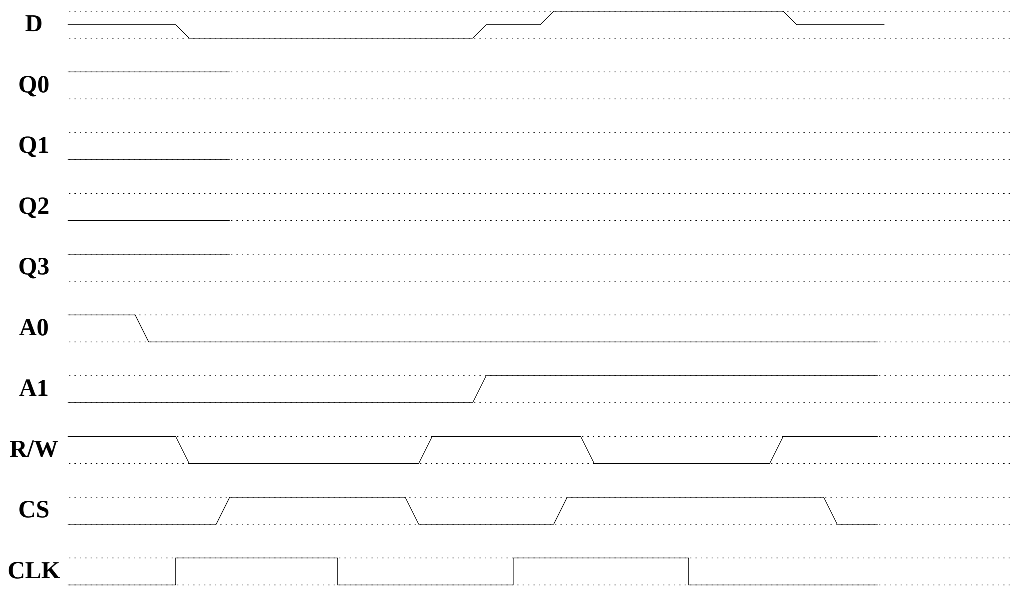
Embedded Real-Time Systems (AME 3623)
Homework 4 Solutions

February 28, 2006

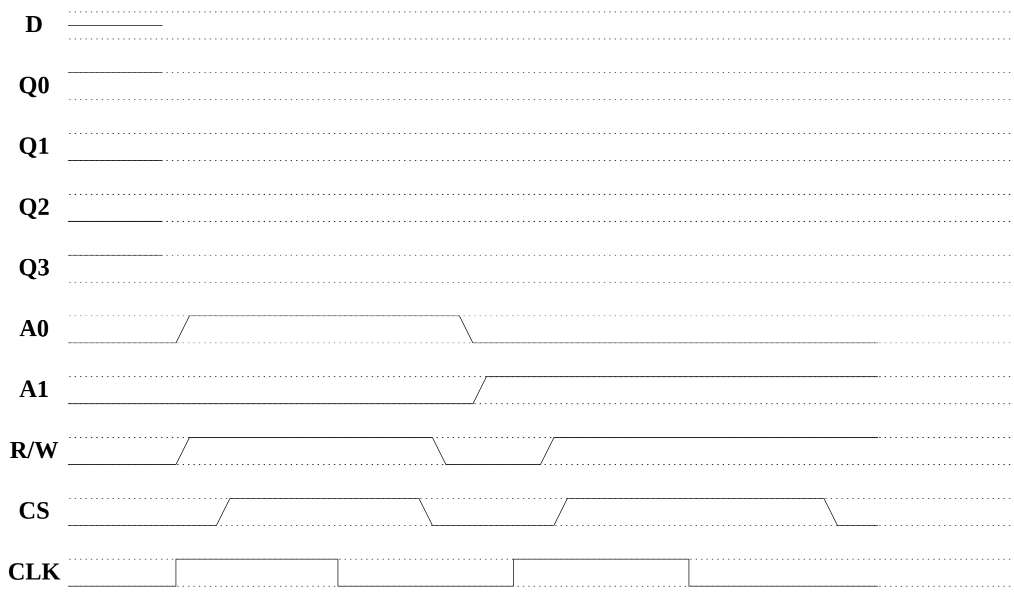
Question 1

(10pts) Consider the four-element memory "chip" that we discussed in class. Given the following timing diagram, fill in the missing traces ($Q0$, $Q1$, $Q2$, and $Q3$).



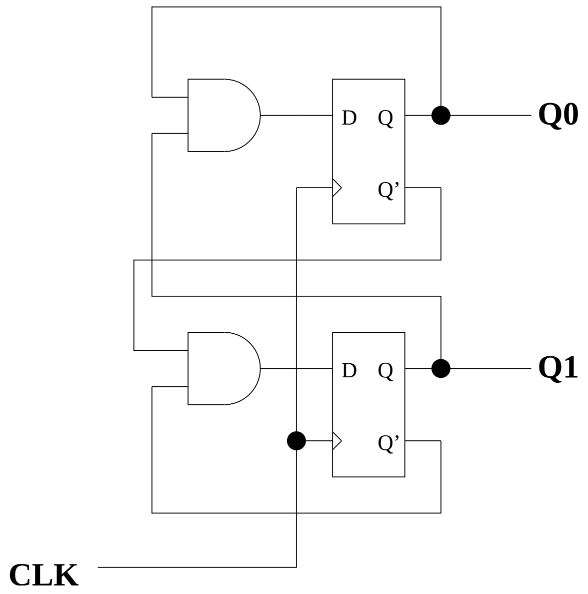
Question 2

(10pts) Consider the same four-element memory chip. Given the following timing diagram, fill in the missing traces (D, $Q0$, $Q1$, $Q2$, and $Q3$).



Question 3

Consider the following circuit:



1. (5pts) List all possible states that this circuit can be in (the possible combinations of $Q1$ and $Q0$).

2. (10pts) Assume an initial state of $Q1 = 1$ and $Q0 = 1$. List the sequence of states given six clock cycles (6 high-low transitions).

Question 4

(10pts) Is the “chip select” signal for a memory chip an input or an output (with respect to the chip)? Explain in brief its function.

Question 5

How much time did you spend on this assignment?