

PROCESSOR PART II : ALU

COL216

COMPUTER ARCHITECTURE

Submitted by

ANUP LAL NAYAK

2022CS51827

LUCKY AHIRWAR

2022CS52049

Aim :

To implement 32-bit RISC-V Arithmetic Logic Unit (ALU).

Design:

In the alu.circ file we implement a multiplexer which selects the output of the operation corresponding to the ALUOp, the design have separate circuits for performing different operations.

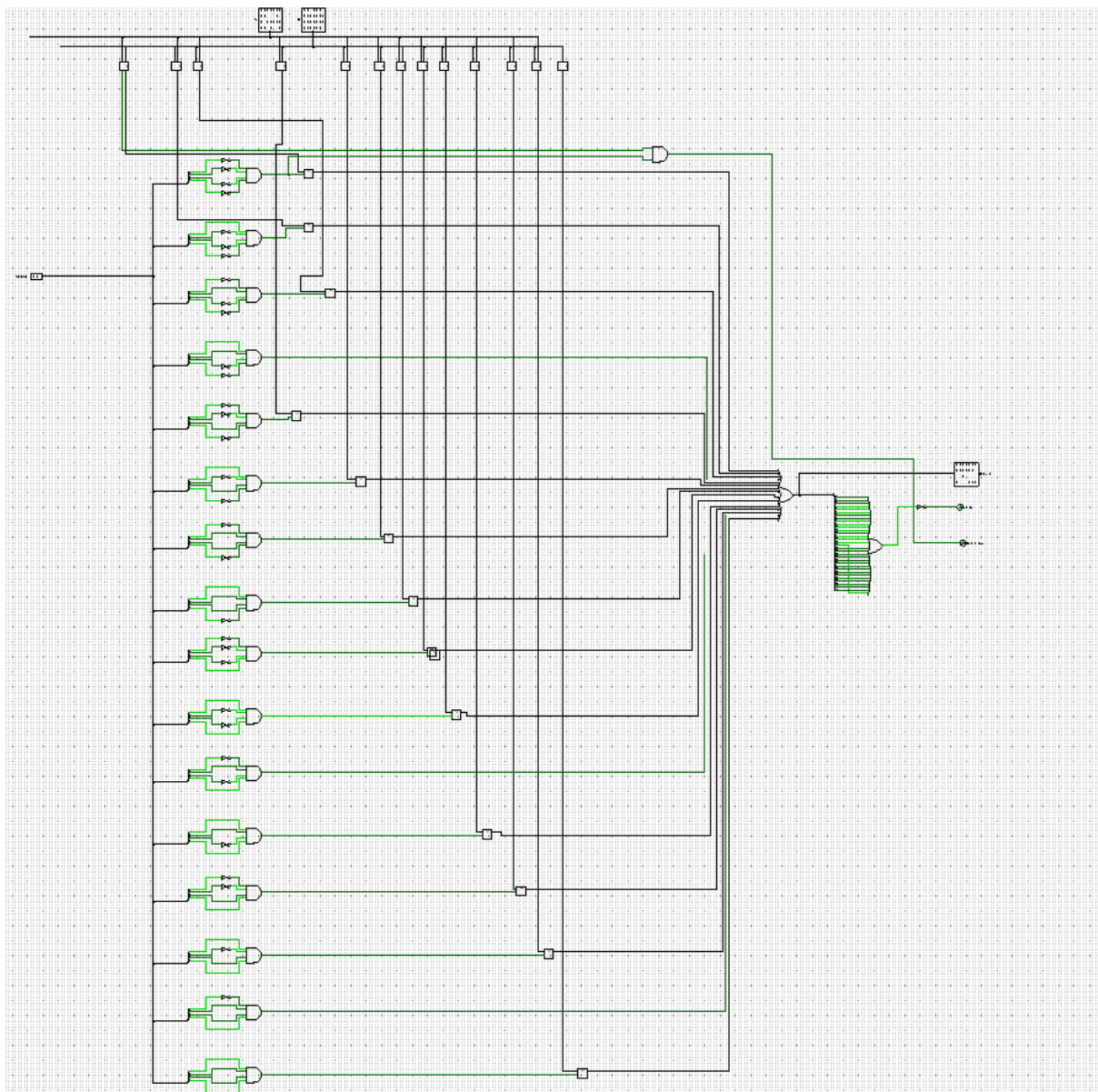
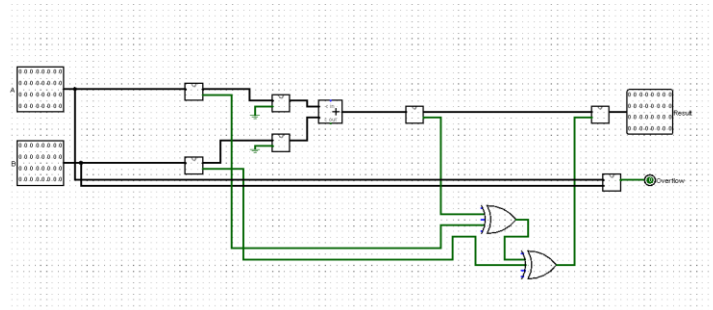


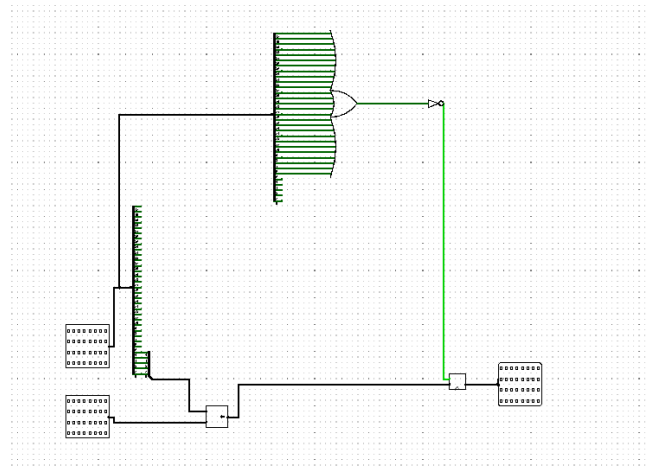
Fig1. ALU

The different operations of Arithmetic Logic Unit are :

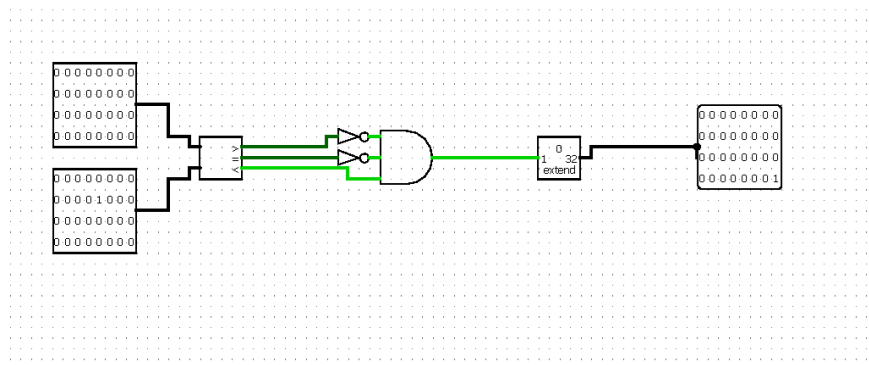
1) Add :



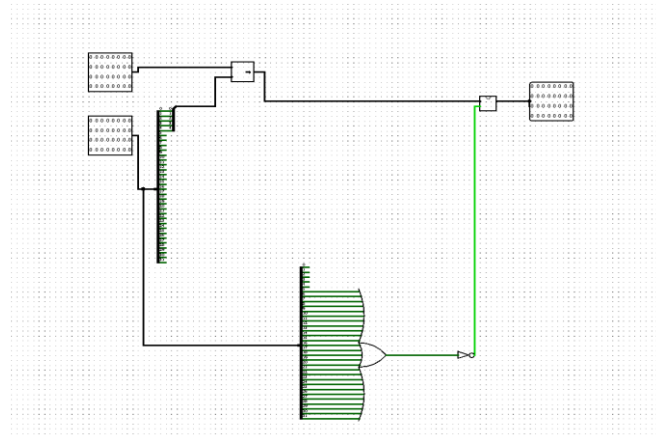
2) sll :



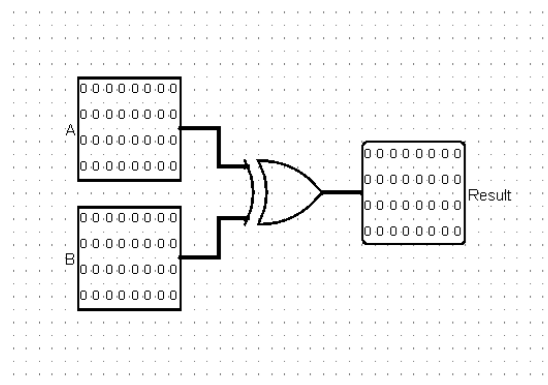
3) slt :



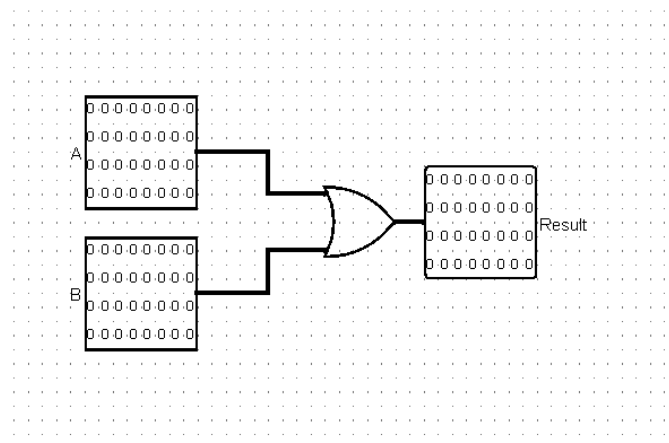
4) srl:



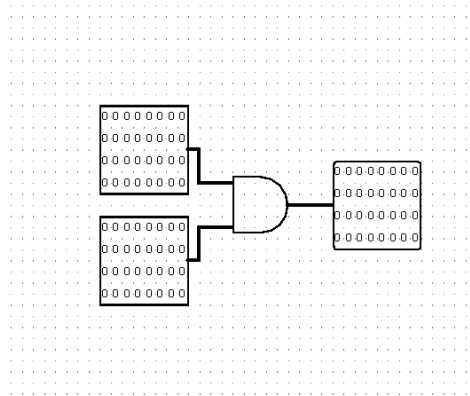
5)xor :



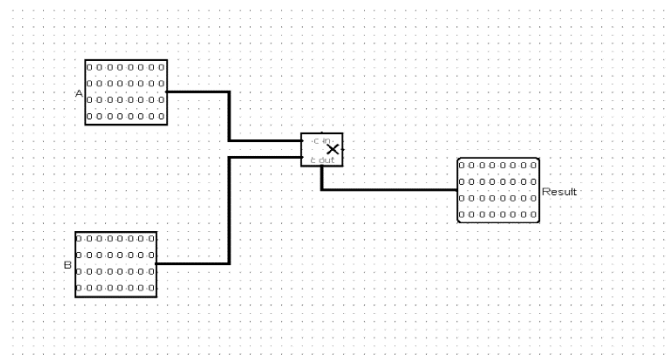
6)or :



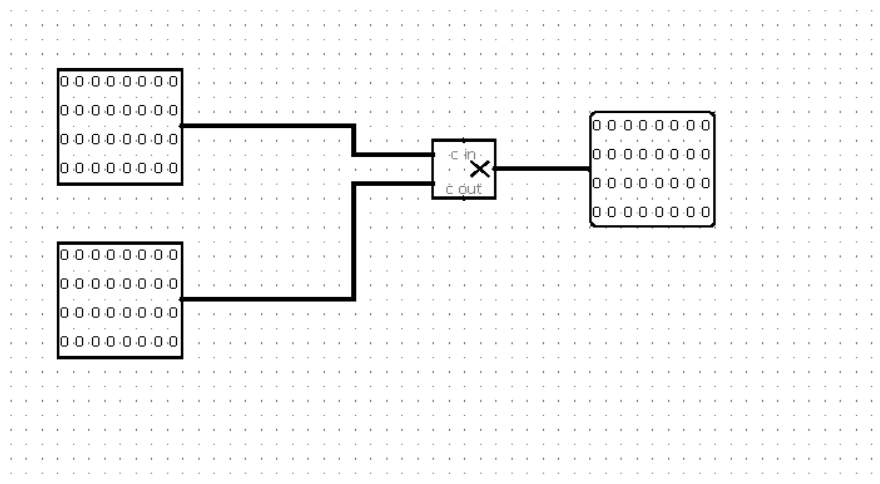
7)and :



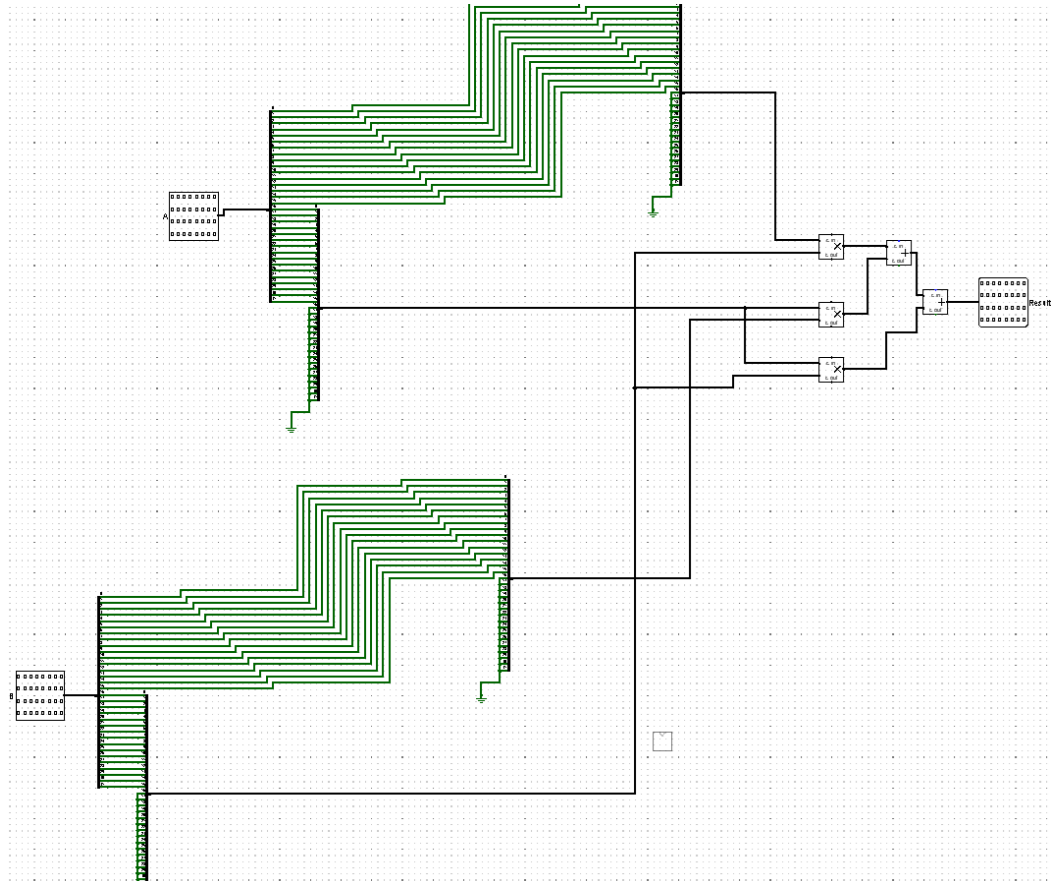
8)mulh:



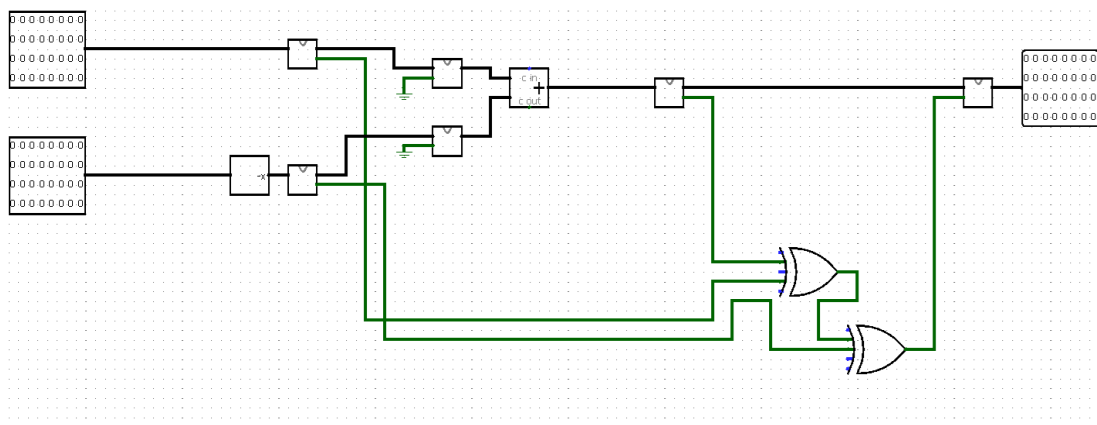
9)mul :



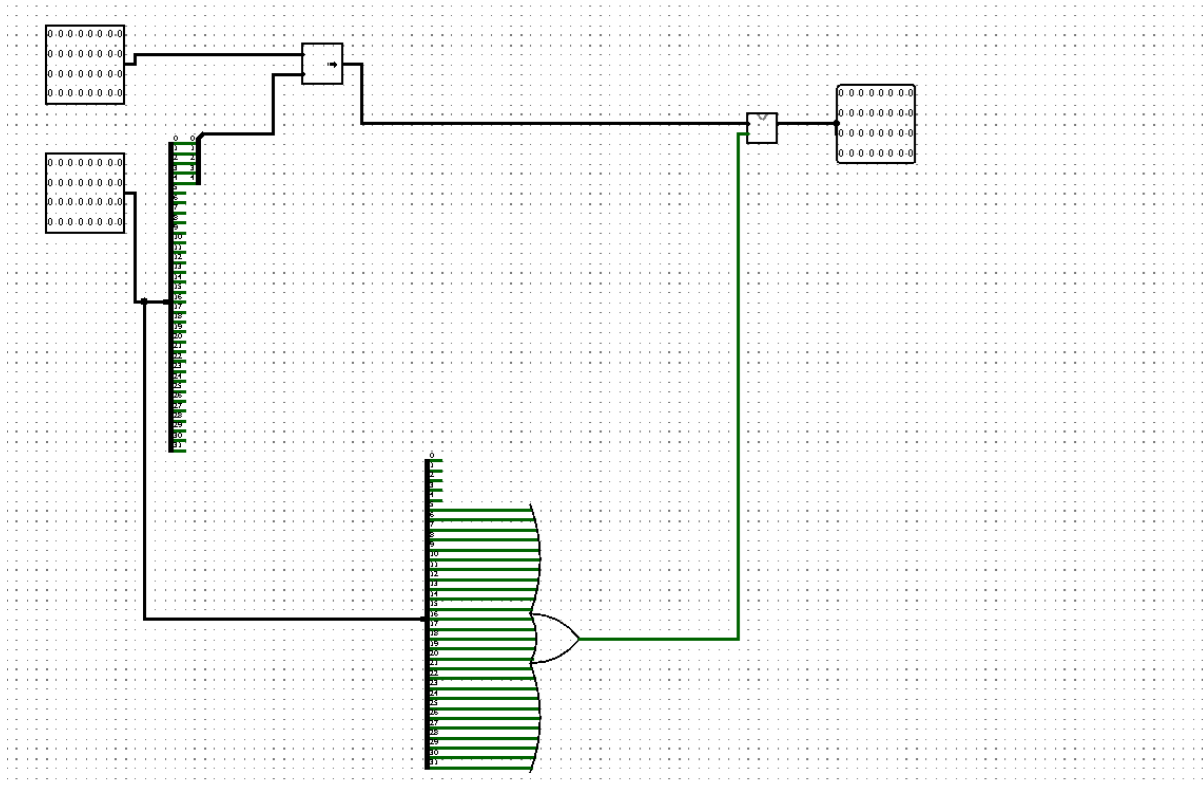
10)mulhu :



11)sub :



12)sra



13) bsel:

