SOFTWARE 3:
HAMMING CODE

STUDENT RUBRIC

DEMO RUBRIC

This lab requires the creation of three components which will later be organized into two circuits. These subcomponents are the parity generator, an error bit indicator, and an error corrector. Ultimately the latter two subcircuits will be connected into a single circuit that can take any 7-bit parity code and output the (corrected) data. You will be creating each subcircuit/component separately and saving them as a "symbol" which behaves as its own chip. View the "subcircuit creation" instructions PDF for details. Demoing for this lab consists of first checking the implementation of your generator, and then the completed detector/corrector.

Completion Requirements:

- ✓ We are using EVEN parity!
- ✓ Correct implementation of each of the three subcomponents as independent symbols (in a user-defined library) before including them in the main circuit
- ✓ The parity generator is functional for any and all four-bit inputs
- ✓ The error detection/correction module can fix any 1-bit error

REPORT RUBRIC

This is not a full lab report. Simply answer the questions (correctly) and include the graph for full credit. All of the information you need is provided in the instructions and modules.

Scoring (out of 3 points):

- ✓ **[1.4 points]** Question 1: Provide graph of the number of parity bits required for the range of data bits from 4. This MUST be a step graph done in Excel, and the steps should be labelled. You must also explain how you determined where each step occurs.
- ✓ **[0.8 points]** Question 2: What needs to be added to detect double errors?
- ✓ **[0.8 points]** Question 3: What do we mean by hamming distance?