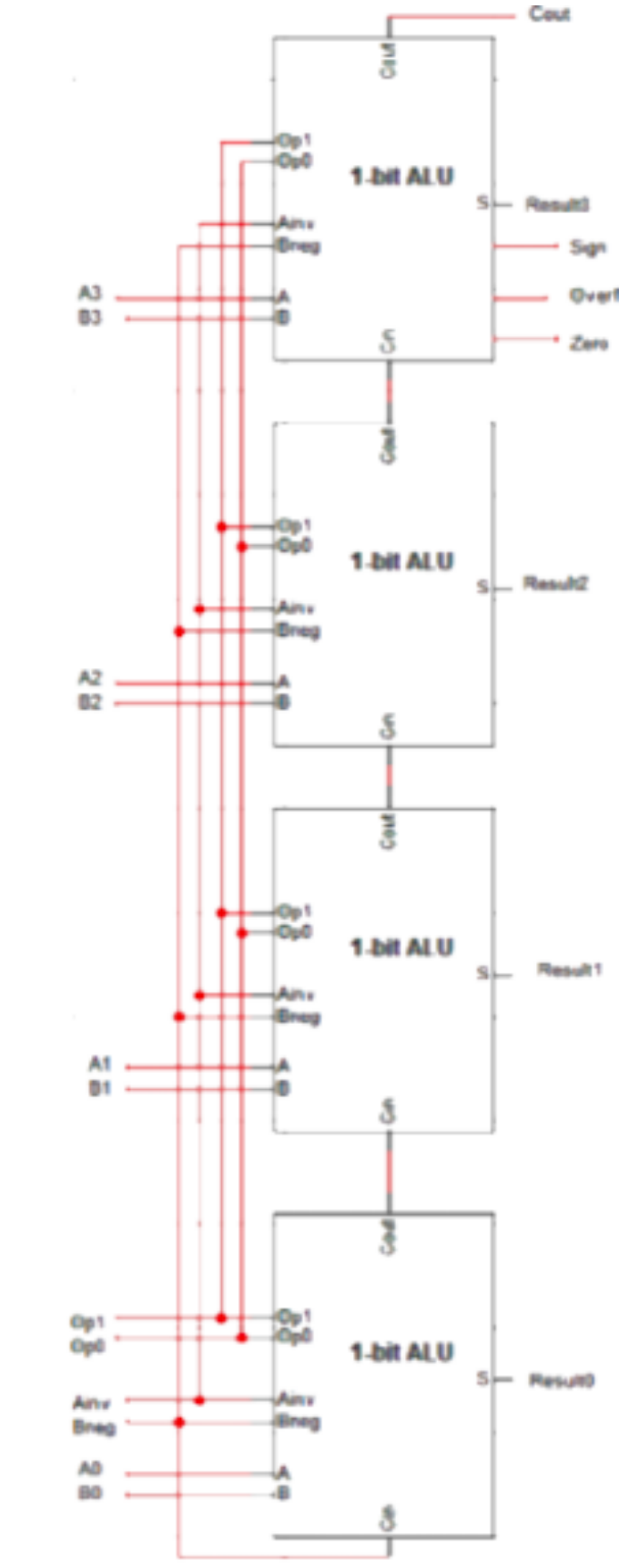


CS 240 Lab 4 assignment: Assume that you have the 4-bit ALU from lab, shown below (if it's hard to read the labels, zoom in on the image).



1. Predict the results in the table below, taking the following into consideration:

- **A** and **B** are 4-bit values represented by a hex digit, and are assumed to have *two's complement* representation.
- **Result** is a 4-bit value, and should be displayed as a **hex digit**
- **Cout**, **Sign**, **Zero**, and **Overflow** are single bit (0 or 1).
- **Cout** and **Overflow** are produced when adding **A** and **B**, (which happens even when the ALU result is a logical operation).

Function	Test Inputs	Result	Cout	Sign	Overflow	Zero
A + B	A = 3, B = 7	A	0	1	1	0
A + B	A = F, B = E					
A AND B	A = 1, B = F					
A AND B	A = 7, B = 8					
A OR B	A = 3, B = C					
A NOR B	A = 6, B = 9					
A - B	A = 3, B = 9					
A - B	A = C, B = 7					

2. In the diagram of the 4-bit ALU given above, sketch the underlying logic needed to produce the **Sign**, **Overflow**, and **Zero** outputs (show any gates that are required).