

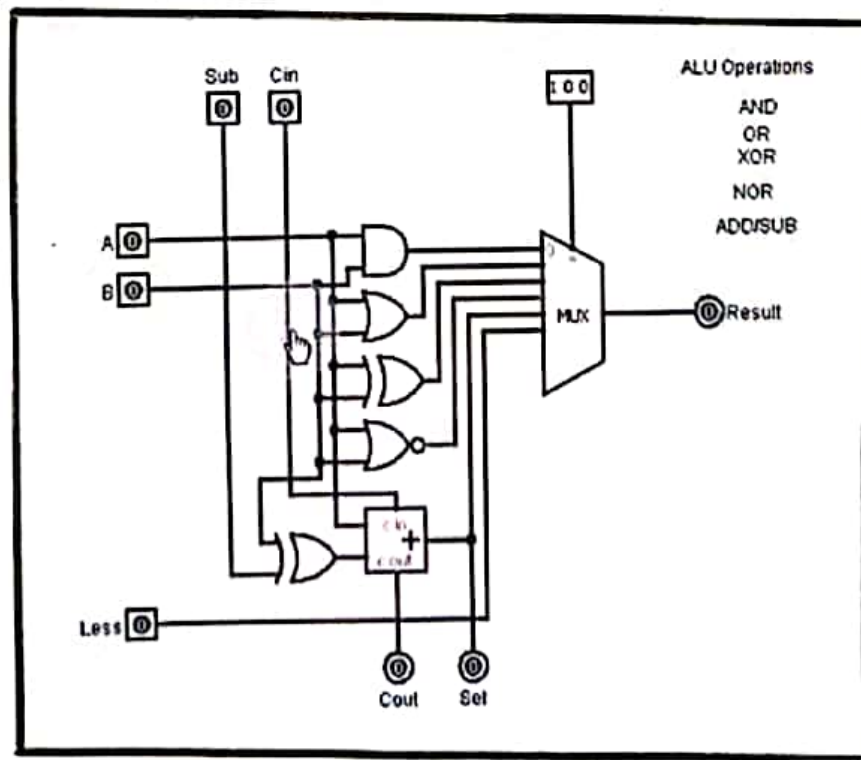
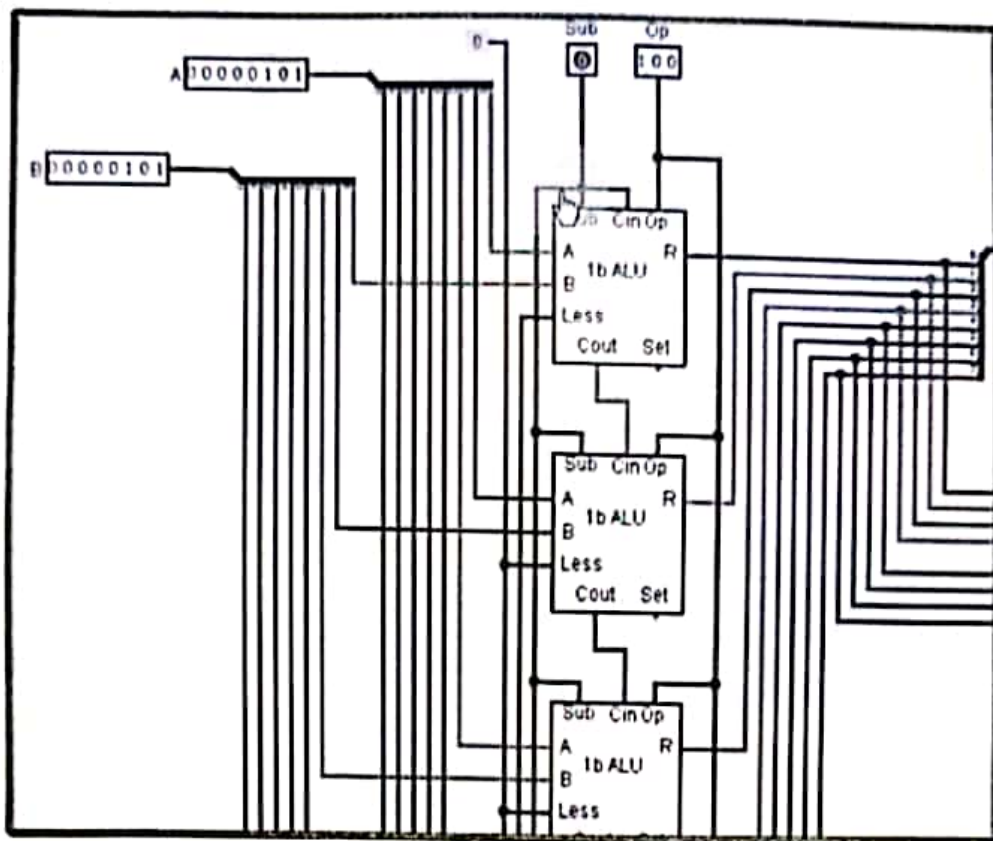
Computer Organization

Activity: Designing an ALU to perform arithmetic and logical functions using logic simulator

List out the steps in designing ALU

- 1) Add the two i/p pins. Name them A and B
- 2) Add or, and, xor, not 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
- 8) Add i/p pin to Cin and output pin to Cout
- 9) Add an xor gate. Connect its o/p to Cout. 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. Connect it to the mux.
- 11) Add an output pin and name it sub. Connect it to the multiplexer o/p of adder circuit.

Snapshots.

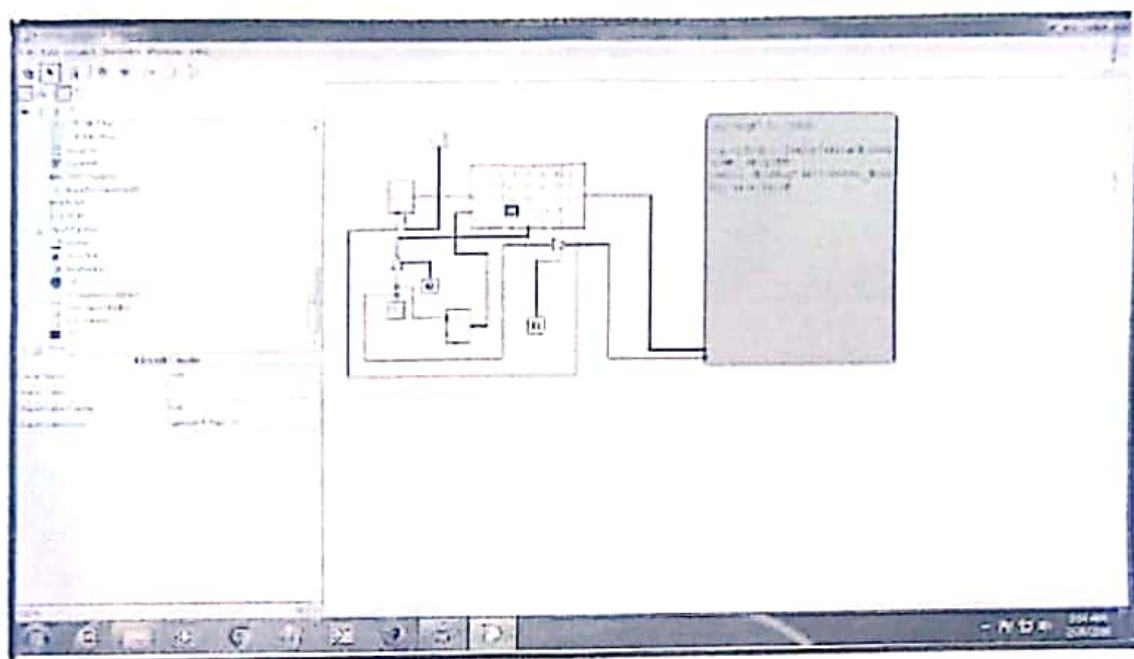


Activity VI: Designing memory system using Logisim simulator

List out the steps in designing memory system:

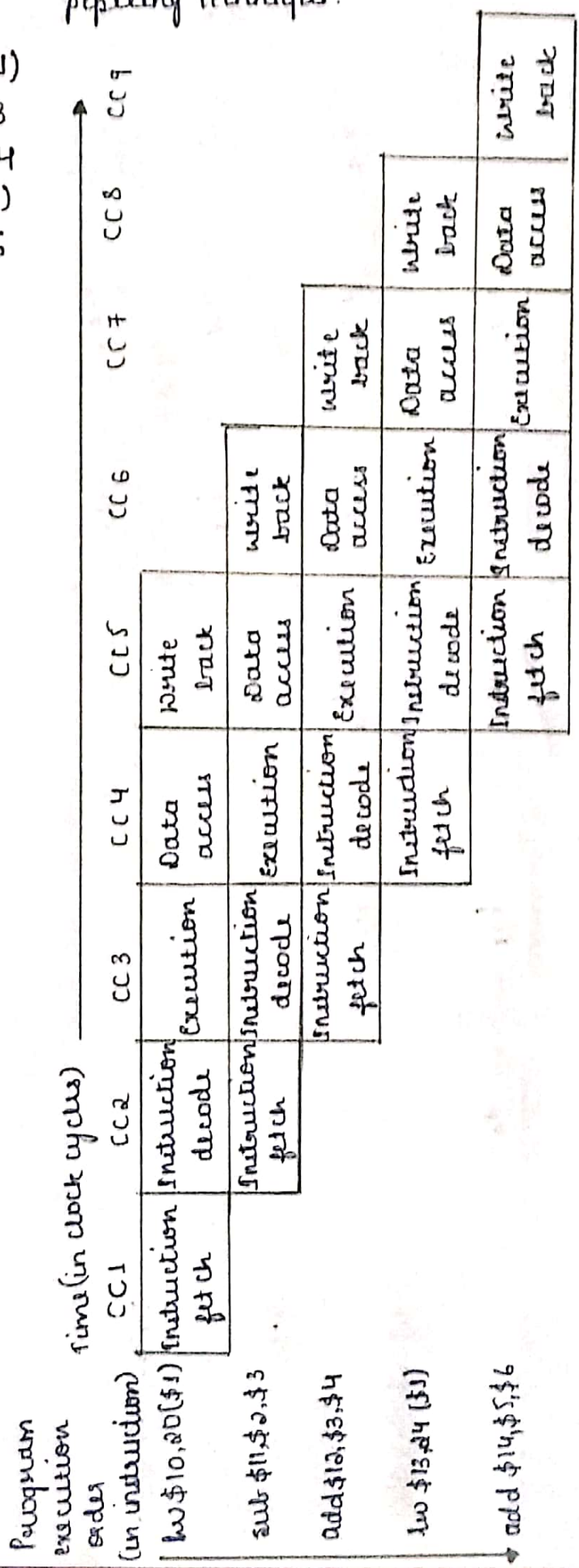
1. Add a RAM with separate load and store enabled.
2. Add a counter and connect Q to A of the RAM.
3. Add a controller buffer and connect its o/p to RAM.
4. Add a clock and connect to the i/p of the buffer.
5. Add a TTY unit with 20 rows and columns. Make the connections with RAM.
6. Add a 7-bit random number generator, connect Q to D.
7. Add another controlled buffer, connect to TTY. Also add an i/p pin to the buffer.
8. Connect the output of second buffer to the counter.
9. Connect a button to the counter.

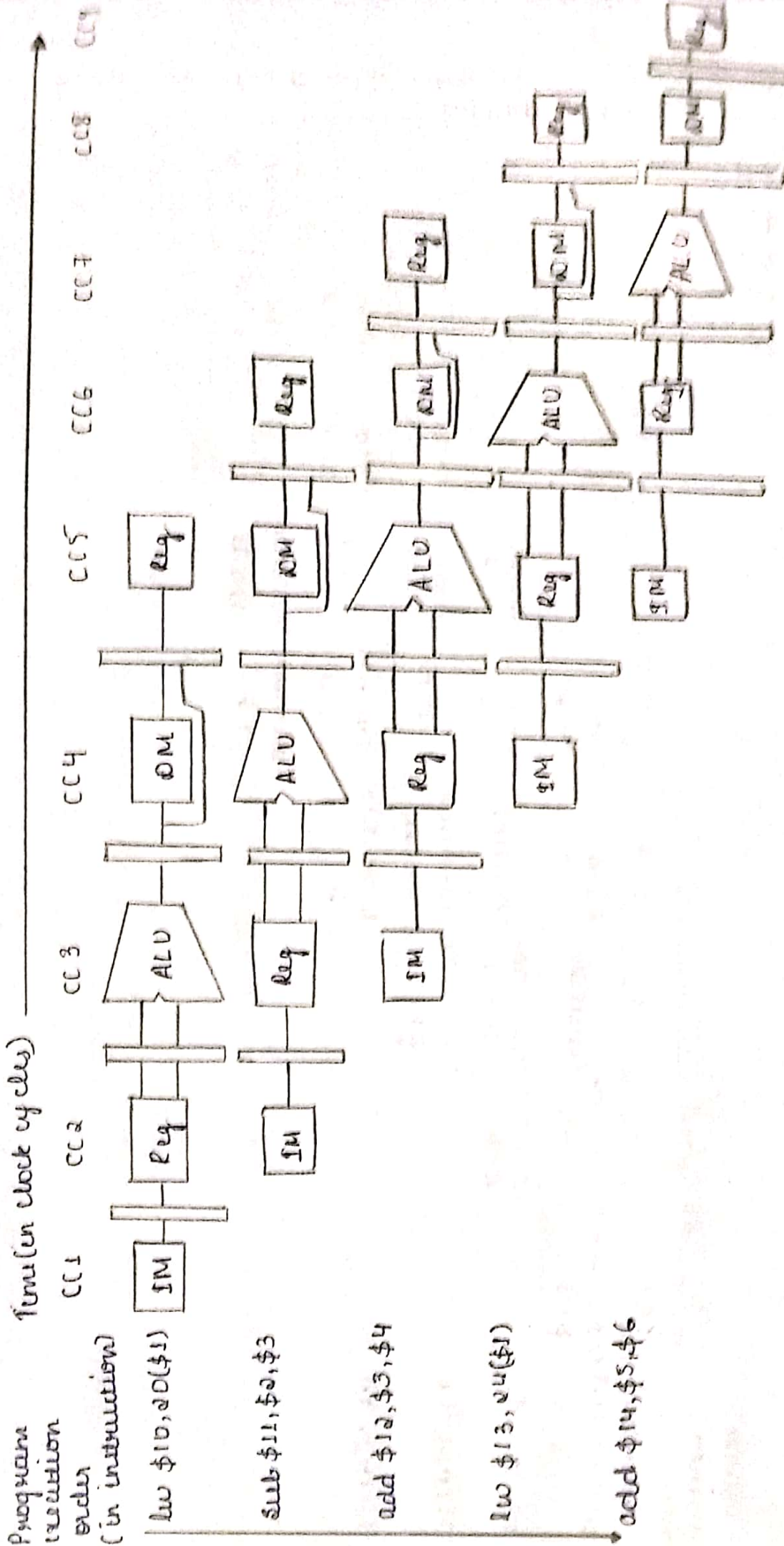
Snapshots :



Activity VII
with diagram demonstrate execution of four instructions using
pipelining technique.

lw \$10, 20(\$1)
sub \$11, 42, \$3
add \$12, \$3, \$4
lw \$13, 24(\$1)
add \$14, \$5, \$6





Snapshots:

