

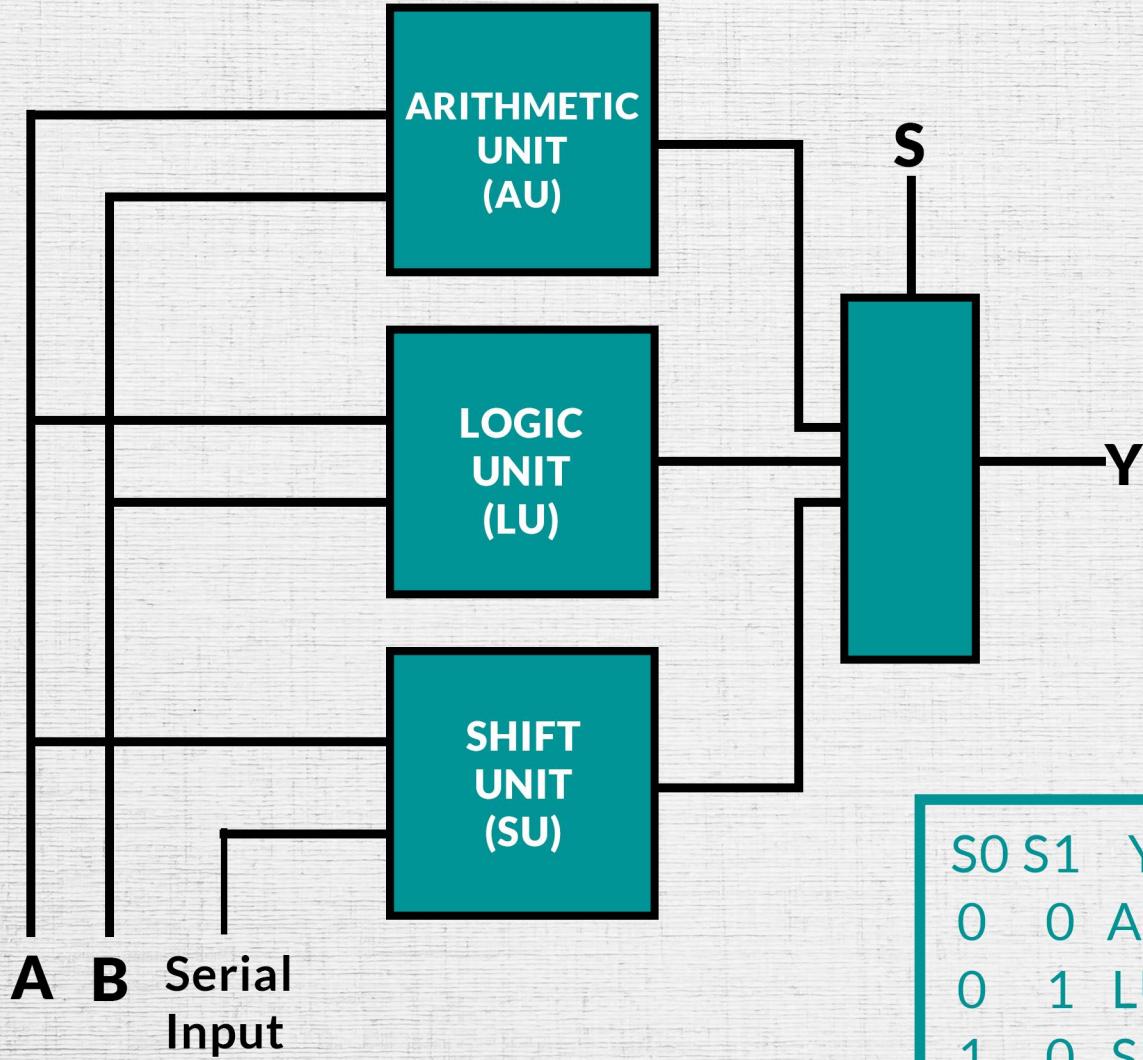
COMPUTER ARCHITECTURE

ASSIGNMENT-1

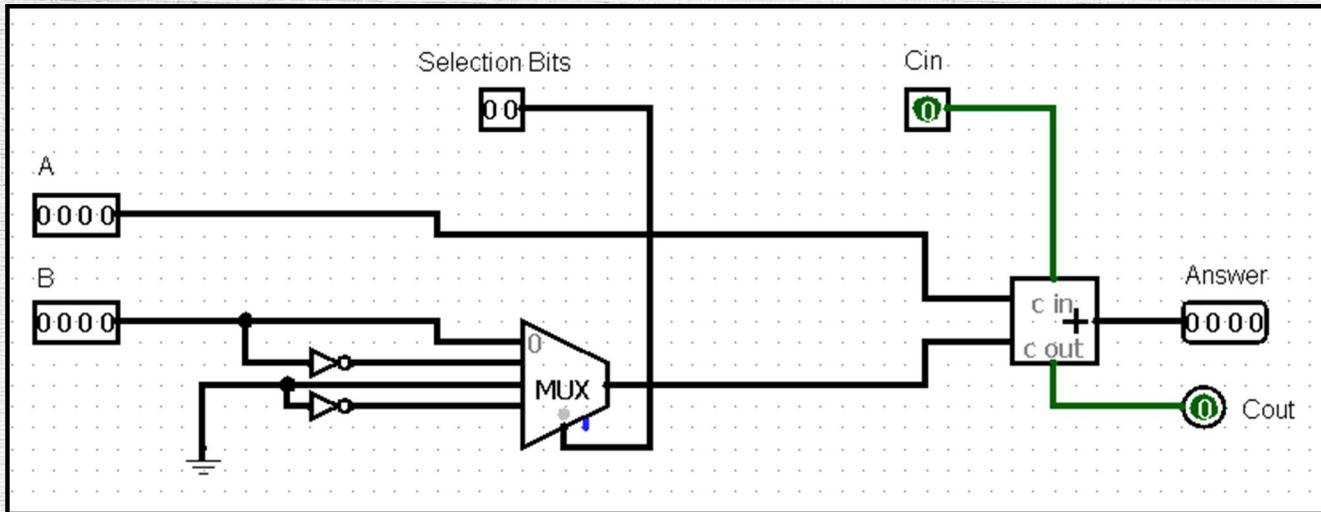
ARITHMETIC LOGIC SHIFT UNIT (ALSU)

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TOP LEVEL DESIGN



1 - ARITHMETIC UNIT

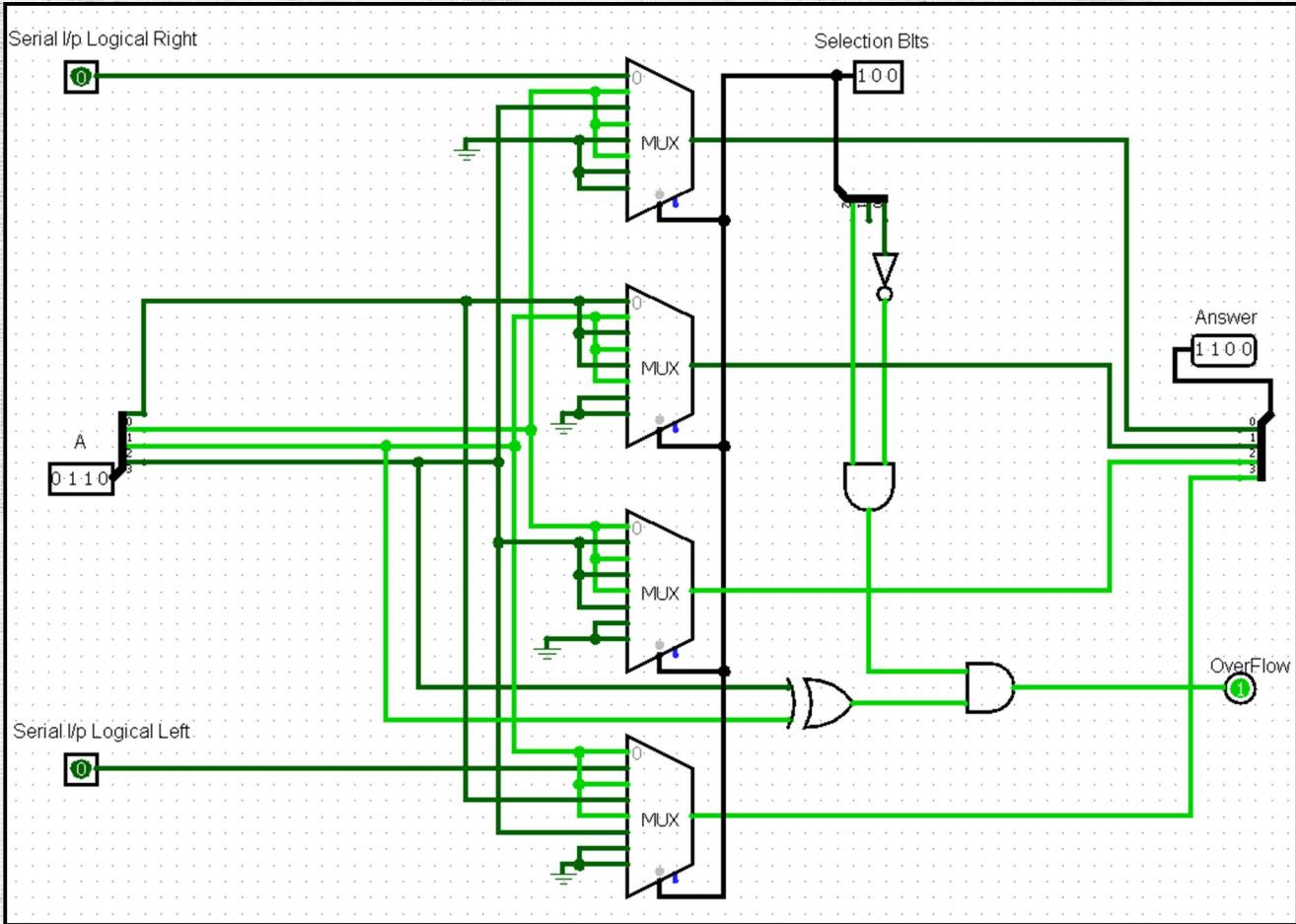


Screenshot of my Arithmetic Unit in Logisim.

S3 S2 Cin	DESCRIPTION
0 0 0	Addition of A & B
0 0 1	Addition of A & B with Carry
0 1 0	Subtraction of A & B with Borrow
0 1 1	Subtraction of A & B
1 0 0	Transfer A
1 0 1	Increment A
1 1 0	Decrement A
1 1 1	Transfer A

The Arithmetic Unit of ALSU is used to do mathematical calculation of given A & B.

2 - SHIFT UNIT

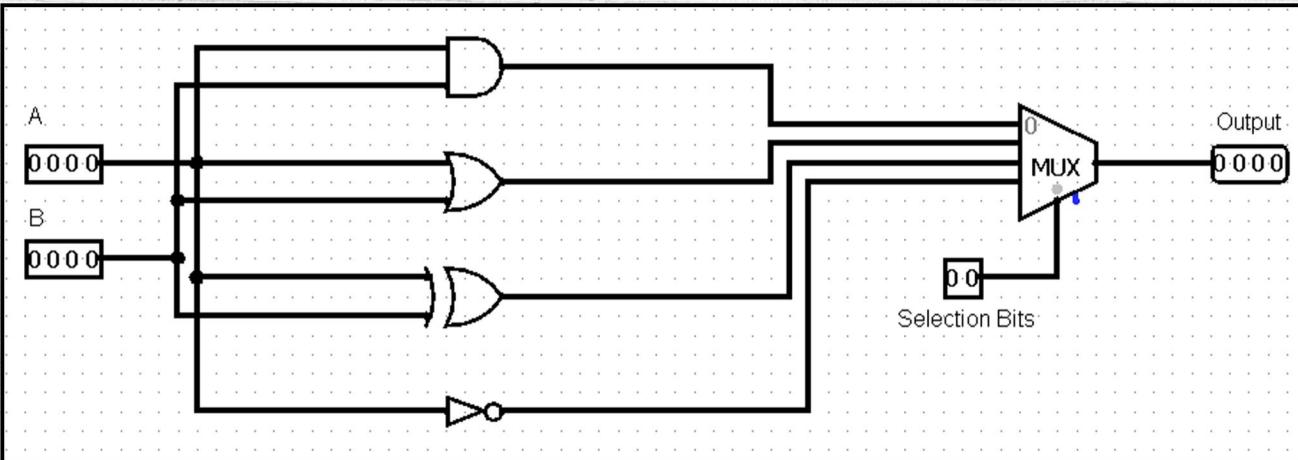


Screenshot of my Shift Unit in Logisim.

S4 S3 S2	DESCRIPTION
0 0 0	Logical Shift Left
0 0 1	Logical Shift Right
0 1 0	Circular Shift Left
0 1 1	Circular Shift Right
1 0 0	Arithmetic Shift Left
1 0 1	Arithmetic Shift Right

The Shift Unit of ALSU is used to do shift operation on given A .

3 - LOGIC UNIT



Screenshot of my logistic Unit in Logisim.

S3 S2	DESCRIPTION
0 0	AND Operation
0 1	OR Operation
1 0	XOR Operation
1 1	NOT Operation

The Logical Unit of ALSU is used to do
Logical operation on given A & B.

CONCLUSION

An arithmetic logic unit (ALU) is a digital circuit used to perform arithmetic and logic operations. It represents the fundamental building block of the central processing unit (CPU) of a computer. Modern CPUs contain very powerful and complex ALUs. In addition to ALUs, modern CPUs contain a control unit (CU).