Name _____ Period _____

Storing Text

Your Tasks

- ☐ Assign group roles
- ☐ Develop a protocol to represent the 50 states
- ☐ Write a protocol for sending letters
- ☐ Get acquainted with the Internet simulator
- ☐ Send a simple text message
- ☐ Send a multi-word/number text message
- ☐ Compare your protocol to the ASCII System
- ☐ Define key vocabulary
- ☐ Receive credit for this lab guide

☐ Assign group roles

Before you continue. record your group number, then collaborate with your group and assign each person a role. Each role and a description is provided below.

Project manager (PM)	Leads the team discussion and keeps the team on task and on schedule. Make sure the final lab is submitted. Considers how the team is working and ensures all voices are hear.
Recorder (R)	Records answers for the team, or ensures that all members have correct answers. Presents answers (or questions) to the class, instructor or other teams.

Name	Role

☐ Develop a protocol to represent the 50 states

Imagine we wanted to create a system that would allow you to represent each of the 50 states.

- What's the smallest number of bits you would need to ensure you'd have unique patterns for each state?
- Write down how you would represent these 3 different states in your system. Then add two more of your own.

Smallest number of bits		
	Binary	**Decimal**
Vermont		
Idaho		
Arizona		

☐ Develop a protocol to send letters

Computers do more than numbers, they also store text. We therefore need a system for doing this.

Consider the 26 letters of the alphabet shown below. How might you store the letters using binary code? You may be thinking, "I could represent 'A' as 0, and 'B' as '1'", But, how do you know that '1' represents 'B' and not the actual number '1'?

In the space below, come up with a protocol that will (1) enable you to represent the letters below in binary code and (2) differentiate numbers from letters. Once you have decided on a protocol assign a binary representation to the letters of the alphabet.

Letter	Binary	Letter	Binary
A		N	
B		O	
C		P	
D		Q	
E		R	
F		S	
G		T	
H		U	
I		V	
J		W	
K		X	
L		Y	
M		Z	

☐ Get Acquainted with the Internet Simulator

We will be using the Internet Simulator to test out your protocol. Because, just as computers store letters as numbers, the Internet also transmits letters as numbers.

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

- If you haven't already done so, navigate to http://studio.code.org to create an account
- If you haven't already done so, you will need to join this course. You will need to get the course code from Ms. Pluska
- Once you have done the above, navigate to the link below and connect with your partner.

https://studio.code.org/s/csp1-2018/stage/7/puzzle/2

☐ Send a simple text message

Consider the three text messages below:

- OMG
- LOL
- IMO

Using the binary convention you developed above, try sending a simple one word text message to your partner.

Pick one of the above messages to send... see if your partner can receive it!

Without talking, each member should try a text to their partner. Write your results below.

Message sent	Message received

□ Send a multi-word/number text message

More often than not, the texts you send contain multiple words and even numbers. Consider the texts below:

- P911
- L8R
- SHOWS AT 8
- CYA 2NITE

Discuss with your partner a protocol for sending messages with spaces AND numbers. Write your protocol in the space below.   In your protocol,

- Indicate how you distinguish between numbers and letters.
- Indicate how you indicate a space

Pick one of the above messages to send (or make your own)... see if your partner can receive it!

Without talking, each member should try a text to their partner. Write your results below.

Message sent	Message received

□ Compare your protocol to the ASCII System

ASCII (American Standard Code for Information Interchange) is a widely used system for character encoding. It was originally developed in 1963 as a 7-bit system allowing for 128 characters. Symbols 0-31 and 127 were reserved for control characters (e.g. "Backspace" or "Delete") with the numbers 32-126 being used for printable characters. As the 8-bit "byte" became standardized, ASCII was extended to the 8-bit format. Following the link below to see the ASCII encoding for common characters.

https://tinyurl.com/y3ekfjn7

Compare the ASCII system to the system you developed.

- What's the same as the system you created?
- What's different?
- What is most interesting or surprising about this system?

Write your response below

| |
| |

☐ Define Key Vocabulary

Use the Internet as a resource and write definitions for the following,

| ASCII |
| |
| Unicode |
| |

☐ Receive Credit for this lab guide

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