Student Background Questionnaire and Diagnostic Quiz

Name: _______________________________________________________________

Student ID: _______________ Card Key # (for lab access): ___________________

Circle one:       Freshman          Sophomore          Junior           Senior           Graduate

Have you taken CS 61C?  Yes  No      When? Semester/Year: ___________________

Have you taken EE 40?    Yes  No       When? Semester/Year: ___________________

What is your most ambitious software project (not limited to course projects)?
_____________________________________________________________________
_____________________________________________________________________

What is your most ambitious hardware project (not limited to course projects)?
_____________________________________________________________________
_____________________________________________________________________

How would you describe your skills and interests (circle one per line)?

Mathematical/Analytical                      Engineering/Building Things
Hardware                                      Software
Electrical Engineering                       Computer Science
Components                                    Architecture
Systems                                       Applications
Technology                                    Business
The following are diagnostic questions to test your retention of basic knowledge from CS 61c. If they are mysterious, then you probably are not ready to take CS 150.

1. Logic Gates and Boolean Equations

The following implements a logic function $Z(X, Y)$. Write a Boolean equation that corresponds exactly to the schematic and a second equivalent equation with the fewest possible Boolean operations and operands. You may use any kind of Boolean operation in your solution to the second part of this question. Write the schematic for this simplest form in the box at the right.

2. Flip-flops and State Diagrams

The state diagram on the right purportedly represents the sequential circuit at the left. It has many mistakes, sometimes repeated more than once. Give THREE unique things that are GENERICALLY wrong this diagram:

1. ______________________________________________________________________
2. ______________________________________________________________________
3. ______________________________________________________________________