WARBOATS

By The Hasbros

Keller Chambers, Stephen Haberle, Christian Ouellette, Peyton Rumachik

Our Project

We recreated the classic game Battleship from our childhood.

Implemented networking so two players can wage war on different computers.

Created a GUI with JavaFX for users to interact with.

Players can place their fleet on the game board and battle their opponents for control of the sea.

How It's Played

Two players place 5 ships of varying sizes in a 10x10 grid.

Players go back and forth firing shots at their opponent’s board.

If a player fires a shot on a square that their opponent’s ship is floating on, the square gets destroyed.

When a player destroys all squares of a ship, it sinks.

The first player to sink all 5 of their opponent’s ships wins.

Motivation

We wanted to challenge ourselves with creating something with networking.

When brainstorming ideas, the game Battleship was brought up and it seemed like a perfect medium to implement networking.

We were all familiar with the game and could see the potential to make our game very cool.

Scrum

Some key user stories:

- As a player, I can create my own server for a player to connect to and play.
- As a player, I can connect to a WarBoats server, so that I can play against an opponent.
- As a player, I can place my ships on the board, so that I can begin the game.
- As a player, I can take shots at the other player's board and receive a hit or miss, so I can figure out where their ships are.
- As a player, if my opponent hits or misses my ships my board will automatically update with the position my opponent fired on.
- As a player, if I destroy all of my opponent's boats I will win the game.
- As the owner, I want a slick GUI to play Warboats.

We originally used TargetProcess for management, but moved to Google Sheets because we found it hard to use.

Scrum Strengths and Weaknesses

Strengths

- Kept us organized and on the same page with each other
- Created small goals to work towards/achieve which was motivating

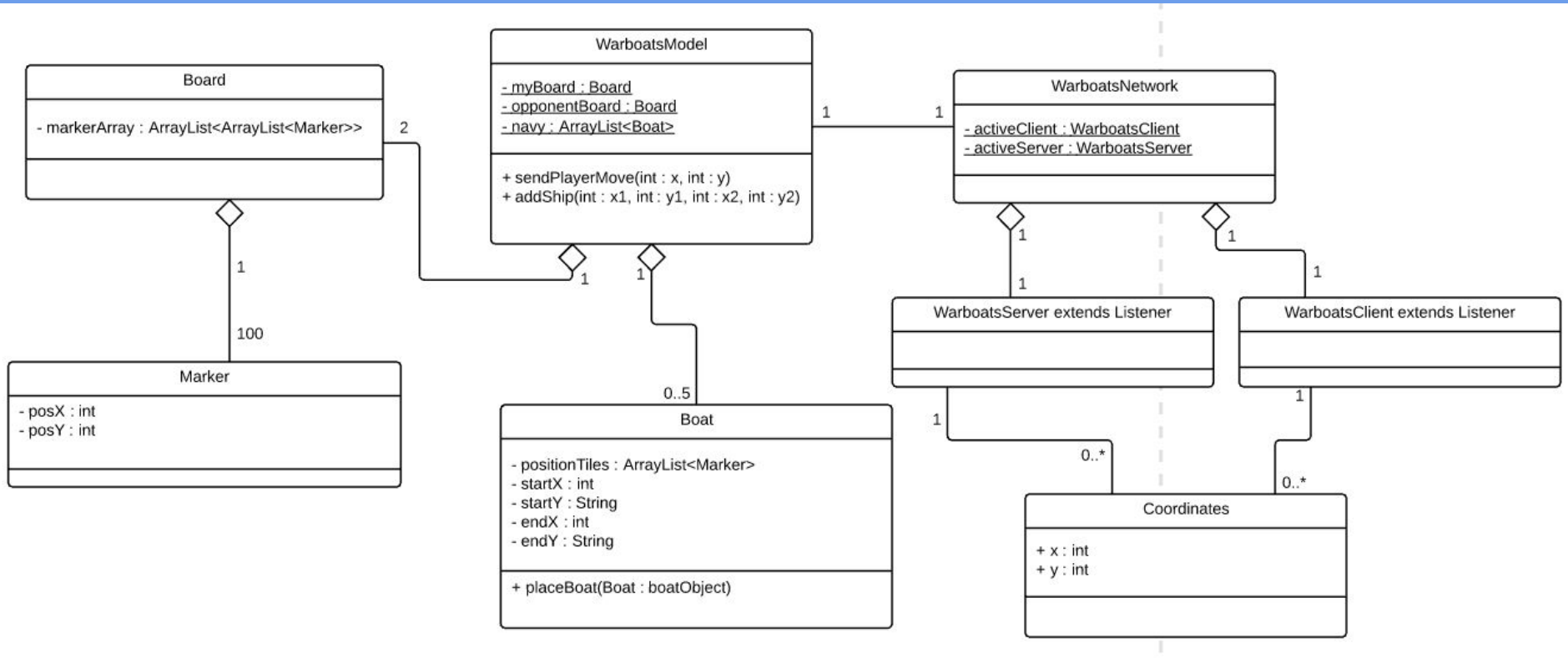
Weaknesses

- Some of our tasks/goals didn't require many hours of effort and made scrum a chore
- Keeping it updated was a lot of work

What we'd do differently

- Don't use TargetProccess for such a "small" project - find something better

Simplified UML Overview



Major Classes

Boat Class - handles the data storage and implementation of ships in the game.

Warboats Model - handles all of the game logic.

Drag and Drop Controller - Our most complicated class. Allows for images of the ships to be dragged from the port to the playing board.

Game Progression Controller - handles the turn based game logic and ensures that all necessary operations have been carried out before the game can be started. This class also sends notifications to the players when needed.

Send Shot Controller - handles extracting coordinates from mouse clicks on the GUI and sends shots from the client to the server and vice versa.

Networking

We used a 3rd party library called KryoNet to simplify the LAN networking process.

We used a server-client model where the first player to start the game becomes the server.

KryoNet serializes and sends objects through TCP.

Abstracts and encapsulates complicated networking code into two easy to use classes: Server and Client

In short: It’s awesome!

GUI

The GUI is slick, sleek, and simple

There are two boards side by side, one for the user and one for the opponent.

The draggable ships are located in the “port” and must be placed before hitting the Begin Game button, which signals to the opponent that you are ready.

By clicking on the opponent’s board, when both players are ready, will fire a shot at that tile and an appropriate graphical change ensues, letting you know if that shot hit a boat or not.

Sounds were added to improve the user experience

WARBOATS

Help

WARBOATS

Ships Remaining: 0
Number of Hits: 0
Number of Misses: 0

Ships

Your Fleet

0	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Opponent's Fleet

0	A	B	C	D	E	F	G	H	I	J
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Begin Game

Reset Ships

Challenges

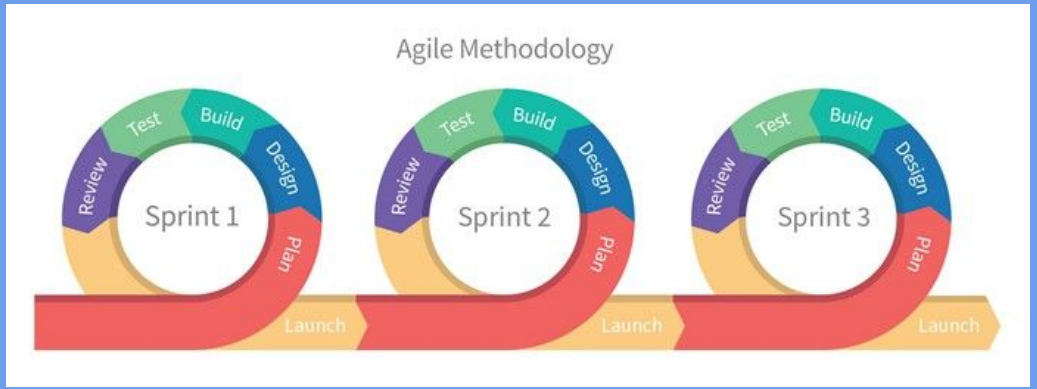
We spent a lot of time in git hell. We initially pushed Netbeans project files to our repo and it caused a lot of issues.

Balancing this project with other projects we had assigned to us from other classes.

Keeping up to date on scrum with TargetProcess.

What We Learned

- The agile development process.
- How to use the scrum process and the many advantages of doing so.
- How to hold each other accountable.
- How important constant communication is.
- How to fully utilize existing third party libraries to simplify seemingly complicated functionality.



Future Work

Implement a start screen where the users can enter their names and select a TCP port.

We would like to add server functionality to allow us to play over the internet and not just LAN.

We would like to be able to place ships in a better fashion. Right now when placing the ship, the leftmost part of the ship ends up where the mouse is released.

Animations for shots, hits, and misses would be nice to have and would make the overall game more fun.

Adding special moves for each type of boat

Make the status of the connection between client and server known

Demonstration