CSIE 2344: Discussion (Unit 8)

1 Hazards I

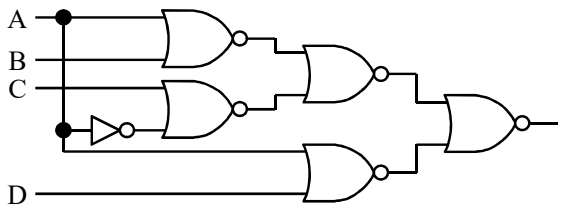
Consider the following logic function: $F(A, B, C, D) = \sum m(0, 4, 5, 10, 11, 13, 14, 15)$.

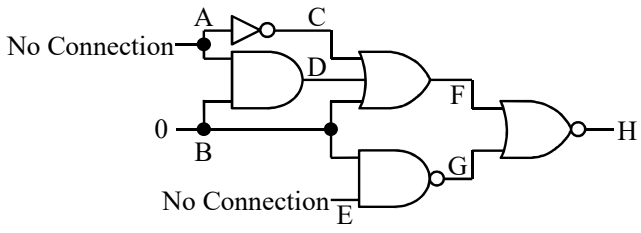
1. Find two different minimum circuits which implement F using AND and OR gates. Identify two hazards in each circuit.
2. Find an AND-OR circuit for F which has no hazards.
3. Find an OR-AND circuit for F which has no hazards.

2 Hazards II

Consider the three-level NOR circuit below (left):

1. Find all hazards in this circuit.
2. Redesign the circuit as a three-level NOR circuit that is free of all hazards.





3 Four-Valued Logic

Consider the circuit above (right) and use four-valued logic to find A, B, C, D, E, F, G, and H.