

Unit 1 The Internet

1.9 The Need for Addressing

Review

- ▶ So far, we have only solved Internet problems when you are connected to just one other person/computer (this is called point-to-point communication).
- ▶ But the internet is bigger than that, and we will look at problems that involve **MULTIPLE** people/computers.

Broadcast Battleship

- ▶ 2 person demo → transition to 3 person game
- ▶ Each person is essentially playing 2 separate games simultaneously
- ▶ You can put your ships in different locations in each game
- ▶ GOAL: Sink your opponent's ship before they sink yours

Broadcast Battleship

My Board			
	A	B	C
1			
2			
3			

Partner 2 Board			
	A	B	C
1			
2			
3			

My Board			
	A	B	C
1			
2			
3			

Partner 2 Board			
	A	B	C
1			
2			
3			

My Board			
	A	B	C
1			
2			
3			

Partner 2 Board			
	A	B	C
1			
2			
3			

Your ship placement shaded in, one ship per opponent

Top row:
Your ship boards

Bottom row:
Your target boards

	Partner #1: Alexis	Partner #2: Robert	Partner #3: Angelica
	My board	My board	My board
	A B C	A B C	A B C
1	█	X	X
2		X	█ X
3	X	█	X
	Their board	Their board	Their board
	A B C	A B C	A B C
1	X		
2		X X	X X
3			█ X

Alexis guessed A3.
You say "MISS"
and record it.

Robert guessed B2.
You say "HIT"
and record it

You guessed A1.
Alexis said "MISS"
and you record it

You guessed C1.
Robert said "HIT". Shade
in C1 to reflect a HIT.

SUNK - Angelica's
ship hit twice

Time to play

Broadcast Battleship



Question...

- ▶ How can we play this game using only the computer to communicate with other players (i.e. NO TALKING)?

NEW Internet Simulator

- ▶ Can have more than 2 people in a room
- ▶ Can still use ASCII and binary
- ▶ One person will need to create a room for all to join
- ▶ Continue playing or start a new game
- ▶ **ABSOLUTELY NO TALKING!**

<https://studio.code.org/s/csp1/stage/9/puzzle/2>

Refine and Reflect

- ▶ Take some time to standardize your communication and create a protocol
- ▶ How can you make your message as clear as possible?
- ▶ How can you make your message as efficient (short and quick to interpret) as possible?

Class Reflection (Part 1)

- ▶ What problems did your group encounter?
- ▶ What methods did you come up with to help solve your problems?
- ▶ How did your group decide upon a system for sending messages in the Battleship simulator?

Homework

- ▶ Complete 1.9 Day 1 Reflection WS

Broadcast Battleship Part 2

- ▶ Yesterday, you and your group came up with a protocol for exchanging messages on the internet simulator to play multiple games of Battleship at once with multiple people.
- ▶ Now, you and your group are to come up with a binary protocol (not ASCII) for a 3 person game of Battleship that can be played accurately over the Simulator
- ▶ Your protocol should be as EFFICIENT as possible
 - ▶ Try to use the smallest number of bits (1s and 0s) as possible
 - ▶ Be sure your message includes all necessary information for playing the game

Hints...

- ▶ Your protocol should include the following information:
 - ▶ Sender
 - ▶ Receiver
 - ▶ Cell location
 - ▶ Result (hit/miss)

"From player 1 to player 2, fire shot at C3"

01 10 11 11 00

From address: 2 bits to represent range of 0 – 3	To address: 2 bits to represent range of 0 – 3	Column #: 2 bits to represent range of 1 – 3, mapping to A, B, C	Row #: 2 bits to represent range of 1 – 3	Shot info: 2 bits to represent: <ul style="list-style-type: none">• 00 Fire from sender• 01 Target Miss• 10 Target Hit• 11 Error
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"From player 2 to player 1, C3 is a hit"

10 01 11 11 10

From address: 2 bits to represent range of 0 – 3	To address: 2 bits to represent range of 0 – 3	Column #: 2 bits to represent range of 1 – 3, mapping to A, B, C	Row #: 2 bits to represent range of 1 – 3	Shot info: 2 bits to represent: <ul style="list-style-type: none">• 00 Fire from sender• 01 Target Miss• 10 Target Hit• 11 Error
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What does this have to do with the Internet?

- ▶ Compare to the US postal service...
 - ▶ How does mail get to the correct location?
 - ▶ How do you know who sent you the mail?

What does this have to do with the Internet?

- ▶ Compare to the US postal service...
 - ▶ How does mail get to the correct location?
 - ▶ How do you know who sent you the mail?
- ▶ Computers on the internet are addressed in a very similar way
- ▶ The real addresses used on the Internet are called “Internet Protocol Addresses” or IP Addresses

Video–IP Addresses

- ▶ <https://www.youtube.com/watch?v=5o8CwafCxnU&feature=youtu.be>

Homework

- ▶ 1.9 Paper & Computer Reflection