Name _____ Period _____

The Need for Addressing

Your Tasks

- ☐ Review Broadcast Battleship Rules
- ☐ Play Broadcast Battleship Round 1- Unplugged
- ☐ Get Acquainted with the Internet Simulator
- ☐ Play Broadcast Battleship Round 2 – Internet Simulator (ASCII)
- ☐ Invent a Binary Protocol for Battleship
- ☐ Play Broadcast Battleship Round 3 – Internet Simulator (Binary)
- ☐ Critique your Binary Protocol
- ☐ Reflect
- ☐ Receive credit for this lab guide

☐ Review Broadcast Battleship Rules

Navigate to the following link and review Broadcast Battleship Rules

https://drive.google.com/file/d/18H99tuKlF9ye6AN1MInBqnQSGVtEqOkg/view?usp=sharing

☐ Play Broadcast Battleship Round 1 - Unplugged

Before you play a virtual round of Battleship, familiarize yourself with the rules by playing a round "unplugged"

- Group up with 2 or 3 classmates
- Obtain a Broadcast Battleship Game Board
- Develop a protocol for playing unplugged Battleship with your group
- Play 1 round

☐ Get Acquainted with the Internet Simulator

In the lab we will be using the Internet Simulator to connect all the members in your group. To learn more about the version of the Internet Simulator you will be using watch the video below,

https://www.youtube.com/watch?v=x_YTEBRnR1U

To connect with your group using the Internet simulator, you will need to do the following,

- Have everybody in your group navigate to https://studio.code.org/s/csp1-2019/lessons/9/levels/2
- Have everyone in you group join the room your group has been assigned
- Once your are in the room with your team, click on the "My Devices" Tab make sure ASCII is selected "Binary" is NOT selected
- Try have a conversation with people in your group using ONLY the Internet Simulator

☐ Play Broadcast Battleship Round 2 – Internet Simulator (ASCII)

With your group, discuss a protocol for playing Battleship using only the Internet Simulator in ASCII mode

- Make sure you have ASCII selected under the “My Devices Tab”
- NO TALKING

☐ Invent a Binary Protocol for Battleship

In the previous rounds of Battleship, you came up with a method for exchanging messages on an open broadcast channel to play multiple games of Battleship at once. Now that you’ve played Battleship this way, with your group or with a partner, ***describe an efficient binary protocol for playing a 3 or 4-person game of Battleship that can be played accurately over the Internet Simulator.***

Let “efficient” mean that your protocol uses the smallest reasonable number of bits (0s and 1s) to make messages for Battleship that still contain all of the necessary information for playing the game.

Example Grids for Player A

Player A's ship on the board

	A	B	C
1			
2		X	
3	X		

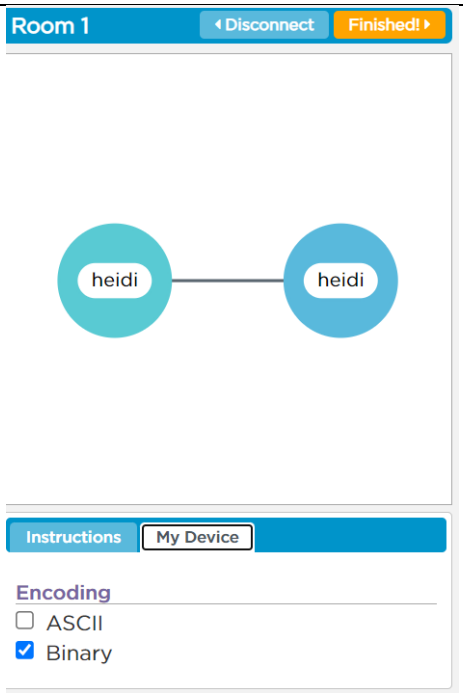
Player A's guesses

	A	B	C
1			X
2	X		
3	X		

List all the information (data) that you will need to communicate in order to play Battleship. For example, you need to know who is firing, along with the x-coordinate and y-coordinates, whether or not they hit or missed, etc.

Explain your protocol. How will you use 0s and 1s to communicate the information above. Don't worry about coming up with a "correct" protocol -- just one that works! Make sure you explain your protocol well enough that another group could follow it. Also, provide some example encodings that could be used to exchange information during game play.

☐ Play Broadcast Battleship Round 3 – Internet Simulator (Binary)

Have everybody in your group locate the "My Device" tab. Uncheck the "ASCII" option and select the "Binary" option.	

Play another round of Battleship using only the Internet Simulator and the protocol you developed

☐ Critique your binary protocol

Critique the success of your binary protocol using the criteria below,

Criteria	Yes	No	Comments
All members new who was firing and who was getting fired at.			
The person firing communicated the coordinates on the game board			
Hit and missed shots were communicated			
Whether or not a ship had sunk was communicated			
All members new when game play ended			

☐ Reflect

For a 3 – person game of Battleship how my bits do you need to address each player? Explain.

What if you wanted to expand your game to include 8 people, 16 people, 128 people? How many bits would you need to address each player?

What does the activity have to do with the actual Internet?

☐ Receive Credit for this lab guide

Submit this portion of the lab to Pluska to receive credit for the lab guide.