CS 371
Assignment #5
ALU
Due 3/20/20, in class

1. Note
Do both the Multisim work and the book work for this assignment individually.

2. Multisim Work
The goal of the Multisim part of this assignment is to build and play with a 4-bit ALU. Please name your ALU ALU and its test driver ALU-test. Include a title block in the lower right of all circuits.

The ALU’s A and B inputs come from two banks of 4 switches. Connect each bank and the output to a 7-segment display. The ALU should support the following functions:

<table>
<thead>
<tr>
<th>FSEL</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>00</td>
<td>A = B</td>
</tr>
<tr>
<td>01</td>
<td>0</td>
</tr>
<tr>
<td>10</td>
<td>B</td>
</tr>
<tr>
<td>11</td>
<td>A + B</td>
</tr>
</tbody>
</table>

Notes
Within reason, the fewer components (gates / chips) the better.
Avoid busses out of Hierarchical Blocks (last I checked Multisim did not work with them well :( )

Extras Credit
[4 points] Add (and clearly label) the status bits S, Z, O, and C to the ALU.

3. Book Work
Do Problems 6(hard) and 8 from Chapter 3 (Pages 184-185), and Problems 1ab and 8 from Chapter 7 (Pages 431-432) of Mano and Kime 5th ed.

4. What to hand it
(1) A 1-page printout of your ALU schematic with your name in the title block. (Don’t print ALU-test by mistake!)

(2) Your book work.

(3) Upload to moodle a zip file of your entire circuits directory named alu.zip. After extracting your files, I will open ALU-test to check your work.