

Quiz 3 CSCI 255 Spring 2002

18 March, 2002

Name: _____

This is an open book quiz. It is to be turned in by 6:30 pm.

Quiz 4 will be given at the end, rather than the beginning, of class!

There are three questions on this exam. Questions appear on the front and on the back of this page.

Please write your seat number (row and column) to the right. _____

I am using this information to draw up a class-seating chart and to speed up the return of quizzes.

Problem 1 (70 points)

For this question, you are to be a human instruction decoder. In the leftmost column of the table below is a list of 16-bit LC/2 instructions. You are to fill in the other three table columns with the operation, destination, and sources of the instruction. If the instruction has only one source, leave one of the source cells blank. If the instruction is a branch, you should indicate which kind of branch (BRn, BRnp, *etc.*) and you should put the potential branch target in the destination field. Assume that the instructions are stored in the computer starting at address $\times 3000$. (Actually, you can assume all the instructions are stored at $\times 3000$ without changing the answers.)

I've filled in the first three rows to get you started.

Instruction	Operation	Destination	Source 1	Source 2
0101101101100111	AND	R5	R5	#7
0010100010101010	LD	R4	M[30AA]	
0000010000000110	BRz	3006		
1001101000111111				
0000011000110011				
0011101100010001				
0010101001010101				
0001100111111111				
1110100000100010				
0101011011000110				

Problem 2 (20 points):

What are the numbers of address and data pins needed for the following three kinds of RAM chips? You may consider the data pins to be shared **or** unshared for both input and output.

Chip type	Number of address pins	Number of data pins
256k × 8		
16M × 16		

Problem 3 (10 points):

Write the 16-bit LC/2 machine instruction that will set register 4 to zero. (Hint: This is very similar to something you saw in Lab 5.)