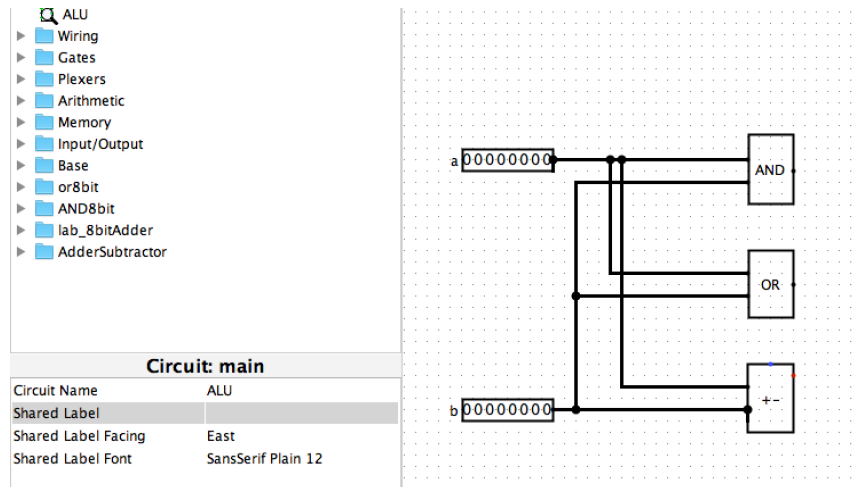


ASDV 1220, Intro to IT
Lab, Design of the 8-bit Arithmetic Logical Unit --- ALU

1. Create a new Logism circuit save it as ALU and rename its main to ALU as well.
2. Load into circuit ALU the libraries you designed in previous labs: AND8bit, OR8bit and AdderSubtractor8bit. If you do not have your own circuits, used the posted circuits.

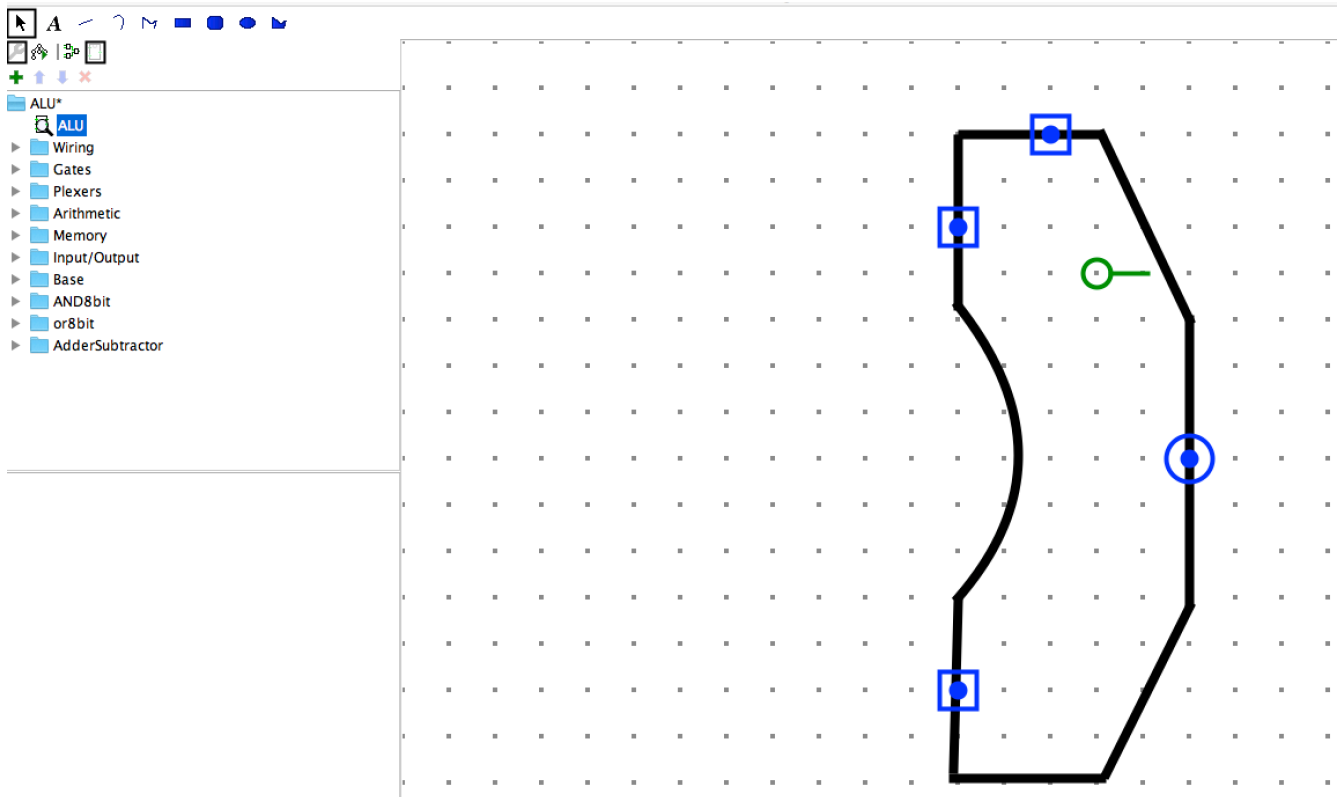


3. Use 2 multiplexers (set their Include Enable to NO) with 8-bit inputs and 1-bit selector to implement the following logic:

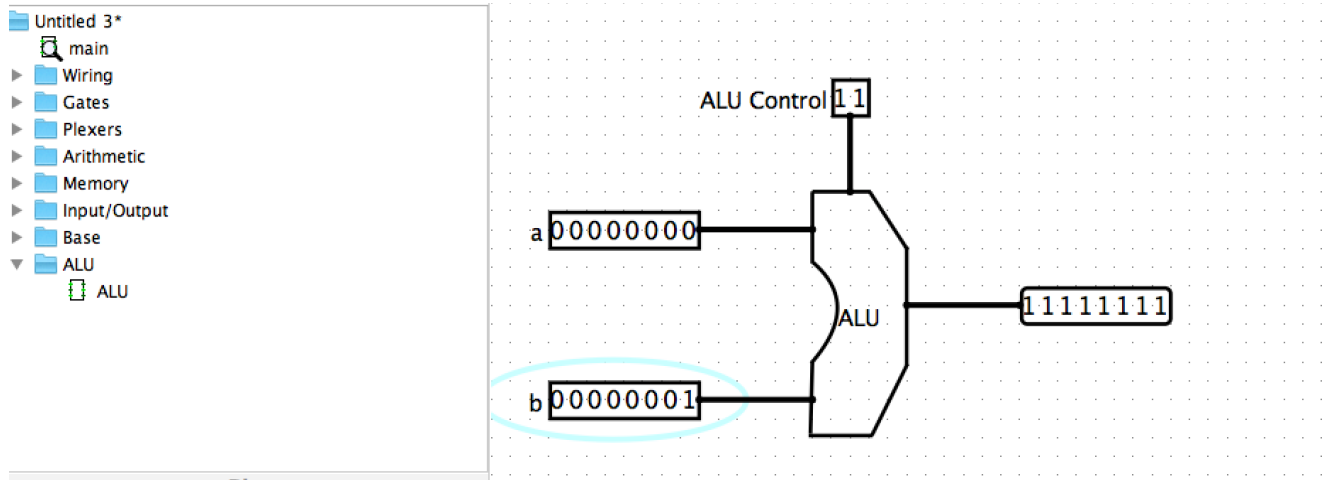
ALU CONTROL	ALU RESULT
00	a AND b
01	a OR b
10	a + b
11	a - b

In other words the ALU uses control bits 00 for ANDing, 01 for ORing, 10 for ADDing and 11 SUBtracting. *The CONTROL of the operation(AND, OR, +, -) must be a 2-bit input, regardless that our multiplexers have 1-bit selector(that is, you have to think and improvise).*

4. After you test your ALU circuit and works properly create the chip of size (6 x 15) shown below by using the *line* and the *curve* tools at the tool bar. Use pen width of width 1 to draw the ALU chip. Place the input a West and up. Place the input b West and down, place the output East, and the 2-bit control North. Its shared label is ALU facing North. No other labels but the shared label ALU.



5. Create a test circuit like the one shown below and put in the ALU, a, b control ,output and upload the jpgs for the values of a and b shown in the table below. You have to upload 4 files with the exact names shown, and of course showing the correct results for inputs a=1 and b=5:



ALU CONTROL	ALU RESULT
00	a AND b = (1 AND 5) : oneANDfive.jpg
01	a OR b = (1 OR 5) : oneORfive.jpg
10	a + b = (1 + 5) : one+five.jpg
11	a - b = (1 - 5) : one-five.jpg

Upload 4 JPG, or PNG, for the values given in the table above, and name them as shown (oneANDfive.jpg etc).