

Ramaiah Institute of Technology
(Autonomous Institute, Affiliated to VTU)

Department of CSE

Programme: B.E

Term: Jan to May 2019

Course: Computer Organization

Course Code: CS45

Activity V: Designing an ALU to perform arithmetic and logical functions using Logisim simulator.

Name: Kashish Gulati	Marks: /10	Date:
USN: 1MS18CS056	Signature of the Faculty:	

Objective: To simulate the working of Arithmetic and Logical Unit using simulator.

Simulator Description: Logisim is an educational tool for designing and simulating digital logic circuits. With its simple toolbar interface and simulation of circuits as you build them, it is simple enough to facilitate learning the most basic concepts related to logic circuits. With the capacity to build larger circuits from smaller sub circuits, and to draw bundles of wires with a single mouse drag, Logisim can be used (and is used) to design and simulate entire CPUs for educational purposes.

Activity to be performed by students:

KASHISH GULATI

IMS 18C5056

Section - B

Activity - 5

Q List out the steps in designing ALU

Ans 1. Add the two i/p pins. Name them A and B.

2. Add or, and, xor, nor gates and a 1 bit adder.

3. Connect the A's and B's of all the gates to their respective pins.

4. Add an output pin and name it Result.

5. Add a 1 bit multiplexer with 3 select bits.

6. Connect outputs of all the gates to the mux.

7. Connect 3 bit input pin to ~~mux~~ mux.

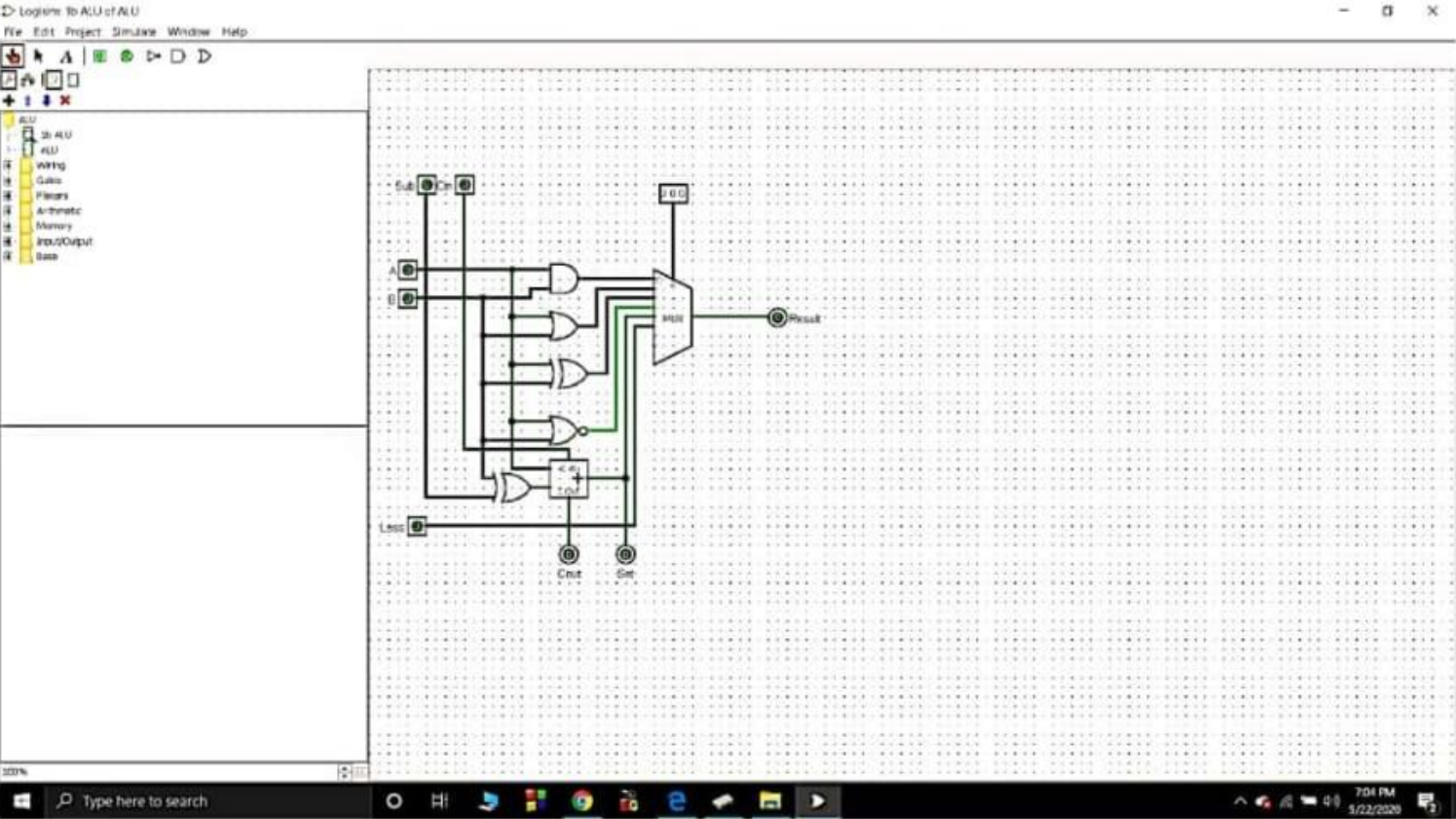
8. Add i/p pin to C_{in}, and output pin to C_{out}.

9. Add an XOR gate. Connect its output to C_{out}. The first i/p must be connected to B and the second to another i/p pin sub.

10. Add another i/p and name it ~~Sub~~ less. Connect it to the mux.

11. Add an output pin and name it Set. Connect it to the output of adder unit.

Snapshots:



Logism ALU of ALU

File Edit Project Simulate Window Help



- ALU*
- 1b ALU
- 4b ALU
- 8b ALU
- 16b ALU
- 32b ALU
- 64b ALU
- 128b ALU
- 256b ALU
- 512b ALU
- 1024b ALU
- 2048b ALU
- 4096b ALU
- 8192b ALU
- 16384b ALU
- 32768b ALU
- 65536b ALU
- 131072b ALU
- 262144b ALU
- 524288b ALU
- 1048576b ALU
- 2097152b ALU
- 4194304b ALU
- 8388608b ALU
- 16777216b ALU
- 33554432b ALU
- 67108864b ALU
- 134217728b ALU
- 268435456b ALU
- 536870912b ALU
- 1073741824b ALU
- 2147483648b ALU
- 4294967296b ALU
- 8589934592b ALU
- 17179869184b ALU
- 34359738368b ALU
- 68719476736b ALU
- 137438953472b ALU
- 274877906944b ALU
- 549755813888b ALU
- 1099511627776b ALU
- 2199023255552b ALU
- 4398046511104b ALU
- 8796093022208b ALU
- 17592186044416b ALU
- 35184372088832b ALU
- 70368744177664b ALU
- 140737488355328b ALU
- 281474976710656b ALU
- 562949953421312b ALU
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- 463168356949264781694283940034751631413079938662562256157830336031

Ramaiah Institute of Technology
(Autonomous Institute, Affiliated to VTU)

Department of CSE

Programme: B.E
2019

Term: Jan to May

Course: Computer Organization
CS45

Course Code:

Activity VI: Designing memory system using Logisim simulator.

Name:	Marks: /10	Date:
USN:	Signature of the Faculty:	

Objective: To simulate the writing operation on memory.

Simulator Description: Logisim is an educational tool for designing and simulating digital logic circuits. With its simple toolbar interface and simulation of circuits as you build them, it is simple enough to facilitate learning the most basic concepts related to logic circuits. With the capacity to build larger circuits from smaller sub circuits, and to draw bundles of wires with a single mouse drag, Logisim can be used (and is used) to design and simulate entire CPUs for educational purposes.

Activity to be performed by students:

List out the steps in designing memory system

Observations and Snapshots:

Activity - 6

List out the steps in designing memory steps:-

1. Add a RAM with separate load and store select.
2. Add a counter and connect Q to A of the RAM.
3. Add a controller buffer and connect its output to the RAM.
- ~~4. Add a clock and connect its o/p to the RAM.~~
- ~~4. Add a clock and connect to the i/p of the buffer.~~
5. Add a TTY unit with 32 rows and columns. Make the connection with RAM.
6. Add a 7 bit random number generator, connect Q to D.
7. Add another controlled buffer, connect to TTY.
8. Connect the output of the second buffer to the counter.
9. Connect a button to the counter.

Snapshot :

