Department of Computing

Curtin University

Software Engineering Testing (SET)

Week 5 Laboratory/Tutorial

The following exercises are intended to be done in a laboratory/tutorial session with a teaching assistant or instructor present. The exercises have been designed to reinforce concepts taught in SET.

1. Answer questions a-f for the graph in Figure 1.
   a) Give the sets N, N_0, N_f, and E for the graph.
   b) Give a path that is not a test path.
   c) List any five test paths.
   d) Enumerate the test requirements for Node Coverage, Edge Coverage, and Prime Path Coverage on the graph.
   e) List test paths that achieve Node Coverage but not Edge Coverage on the graph.
   f) List test paths that achieve Edge Coverage but not Prime Path Coverage on the graph.
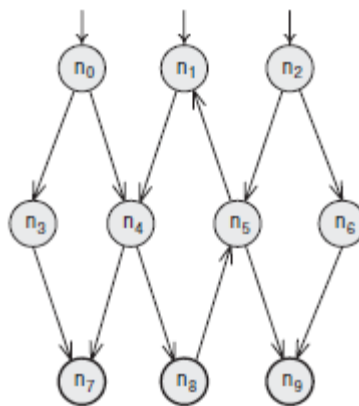

Figure 1

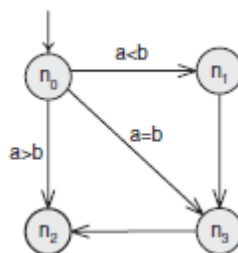2. In Figure 2, find test case inputs such that the corresponding test path visits edge (n_1, n_3).

Figure 2

3. Answer questions a-d for the graph defined by the following sets:

$N = \{0, 1, 2\}$
$N_0 = \{0\}$
$N_f = \{2\}$
$E = \{(0, 1), (0, 2), (1, 0), (1, 2), (2, 0)\}$

Also consider the following (candidate) paths:
$p_0 = [0, 1, 2, 0]$
$p_1 = [0, 2, 0, 1, 2]$
$p_2 = [0, 1, 2, 0, 1, 0, 2]$
$p_3 = [1, 2, 0, 2]$
$p_4 = [0, 1, 2, 1, 2]$

a) Which of the listed paths are test paths? Explain the problem with any path that is not a test path.

b) List the eight test requirements for Edge-Pair Coverage (only the length two subpaths).

c) Does the set of **test** paths (part a) above satisfy Edge-Pair Coverage? If not, identify what is missing.

d) Consider the prime path $[n_2, n_0, n_2]$ and path p_2. Does p_2 tour the prime path directly? With a sidetrip?