

ELEC 5280/6280 BIST

Assignment #3 Random Test Pattern Bridging Fault Simulation

Use the ASL for the circuit assigned to you and the 2000 random test patterns you generated for the previous assignments.

Generate collapsed dominant bridging faults for your circuit. Repeat this process for dominant-AND and dominant-OR bridging faults. Note that you can separately generate and then combine the dominant-AND and dominant-OR bridging fault lists to obtain a single fault list for dominant-AND/OR bridging fault simulation **OR** you can run the simulations separately and then combine the results for data reporting.

Example for serial collapsed dominant bridging faults with audit:

```
default s#
proc
audit
simul8
bftgen dom      (use dand and dor to generate dominant-AND and dominant-OR bridging faults)
bftsim
```

Record the following data for your circuit (this info will be in *s#.aud*):

1. Total number of nets in circuit.
2. Calculate the total number of uncollapsed (N-choose-2) dominant bridging faults that would be generated based on the number of nets.
3. Calculate the total number of uncollapsed (N-choose-2) dominant-AND/OR bridging faults that would be generated based on the number of nets.

Record (or calculate) the following for serial bridging fault simulation of your circuit for collapsed dominant bridging faults:

4. Fault Generation: Total number of collapsed bridging faults (these faults will be in *s#.flt*).
5. Fault Detection: Number of faults detected (these faults will be in *s#.det*), undetected (these faults will be in *s#.udt*), potentially detected (these faults will be in *s#.pdt*), and oscillation (these faults will be in *s#.osc*) faults. Determine whether any (and how many) potentially detected faults also were determined to be oscillation faults.
6. Fault Simulation: Record fault simulation time for serial bridging fault simulation (given at end of fault simulation).
7. Fault Coverage: Calculate fault coverage considering potentially detected and/or oscillation faults with 0.5 and 1.0 probabilities. Do not count faults twice if they are potentially detected and an oscillation fault.

Record (or calculate) the following for serial bridging fault simulation of your circuit for combined collapsed dominant-AND/OR bridging faults:

8. Fault Generation: Total number of collapsed bridging faults (these faults will be in *s#.flt*).
9. Fault Detection: Number of faults detected (these faults will be in *s#.det*), undetected (these faults will be in *s#.udt*), potentially detected (these faults will be in *s#.pdt*), and oscillation (these faults will be in *s#.osc*) faults. Determine whether any (and how many) potentially detected faults also were determined to be oscillation faults.
10. Fault Simulation: Record fault simulation time for serial bridging fault simulation (given at end of fault simulation).
11. Fault Coverage: Calculate fault coverage considering potentially detected and/or oscillation faults with 0.5 and 1.0 probabilities. Do not count faults twice if they are potentially detected and an oscillation fault.

Turn in your results on paper at the beginning of class on or before the due date (be sure to include your *s#* next to your name on the sheet(s) of paper).

Happy BISTing!!!