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## Section 2.2.1

    5.
- a. See scanned attachments **below**.
- b. {[(1,2),(2,3)], [(6,1),(1,7)], [(1,2),(2,4)], [(2,4),(4,5)], [(2,4),(4,6)], [(4,5),(5,6)], [(4,6),(6,1)], [(5,6),(6,1)], [(2,3),(3,2)], [(3,2),(2,4)], [(6,1),(1,2)], [(3,2),(2,3)]}
- c. No. Doesn't cover [(6,1),(1,2)], [(3,2),(2,3)].
- d. No. It sidetrips with [4,6,1,2,4].
- e. **Node Coverage**: {1, 2, 3, 4, 5, 6, 7}
  **Edge Coverage**: {(1,2), (1,7), (2,3), (2,4), (3,2), (4,5), (4,6), (5,6), (6,1)}
  **Prime Path Coverage**: {[2,3,2], [3,2,3], [1,2,4,5,6,1], [1,2,4,6,1], [2,4,5,6,1,2], [2,4,6,1,2], [4,5,6,1,2,4], [4,6,1,2,4], [4,5,6,1,7], [6,1,2,4,6], [3,2,4,5,6,1,7], [3,2,4,6,1,7], [4,5,6,1,2,3], [4,6,1,2,3], [5,6,1,2,3]}
- f. [1,2,3,2,4,6,1,7] achieves node coverage but not edge coverage for (4,5).
- g. [1,2,3,2,4,5,6,1,2,4,6,1,7] achieves node coverage but not prime path coverage since this side trips.

    6.
- a. **Node Coverage**: {0, 1, 2, 3, 4, 5, 6, 7, 8, 9}
  **Edge Coverage**: {(0,3), (0,4), (3,7), (4,7), (4,8), (1,4), (8,5), (5,1), (5,9), (2,5), (2,6), (6,9)}
  **Prime Path Coverage:** {[0,3,7], [0,4,7], [0,4,8,5,1], [0,4,8,5,9], [1,4,8,5,1], [1,4,8,5,9], [2,5,1,4,7], [2,5,1,4,8], [2,6,9], [2,5,9]}
- b. {[0,3,7], [2,6,9], [1,4,8,5,9]}
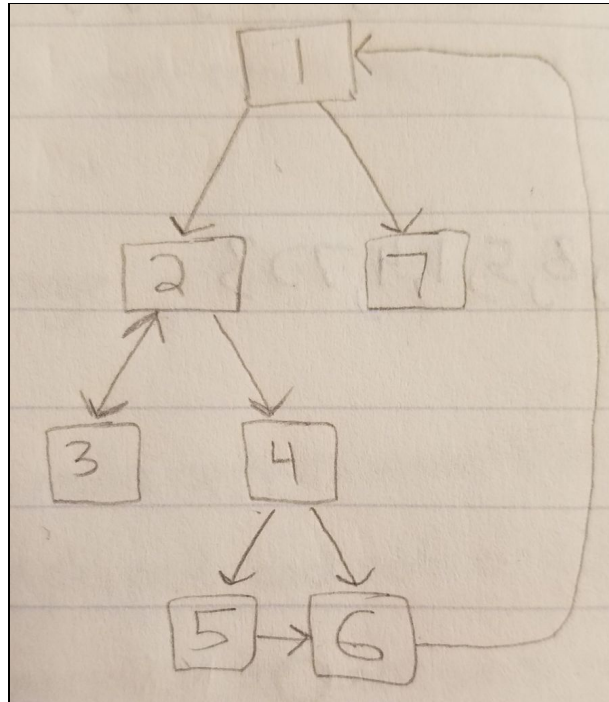- c. {[0,3,7], [2,6,9], [2,5,9], [0,4,8,5,1,4,7]}

## Section 2.3

    1.
- a. See scanned attachments **below**.
- b. defs(w) : 1, 3, 2
- c. uses(w) : 2, 3, 7
- d. No. By definition, a du-path is a simple path that is def-clear. Therefore, variable **w** cannot have a reassignment after the initial node **1**. Since in either node **2** or **3** the variable **w** is used as a def, this eliminates the possibility of there being a du-path starting at the initial node.
- e.
  - i. Du-path (w) :
    1. [2,4,5,7]
    2. [2,4,6,7]
    3. [3,4,5,7]
    4. [3,4,6,7]
  - ii. Du-path (x):
    1. [5,7]
    2. [6,7]

**ATTACHMENTS BELOW**

**2.2.1 - a)**



**2.3 - a)**