DEPARTMENT OF COMPUTER SCIENCE

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CSCI 341: Computer Organization
WS5: Bitwise Instructions

1 How would you bit mask the bottom half of a word? That is, how would you set the top half of a word to 0 using logical operators only?

2 The NOR operation does not exist in RISC-V. How would you do this in RISC-V? Here is its truth table:

A	B	A NOR B
0	0	1
0	1	0
1	0	0
1	1	0

3 Assume that x (using s0) and y (using s1) are both ints. Recall that bits are numbered from right to left in a word starting with bit 0.

Write two lines of RISC-V code to set x to the value contained in bits 15 to 10 of y. That is, x has y's bits 15 to 10 as its bits 5 to 0, and 0's in all other bits.

4	Set s1 to hold the value 0xAACCBBDD End up with the value 0x00AACC00 in s0, using only logical operations to erase bits and move bits around, and print it out as a hexadecimal. Make it so that it creates a value from s1 that is the upper two bytes of s1 as the middle two bytes of s0 no matter what the starting value is.