

The University of Texas at Dallas
Dept. of Electrical and Computer Engineering

EEDG/CE 6303: Testing and Testable Design

HW # 4: Due on Tuesday 3/26/2024 - 11:59 pm (US CST)

(To prepare for Test 2, the solutions will be posted on 3/27/2024. No late homework will be accepted.)

When you submit your homeworks, to help us grade and identify your work, you need to comply with the following guidelines carefully:

- *Have a **cover page** for each document (e.g. homework, project, report, etc.) that you submit. A sample of cover page is provided in the course webpage. This page must include: (1) your name as it appears in your **student ID card**, (2) course name/number, (3) homework/project number, and (4) the **Statement of Academic Honesty** that you sign.*

1. From your text, solve the following problems:

– Chapter 14: 5, 6, 7, 8.

2. Determine if: (i) AFs, (ii) SAFs, (iii) TFs, (iv) unlinked CFs (CFin, CFid, CSst), and (v) linked CFids faults can be detected by MARCH C– test shown below.

$$\{M0 : \uparrow (w0); M1 : \uparrow (r0, w1); M2 : \uparrow (r1, w0); M3 : \downarrow (r0, w1); M4 : \downarrow (r1, w0); M5 : \uparrow (r0)\}$$

As you know, in some categories (e.g. coupling faults), there may be multiple faults. You need to justify/prove your answer for each fault. To do this for each case, carefully tabulate which March element(s) (M_i) stimulates it and which element(s) detects it. If there are multiple scenarios to detect a particular fault, list them all.

3. Determine if: (i) AFs, (ii) SAFs, (iii) TFs, (iv) unlinked CFs (CFin, CFid, CSst), and (v) linked CFids faults can be detected by MARCH X test shown below.

$$\{M0 : \uparrow (w0); M1 : \uparrow (r0, w1); M2 : \downarrow (r1, w0); M3 : \uparrow (r0)\}$$

As you know, in some categories (e.g. coupling faults), there may be multiple faults. You need to justify/prove your answer for each fault. To do this for each case, carefully tabulate which March element(s) (M_i) stimulates it and which element(s) detects it. If there are multiple scenarios to detect a particular fault, list them all.

4. Read the following paper available in <http://www.utdallas.edu/library/>. Summarize and comment on your understanding of the paper in at most 2 pages.

A. J. van de Goor, “An Industrial Evaluation of DRAM Tests,” *IEEE Design & Test of Computers*, vol. 21, no. 5, pp. 430-440, Sep./Oct. 2004.