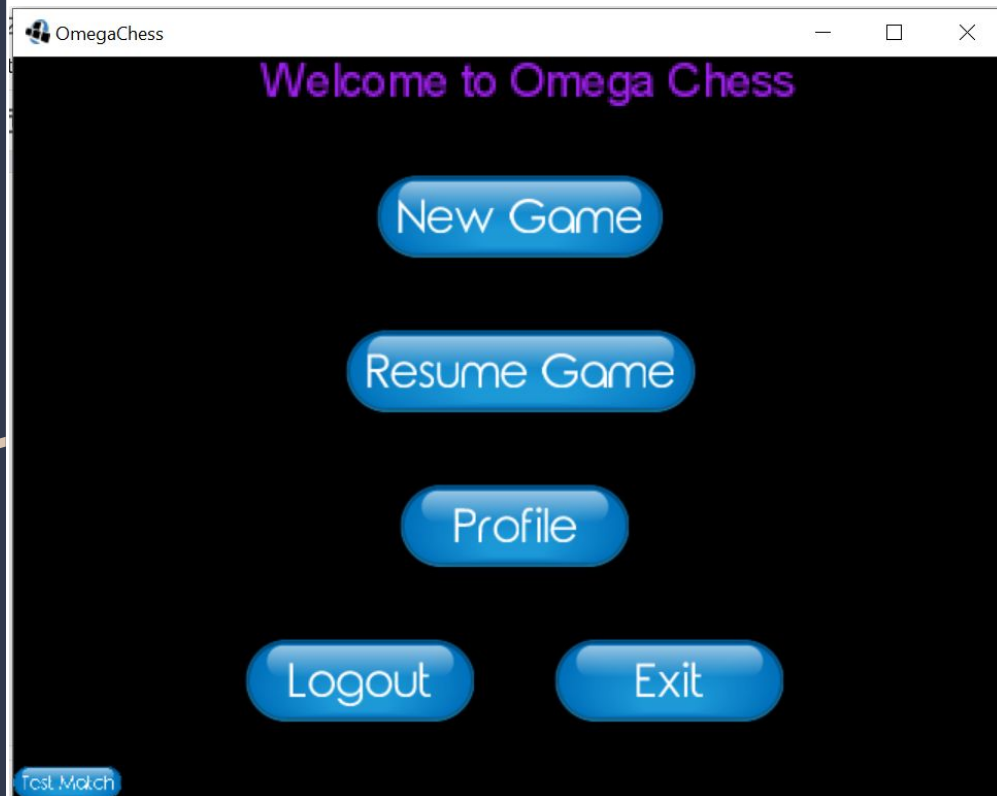
Nickname:

Password:

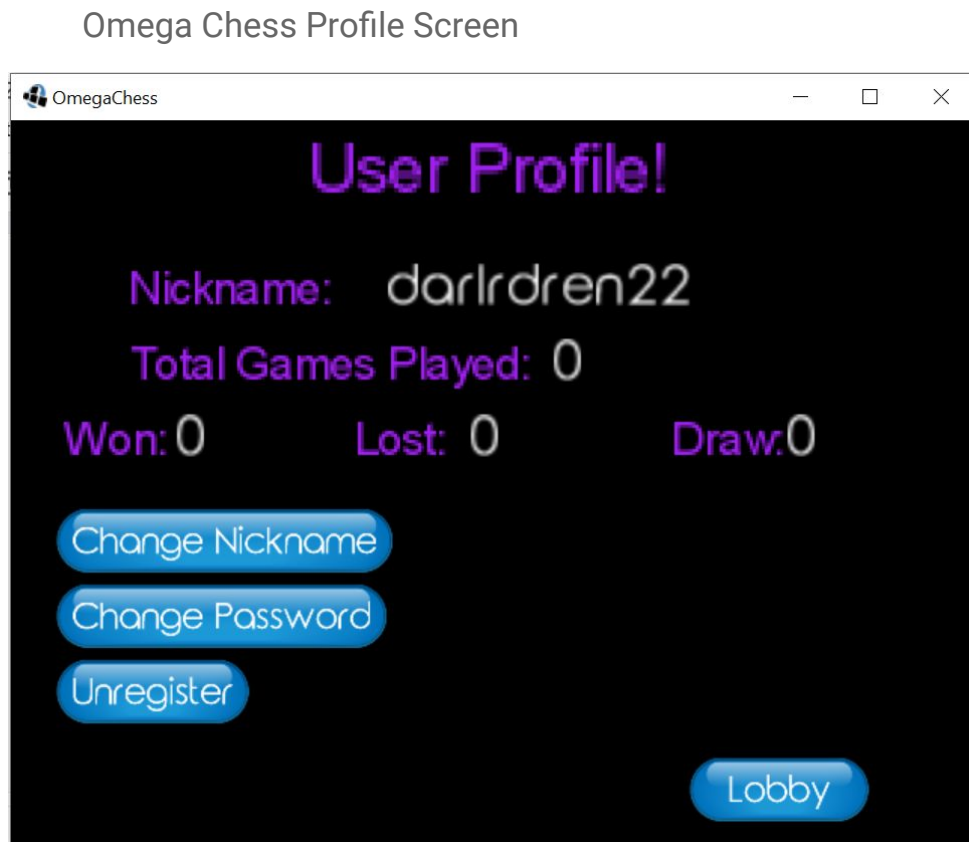
Back Login!

Graphics – Lobby Screen

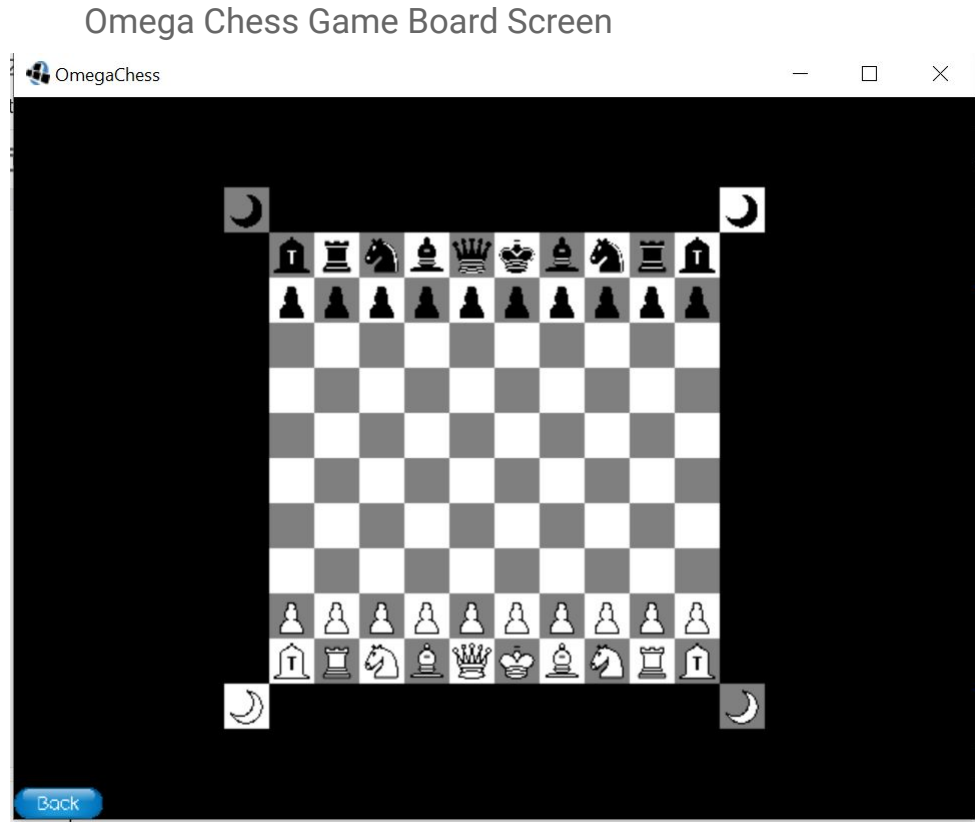
Omega Chess Lobby Screen



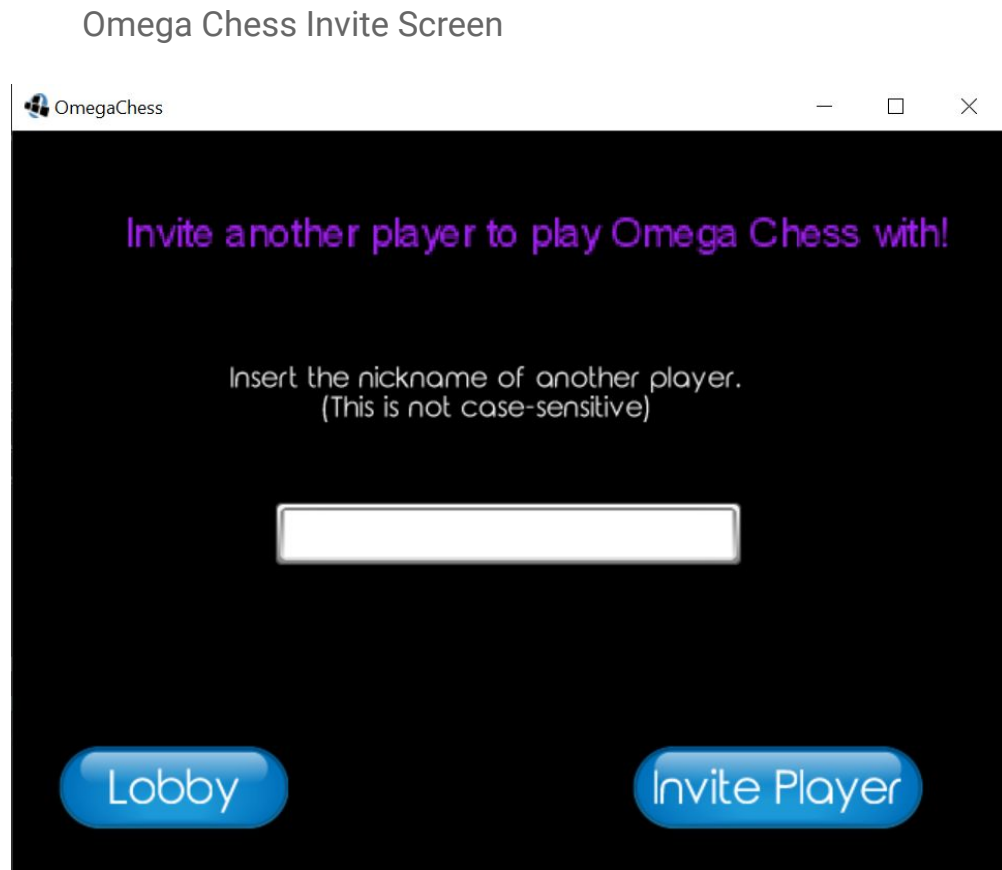
Graphics – Profile Screen



Graphics – Game Board Screen



Graphics – Invite Screen



User Story Improvements

We met with the PO to determine highest priority user stories for each sprint during the P2 timeframe.

We determined acceptance criteria and have been tweaking them as needed.

We have associated each task in our repository with a user story.

Completed User Stories

1) As a user, I can register for the platform by using my email address and set up my profile (nickname, password) for quicker access to the application.

3) As a user, I can invite another user to join the match.

4) As a user, I can send more than one invitation.

8) As a user, I can unregister.

15) As a user, I want to have a lobby which shows me the actions I can perform.

17) As a user, I will be able to view a chess board and pieces when I'm in a match.

User Stories In Progress

2) As a user, I can create a new match.

5) As a user, I can accept or reject an invitation, alerting the inviter.

6) As a user, I can participate in multiple games at the same time.

7) As a user, I can quit from any game at any time.

11) As a user, I can make the first move if I create the match

16) As a user, I will be able to quit the game using a Quit button.

18) As a user, when I choose to move a piece the board will show where I can move the piece.

User Story Acceptance Criteria

(for completed user stories)

- 1) As a user, I can register for the platform by using my email address and set up my profile (nickname, password) for quicker access to the application.
 - a. Test user attempts to login with invalid nickname (fail)
 - b. Test user creating new account with email address already registered (fail)
 - c. Test user creating new account with email address not already registered (pass)
 - d. Test user attempting to login with valid email address (pass)
 - e. Test after registering with email address, submitting nickname that already exists (fail under assumption that nickname is unique)
 - f. Test after registering with email address, submitting nickname that does not already exist (pass)
 - g. Test after registering with email address and nickname, creating password that meets complexity requirements (pass)
 - h. Test after registering with email address and nickname, creating password that doesn't meet complexity requirements (fail assuming we have complexity requirements for passwords)
 - i. Test logging in with invalid email/password combination (fail)
 - j. Test logging in with valid email/password combination (pass)

User Story Acceptance Criteria (continued)

3) As a user, I can invite another user to join the match

- a. Test that a user can invite another to join the match (pass)
- b. Test that it is not possible to create a match with an invalid/blank opponent (pass)

4) As a user, I can send more than one invitation

- a. Test that a user tries to send multiple (>1) invitations without error (pass)

User Story Acceptance Criteria (continued)

8) As a user, I can unregister

- a. Test that the user has the option to unregister from the game (pass)
- b. Test that when the user hits the unregister button, a warning/confirmation popup comes up asking if the user is sure they want to unregister (pass)
- c. Test that hitting cancel on the confirmation popup return the user to their user page and does not do anything to their account (pass)
- d. Test that hitting the OK button on the confirmation popup unregisters their account and signs them out of the application (pass)
- e. Test that after unregistering, trying to sign in with the previous credentials will result in not being able to find user and prompting to register (pass)

User Story Acceptance Criteria (continued)

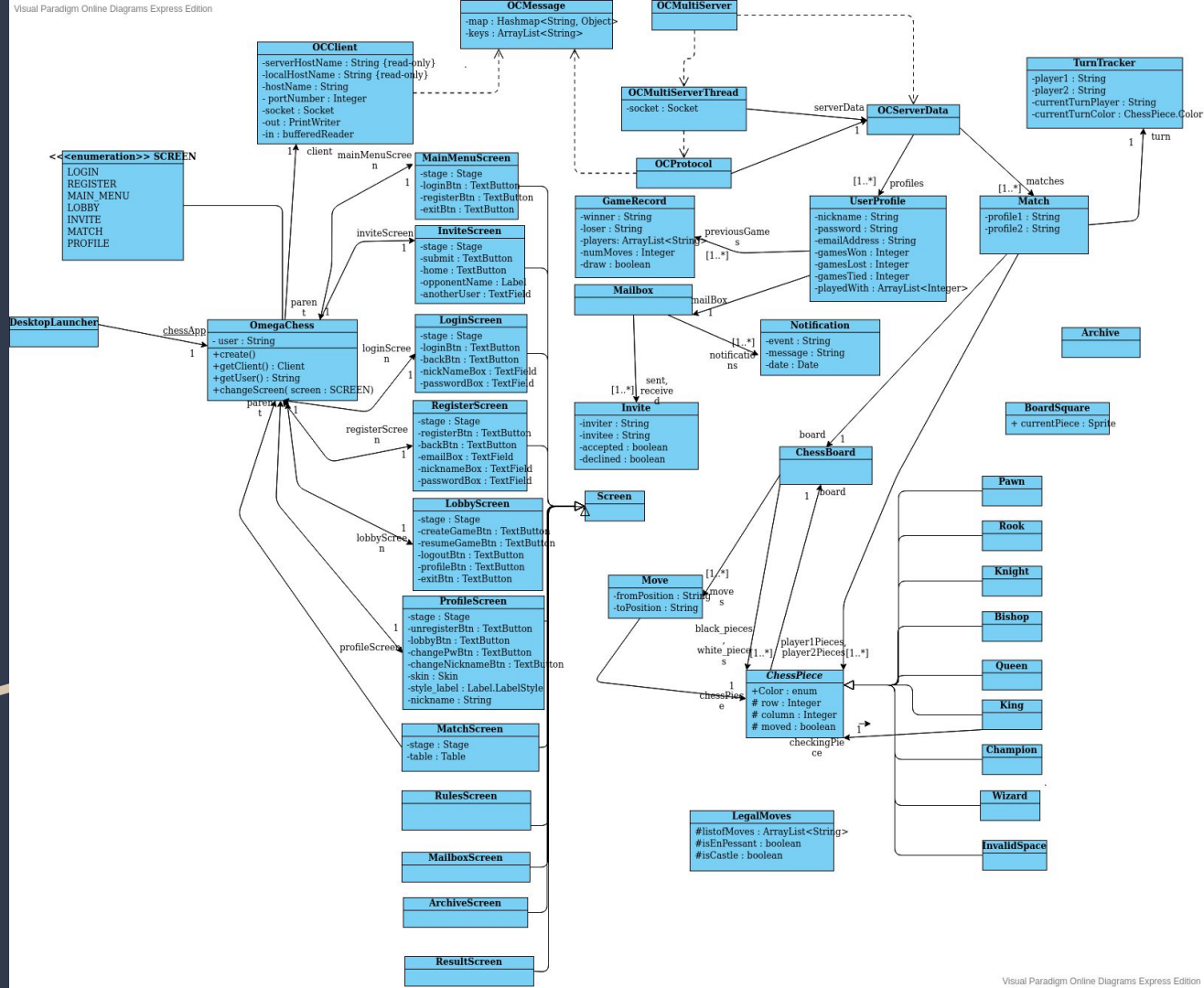
15) As a user, I want to have a lobby which shows me the actions I can perform

- a. Test that a lobby screen is present (pass)
- b. Test that the profile button takes the user to their profile settings (pass)
- c. Test that the continue game button takes the user to show current games

17) As a user, I will be able to view a chess board and pieces when I'm in a match

- a. Test that in an active game, a chess board is shown (pass)
- b. Test that in an active game, the chess board shows the pieces accurately (pass)

Class Diagram



CRC Cards

OmegaChess

- Has user String for the current user
- Has Enumeration SCREEN
- Is the core of our program, it launches the client which processes requests from the different screens and sends them to the server.

OCClient

- Has objects serverHostName, localHostName, hostName, portNumber, socket, out, and in
- OmegaChess
- OCMessages

OCMessage

- Has objects map and keys
- Converts a request and response to and from a string for Server-Client communication
- OCClient
- OCMessages

OCMultiServer

- Listens for new connections from clients
- If the connection is successful it passes the client to a new OCMultiServerThread

OCMultiServerThread

- Uses OCMessages to process requests from the client
- OCMultiServer

OCProtocol

- Processes requests sent from the client and returns an OCMessages as a String to the client
- OCMultiServerThread

OCServerData

- Has objects profiles, matches, and previousGames
- Stores variables on the server to allow users to come and go as they please
- OCMultiServer
- OCMultiServerThread
- OCMessages

MainMenuScreen

- Has objects stage, loginBtn, registerBtn, and exitBtn
- Choose a screen from login or register
- OmegaChess
- OCClient

CRC Cards (continued)

InviteScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Has objects stage, submit, home, opponentName, anotherUser Sends invite request to the server from the client | <ul style="list-style-type: none"> OmegaChess OCClient |
|--|--|

LoginScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Has objects stage, loginBtn, backBtn, nickNameBox, passwordBox Sends login request to the server Logs the user in and takes them to the lobby screen | <ul style="list-style-type: none"> OmegaChess OCClient |
|--|--|

RegisterScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Has objects stage, registerBtn, backBtn, emailBox, nickNameBox, and passwordBox Checks password strength Sends a register request to the server then returns to MainMenuScreen | <ul style="list-style-type: none"> OmegaChess OCClient |
|--|--|

RulesScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Has rules Shows the rules of Omegachess to the user | <ul style="list-style-type: none"> OmegaChess |
|--|--|

LobbyScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Has objects stage, createGameBtn, resumeGameBtn, logoutBtn, profileBtn, and exitBtn Gives the player the option to view their profile, send an invite to another user, and resume a match they are in | <ul style="list-style-type: none"> OmegaChess |
|--|--|

ProfileScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Has objects, stage, unregisterBtn, lobbyBtn, changePwBtn, changeNicknameBtn, skin, style_label, nickname Displays the User's information If you are viewing your own profile option to change nickname and password View the users win/loss/tie ratio Sends a request to the server to get the user's data | <ul style="list-style-type: none"> OmegaChess OCClient |
|--|--|

MailboxScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Has objects outBox, inBox, outCount, inCount, Has a button to show the user their outBox/inBox When viewing outBox cancel an invite When viewing inBox accept/decline an invite | <ul style="list-style-type: none"> OmegaChess OCClient |
|--|--|

ArchivesScreen

- | | |
|--|--|
| <ul style="list-style-type: none"> Unsure what objects this will have currently Show previous games that the user has won and lost | <ul style="list-style-type: none"> OmegaChess OCClient |
|--|--|

CRC Cards (continued)

ResultScreen

- Unsure of what objects this will have yet
- Show the user the results of a match when it has finished
- OmegaChess
- OCClient

BoardSquare

- Has currentPiece
- Contains the sprite of the currentPiece on it
- Highlights if it is contained in the legalMoves of a piece
- MatchScreen

GameRecord

- Has objects winner, loser, players, numMoves, and draw
- Creates an object that holds the results of a game
- Stores it in the OCServerdata/UserProfile
- OCServerData

UserProfile

- Has objects nickname, password, emailAddress, gamesWon, gamesLost, gamesTied, playedWith, and mailbox
- Stores the data of a user
- OCServerData

Mailbox

- Has objects sent and received
- Holds lists of sent and received invites between other users
- UserProfile

Invite

- Has objects inviter, invitee, accepted, and declined
- Send an invite to a user you deem by their username
- Mailbox
- OCMultiServer

Notification

- Has objects event, message, date
- Notifies the user if they have any change in their mailbox
- Notify if you have a game request
- Notify if someone accepts/declines game invite
- Mailbox
- OCMultiServer

CRC Cards (continued)

Match

- Has objects board, player1Pieces, player2Pieces, and turn
 - The match is the instance of a game between two players.
 - I keeps track of the current board state
- OCServerData

TurnTracker

- Has objects player1, player2, currentTurnPlayer, and currentTurnColor
 - Keeps track of whose turn it is
- Match

ChessBoard

- Has objects moves, black_pieces, white_pieces, and board
 - Allows a piece to move based on its list of legalMoves
- Match
 - ChessPiece

Abstract

ChessPiece

Pawn, Rook, Knight, Bishop, Queen, King, Champion, Wizard

- Has objects row, column, and moved
 - Has Enumeration Color
 - Returns a list of Moves as a piece's legalMoves
- ChessBoard
 - Move

LegalMoves

- Has objects listofMoves, isEnPessant, and isCastle
 - This is a helper class for holding the legal moves of a piece
- ChessPiece

P2 Sprint 1

9/30 to 10/14

Scrums

| Date | Tasks closed | Tasks in progress | Impediments |
|----------|--|--|--|
| 9/30/20 | N/A | #19, #105, #106, #107, #108, #109, #130 | N/A |
| 10/2/20 | #19, #130 | #20, #21, #48, #84, #106, #107, #108, #109, #112, #113, #129, #131 | some problems with getting travis working, but Darla and Falkyn got it working |
| 10/5/20 | #20, #21, #48, #84 | #33, #105, #106, #107, #109, #112, #113, #128, #129, #131 | none |
| 10/7/20 | #33, #38, #109, #112, #112 | #105, #106, #107, #108, #110, #111, #129, #131, #147, #157 | some issues with running unit tests with intellij |
| 10/9/20 | #105, #106, #107, #108, #110, #111, #129, #131 | #70, #71, #147, #157, #160, #162, #163, #166 | none |
| 10/12/20 | #157, #160, #162, #163, #166, #171 | #147, #173, #178, #179, #183, #188 | none |
| 10/14/20 | #178, #179, #183, #188 | see sprint2.md | none |

Burndown report



45 Total Story Points

45 Completed / 0 Remaining

30 Total Issues and Pull Requests

30 Completed / 0 Remaining

Metrics

| Statistic | # Planned | # Completed |
|--------------|-----------|-------------|
| Epics | 8 | 6 |
| Tasks | 35 | 29 |
| Story Points | 53 | 44 |

P2 Sprint 2

10/14 to 10/30

| Date | Tasks closed | Tasks in progress | Impediments |
|----------|---|---|-----------------------------------|
| 10/16/20 | #173 | #37, #95, #98, #99, #147, #187, #200, #209 | none |
| 10/19/20 | #98, #182, #200, #205, #206, #207, #208, #209 | #37, #95, #99, #147, #187, #216 | Figuring out libGDX and JSON |
| 10/21/20 | #99 | #37, #95, #147, #187, #216, #220, #221, #222 | Still figuring out libGDX |
| 10/23/20 | #37, #216, #221 | #95, #101, #147, #187, #222, #226, #227 | JSON issues, resulting in no JSON |
| 10/26/20 | #222, #101, #226, #227, #220 | #46, #50, #66, #86, #95, #147, #187, #229, #238, #241, #242, #243, #244, #245 | none |
| 10/28/20 | #238, #146, #144, #148, #95, #94, #93, #92, #241, #242, #229, #210, #66, #49, #46, #244, #245, #50, #243, #86, #60, #54, #40, #57 | #97, #140, #142, #145, #147, #185, #186, #187 | none |
| 10/30/20 | #186, #185, #147, #187, #145, #142, #97 | #140 | none |

Burndown report



69 Total Story Points
69 Completed / 0 Remaining

52 Total Issues and Pull Requests
52 Completed / 0 Remaining

Metrics

| Statistic | # Planned | # Completed |
|--------------|-----------|-------------|
| Epics | 6 | 6 |
| Tasks | 44 | 44 |
| Story Points | 69 | 69 |