CMSC 442/653
Fall 2007
Instructor: Dr. Lomonaco
Homework 8

- **Optional listening assignment:** In celebration of the last homework assignment, listen to Tchaikovsky's 1812 Overture.
- **Reading assignment:** Peterson, "Error-Correcting Codes," MIT Press, (1961), Chapters 7, which can be downloaded from the following link: http://www.cs.umbc.edu/~lomonaco/f06/653/handouts/Peterson-LSC.pdf

1U)

(a) Draw the linear sequential circuit (LSC) that multiplies by the polynomial

$$h(x) = 1 + x^3 + x^6$$

(b) Draw the linear sequential circuit (LSC) that divides by the polynomial

$$g(x) = 1 + x^2 + x^4 + x^6 + x^7$$

(c) Draw the linear sequential circuit (LSC) that simultaneously multiplies by $h(x)$ and divides by $g(x)$.

2U) Draw an LSC which takes as inputs polynomials $a(x)$ and $b(x)$ and then produces the output $h(x)a(x) + k(x)b(x)$, where $h(x)$ and $k(x)$ are the polynomials:

$$h(x) = 1 + x^4 + x^{10} \quad \text{and} \quad k(x) = x + x^2 + x^4 + x^7 + x^9$$