Homework 4 Due at classtime – 12:30.

Because we will go over this in class, it is not fair to others to allow you to turn it in late. Make sure you have submitted it to Eagle before class.

This is to be completed individually, rather than as a group. You are welcome to compare answers for two problems with three different people (a total of 6 problems), but the rest should be your own work.

You may need to read Chapter 4 or look at the online notes. If you don't have a copy of the book, there is one in the CS office (top floor Old Main, Main 414) if you want to borrow one for a few hours.

1. What is the difference between a self-correcting code and an error detecting code?

2. Even parity has been used in the information below to make sure that there are an even number of X’s in each row and column. One of the cells has been changed. Which cell is in error and what is the error?

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td></td>
<td>X</td>
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<td>X</td>
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<td>X</td>
<td>X</td>
<td></td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

3. Which best explains why even parity is better than odd parity?
   a. Even parity works even if there are an even number of columns.
   b. Odd parity sometimes fails to work as there is no consistent coding of the lower right hand corner
   c. Even parity is more reliable for transmission errors
   d. They are equally good.

4. The best definition of parity is
   a. Copying another cell
   b. Evenness
   c. Self checking
   d. Error proof

5. If you have even parity (on a table), which is true when there are exactly two errors
   a. You will recognize the error, but won't be able to correct it
   b. You will recognize and be able to correct the error
   c. You may not even recognize the error
   d. None of the above.

6. A friend says, “What is the big deal of a checksum with ISBN numbers? It just tells you if there has been a mistake. You’ll find out the same information when you try to find the book in your data base. I don’t get it.” How would you answer him/her?
7. A friend says, “Computing the check-digit for IBSN numbers is quite complicated. I wouldn’t bother. I’d just make the check digit a 0 if the sum of all the other digits is even and a 1 otherwise.” How would you respond?

8. A friend says, “Checksums are great! Why don’t they use them for passwords or student numbers?” How would you respond?

9. Explain the origin of the term “debugging”.

10. Which of the following are NOT part of the text’s suggestions for debugging:
    a. isolate the parts that work from the part that doesn’t
    b. make a log of the error and your attempts to locate it
    c. Determine exactly what the problem is – give it a name.
    d. Make predictions about what should happen if X was the problem.

11. From your experience with trying to get your HTML homework to work, explain how you used some of the principles of debugging.