Name(s)_____ Period _____ Date _____

Activity Guide - Coordination and Binary Messages

Develop your Protocol: Develop a protocol that allows you to use Internet Simulator to relay a 2-bit message, i.e. one member sends a message and the other member sends the same message back. You or a teacher will say "Go" to begin the exchange, but otherwise all communication must be through the widget. As you're working, 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?

Your Protocol: List the steps / rules of your protocol.

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Practice: Relay a 2-bit sequence with your partner (partner A sends a 2-bit message, then partner B sends that message back to partner A). Partner A must confirm that the message sent and message received are the same. How long did it take you?

Challenge: Once you can successfully send a 2-bit sequence back and forth, extend your protocol so that it can send more bits. Does it work just as well for 4 or 8 bits? Keep improving your protocol so that you can send more bits as quickly as possible without making mistakes.

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. Calculate your bit rate for one of your fastest runs of your protocol. Note: If you send 4 bits back and forth, you've actually transmitted 8 bits.

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

Respond:

1. A binary message consisting of 4 bits was sent to you by a friend. The message was supposed to be ABAB. Unfortunately, your friend sent the message at one-half the bit rate you agreed upon, while you read the message at the original rate. What message did you receive instead?
2. A binary message was recorded as a wave, as shown in the image below. Can you decode the message? Explain what information you would need in order to successfully decode the message into A's and B's.