Building an Integer ALU Step 1
CS 3339
Group: The Architects

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1 Objective

To introduce the process and methodology of designing a new computer circuit from scratch by coding 1-bit circuits for NAND, NOT, NOR, and 4-bit Shift.

2 NAND Gate

The NAND gate is a NOT AND operation. We took two 1-bit inputs to preform an AND operation before doing the logical NOT operation. Our 1-bit inputs were x and y.

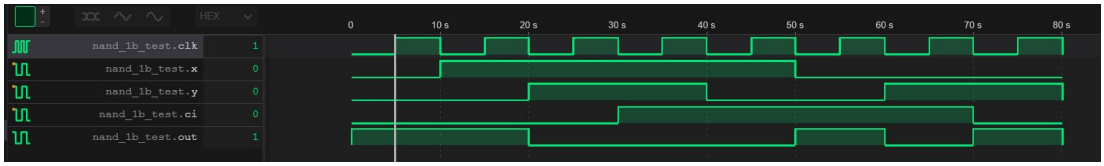

Figure 1: Our NAND gate.

3 NOT Gate

The NOT gate took a 1-bit input x and performed a logical NOT operation.

Figure 2: Our NOT gate.

4 NOR Gate

The NOR gate took our two 1-bit inputs and preformed a logical NOT OR operation. Our inputs are x and y.

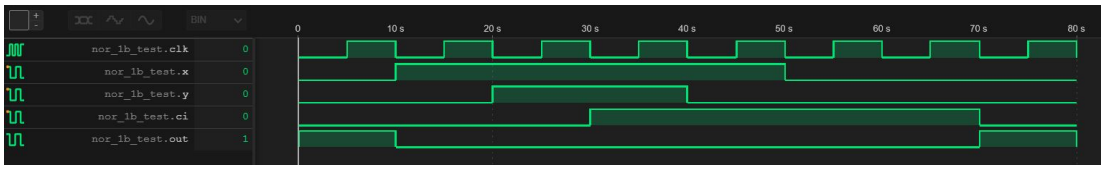

Figure 3: Our NOR gate.

5 Shift

The shift took a 4-bit input as opposed to a 1-bit input, then one operation demonstrates the bits 1000 shifting right, and the bits 0001 shifting left.

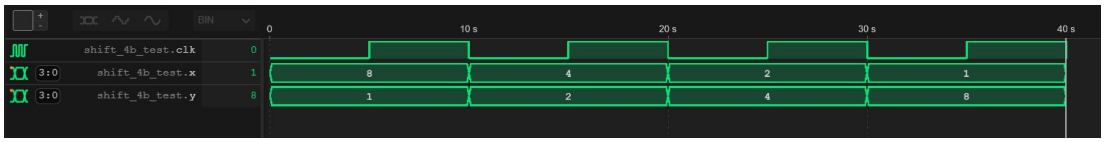

Figure 4: Our 4-bit Shift.

6 Conclusion

The shift took the longest time out of all the operations we had to code. We also struggled getting on the same page in terms of what coding software we were using, especially since we all have varying experience with Verilog and Latex, but once we got on the same page we all seemed to work well together.