EE/Ma 127a Homework Assignment 4
Due (in class) 9am November 3, 2000

Reading: Handout "Chapter 8: Cyclic Codes", Section 8.1"
. Wicker, pp. 99-101.

Problems to Hand In:

Problem 1. Using Table 8.1 of the "Chapter 8" handout, list, for $n = 8, 9, 10$, a table like the one at the bottom of page 8 for $n = 7$. (No "comments" are required: I just want a list of the (n, k)'s and the corresponding $g(x)$'s.)

Problem 2. From Table 8.1 of the "Chapter 8" handout, you see that $g(x) = (x+1)(x^2+x+1)$ divides $x^9 - 1$. Consider the $(9, 6)$ cyclic code with generator polynomial $g(x)$. Write down the matrices G_1, H_1, G_2 and H_2, as discussed in class today, for this code.

Problem 3. Problem 8.33 from the Class Handout "Chapter 8: Cyclic Codes".

Problem 4. Problem 8.34 from the handout "Chapter 8: Cyclic Codes", parts (a) and (b) only.

Problem 5. Problem 8.41 from the handout "Chapter 8: Cyclic Codes".
Note: A *proper* cyclic code is one in which $g(x)$ does not divide $x^{n'} + 1$ for any $n' < n$. For some more on this, see the end of Section 8.1 in the handout.

Problem 6. Problem 8.42 from the handout "Chapter 8: Cyclic Codes".