

CPEG 422/622 Spring 2020

Homework 7

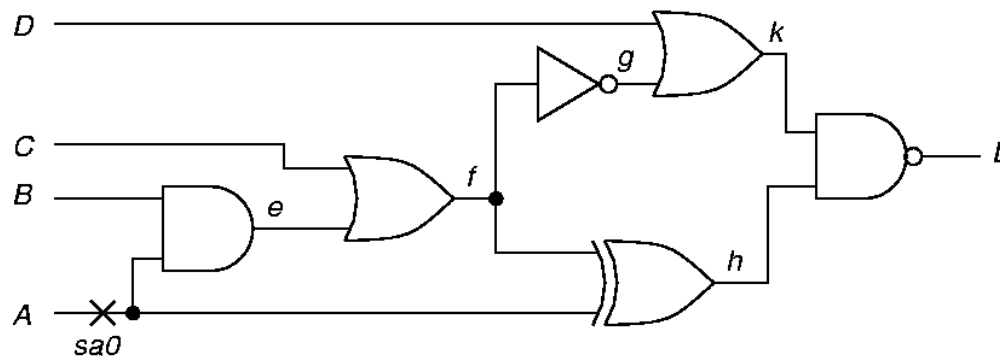
Due May 15th at midnight (through canvas).

1. Derive the forward implication tables for 2-input NOR gate and XNOR gate, respectively.

NOR	0	1	X	D	D'
0					
1					
X					
D					
D'					

XNOR	0	1	X	D	D'
0					
1					
X					
D					
D'					

2. Find **all the test vectors** (input combinations of ABCD) that can test the stuck-at-0 fault shown in the following circuit.



3. Find hardware Trojan taxonomy on trusthub, select a category (e.g., insertion phase, abstraction level, ...) and give an in-depth explanation in your own words.
4. Explore the vulnerability database on trusthub, find one CAD solution for each of hardware Trojan, logic locking, fault injection, and side-channel analysis (thus a total of four solutions). Explain each solution in your own words. What problem it aims to solve? How does it solve it?
5. What are the differences between logic locking and camouflaging? What are some potential attacks to each method?
6. Explore the Internet, explain the graph coloring problem in your own words. How it can be used to fulfill the vendor diversity requirements? Give a heuristic for solving the graph coloring problem.