

HW4

Section 7.2.2

5. Answer questions a–g for the graph defined by the following sets:

- $N = \{1, 2, 3, 4, 5, 6, 7\}$
- $N_0 = \{1\}$
- $N_f = \{7\}$
- $E = \{(1, 2), (1, 7), (2, 3), (2, 4), (3, 2), (4, 5), (4, 6), (5, 6), (6, 1)\}$

Also consider the following (candidate) test paths:

- $p_1 = [1, 2, 4, 5, 6, 1, 7]$
- $p_2 = [1, 2, 3, 2, 4, 6, 1, 7]$
- $p_3 = [1, 2, 3, 2, 4, 5, 6, 1, 7]$

- Draw the graph.
- List the test requirements for Edge-Pair Coverage. (Hint: You should get 12 requirements of length 2.)
- Does the given set of test paths satisfy Edge-Pair Coverage? If not, state what is missing.
- Consider the simple path **[3, 2, 4, 5, 6]** and test path **[1, 2, 3, 2, 4, 6, 1, 2, 4, 5, 6, 1, 7]**. Does the test path tour the simple path directly? With a sidetrip? If so, write down the sidetrip.
- List the test requirements for Node Coverage, Edge Coverage, and Prime Path Coverage on the graph.
- List test paths from the given set that achieve Node Coverage but not Edge Coverage on the graph.
- List test paths from the given set that achieve Edge Coverage but not Prime Path Coverage on the graph.

7. Answer questions a–d for the graph defined by the following sets:

- $N = \{1, 2, 3\}$
- $N_0 = \{1\}$
- $N_f = \{3\}$
- $E = \{(1, 2), (1, 3), (2, 1), (2, 3), (3, 1)\}$

Also consider the following (candidate) paths:

- $p_1 = [1, 2, 3, 1]$
- $p_2 = [1, 3, 1, 2, 3]$
- $p_3 = [1, 2, 3, 1, 2, 1, 3]$
- $p_4 = [2, 3, 1, 3]$
- $p_5 = [1, 2, 3, 2, 3]$

- Which of the listed paths are test paths? For any path that is not a test path, explain why not.
- List the eight test requirements for Edge-Pair Coverage (only the length two subpaths).
- Does the set of **test** paths from part (a) above satisfy Edge-Pair Coverage? If not, state what is missing.
- Consider the prime path **[3, 1, 3]** and path p_3 . Does p_3 tour the prime path directly? With a sidetrip?