Write your name below and indicate your role,

Project Manager (PM), Recorder (R)

Name _____ Role _____

Name _____ Role _____

Sending Binary Messages

Your Tasks (Mark these off as you go)

- ☐ Decode the flashlight binary signal test
- ☐ Define protocol and bit
- ☐ Join the Internet simulator and connect with your partner
- ☐ Develop a protocol for sending a two bit message back and forth
- ☐ Develop a protocol for sending an eight bit message back and forth
- ☐ Calculate your bit rate
- ☐ Watch the video: Wires, Cables, & WiFi and complete the reflection questions
- ☐ Receive credit for the group portion of this lab

☐ Decode the flashlight binary signal test

The flashlight binary signal test simulates a flashlight turning on and off. Let the letter B represents the off position and the letter A represents the on position. Watch the first test, then as a group decide on the message being sent,

Test 1	

Now watch the second test and as a group decide on the message being sent,

Test 2	

After seeing Test 2, how might you revise test 1? Indicate your revised version below,

Test 1 Revised	

☐ Define protocol and bit

In your group discuss what you think is meant by the terms protocol and bit. Write definitions to these terms below,

Protocol	
Bit	

☐ Join the Internet simulator and connect with your partner

Watch the video on how to join and use the Internet simulator.

Navigate to https://studio.code.org/s/csp1-2018/stage/3/puzzle/2 to join the Internet Simulator and connect with your partner

Explore the tool with your partner – click all the buttons, type in the text areas what you can. You cannot break it, so do not worry!

☐ Develop a protocol for sending a two bit message back and forth

You and your partner will need to send a 2-bit message back and forth on the Internet Simulator. One partner will have a secret 2-bit message (for example BA). When your teacher says “Go” that partner will send the message using the Internet Simulator. The second partner will then send the same message back. At the end the first partner will check that the correct secret message was successfully sent back. You will need to agree on rules, or a “protocol” to make this message exchange work. Develop your protocol in the space below. Make sure you consider:

- How will you know when the exchange is supposed to begin?
- How will you know whose turn it is to send or receive the message?
- How will you coordinate your actions?

☐ Develop a protocol for sending an 8 bit message back and forth

Does the protocol you developed above work for an 8 bit message(for example AAABBBAA? If so great! If not, revise your protocol to account for a longer sequence. Write your new protocol below,

□ Calculate your bit rate

A **bit rate** is a measure of how fast a system transmits bits. You can calculate your protocol's bit rate by dividing the number of bits sent by the amount of time it takes. Note, if you send 4 bits back and forth, you've actually transmitted 8 bits (4 bits to your partner + 4 bits back to you equals 8 bits)

Try sending an 8 bit signal to your partner and have them send it back for a total of 16 bits. How long does this take? Record the bits, the time, and the bit rate for your best run.

Bits Transmitted: _____ Time in Seconds: _____ Bit rate: _____ bits/sec

□ Watch the video: Wires, Cables, and WiFi and complete the reflection questions

Following the link below to watch the vide: Wires, Cables, and WiFi

https://www.youtube.com/watch?v=ZhEf7e4kopM

Once you have completed the video, complete the following reflection question.

Now that you have completed the lesson, in your group discuss what you think is meant by each term. Write definitions to these terms below,

Bit	
Bandwidth	
Bit Rate	
Latency	

Why is it important to communicate a timing protocol prior to sending a message?

Base on what you saw in the video, indicate the pros and cons of each of the following,

	Pros	Cons
Electricity		
Light		
Radio waves		

Where is copper wire most commonly used? Why don’t we use it everywhere?

Where is fiber-optic cable most commonly used? Why don’t we use it everywhere?

Where are radio waves most commonly used? Why don’t we use them everywhere?

□ Receive Credit for the group portion of this lab

Make sure to indicate the names of all group members, then submit this lab to the needs to be graded folder to receive credit for the group portion of this lab.