CS 1622 – Homework 1
Due: Monday, October 2, 2017 at the start of class

Please submit a typewritten document. I'd prefer you draw your finite state machines on the computer, but if this is a challenge, you may hand draw them neatly on the paper by hand.

1.) Write the following regular expressions:

     a.) Binary numbers that are an integer power of 2.

     b.) Valid C/Java integer constants that can be negative or positive, in decimal, octal, or hexadecimal.

     c.) A block comment without nesting (/* to */)

2.) Using Thompson's algorithm, convert the following regular expression to an NFA (alphabet is {a,b}):

$$b?(ab)*bb+$$

3.) Convert your NFA from question 2 into a DFA using the algorithm from class.

4.) Convert the regular expression from question 2 into a Regular Grammar.

5.) Write a grammar for the language of valid Boolean expressions. The terminals are:

$$true, false, \&\&, ||, !$$