Real-Time Embedded Systems (AME 3623)
Homework 5

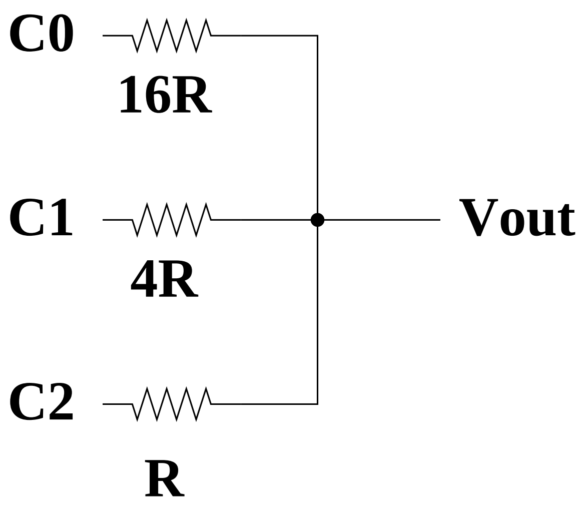
April 23, 2008

This homework assignment is due on Tuesday, April 29th at 5:00pm. Your work may be handed in electronically (use the **Homework 5** digital dropbox on D2L) or in hardcopy form (in person or under door).

This assignment must be done individually: do not share/discuss your answers with others or look at the answers of others.

Question 1

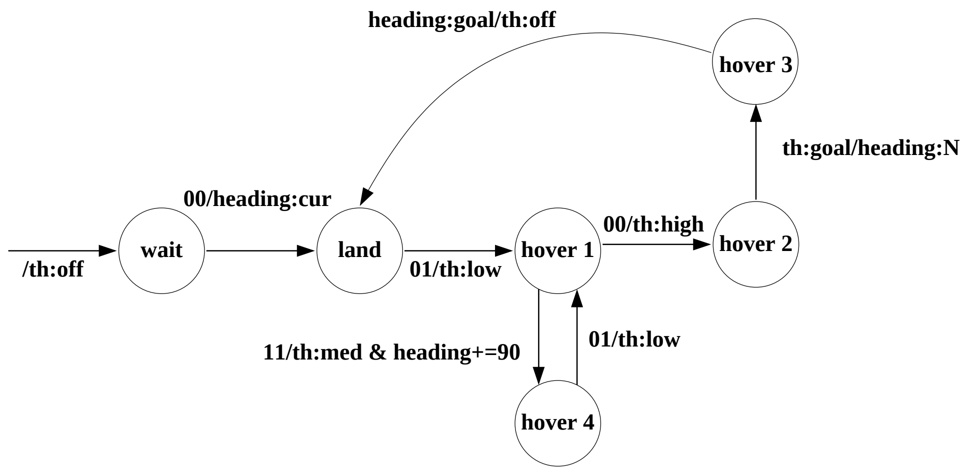
Consider the following circuit:



(20pts) Show V_{out} as a function of $C0$, $C1$, and $C2$. Show your derivation.

Question 2

Consider the FSM from the project:



Suppose we want our controller to do two additional things:

1. Land on command from *hover 4*.
2. Return to *hover 1* from *hover 3* if an imaging sensor detects a tank.

1. (10pts) What events, states, and actions must you add to this FSM?

2. (10pts) Show the modified FSM.

Question 3

Consider the same FSM from the project (the original FSM, not the one you just modified).

Suppose we want our controller to do two additional things from *hover 3*:

1. Land on command (10)
2. Otherwise, rotate in place indefinitely

1. (10pts) What events, states, and actions must you add to this FSM?

2. (10pts) Show the modified FSM.

Question 4

How much time did you spend on this homework assignment?