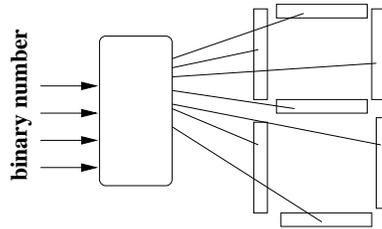


CS 355 - Computer Organization and Architecture II
Practice Questions

No answers will be provided.

Question 1

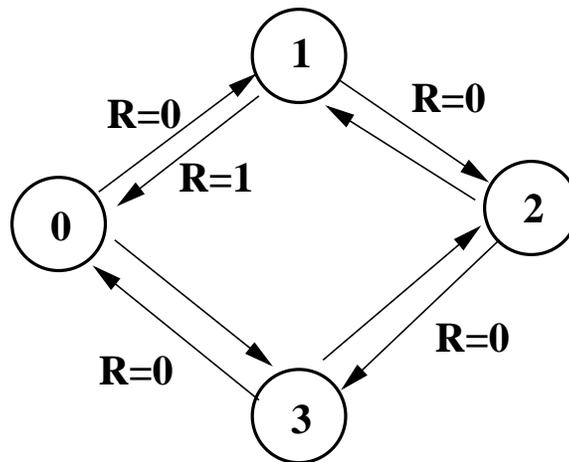
- The binary numbers 0000, 0001, 0010, ..., 1001 represents the digits from 0 to 9. Construct a circuit using elementary gates that can show the binary in a “numeric” figure as shown in the following figure:



- Construct a circuit with $2n$ inputs (representing two n bit unsigned numbers) and n outputs where the output is equal to the larger of the two input numbers.

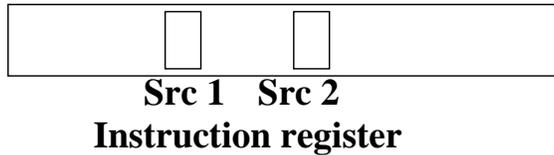
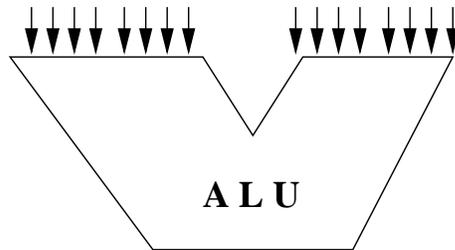
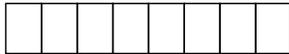
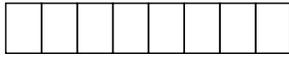
Question 2.

Construct the following finite state automaton using elementary gates and D-flip flops:



Question 3.

Show the circuit that is used switch the values of these two 8-bit registers to the inputs of the ALU:



Question 4.

Write a micro-program that multiplies the values in the register R0 and R1 and store the result in R2. Use R15 as scratch register and the fact that register R5 contains the constant 0.

Hint: use repeat addition to multiply.

Question 5.

Show the timing diagram from a write operation on a synchronous bus.