2020/05/13 Algorithm Homework

Note: When the exercise asks you to “design an algorithm for…,” it always means that “designs an EFFICIENT algorithm for … and ANALYZES your algorithm and write pseudo code”. You should keep this in mind when writing solutions.

1. **[CLRS 3rd] Exercise 22.3-5**

2. **[CLRS 3rd] Exercise 22.4-3**

3. **[CLRS 3rd] Exercise 22.5-2**

4. **[CLRS 3rd] Exercise 22.5-7**

5. A DFS forest can be generated by perform DFS on a directed graph. There are 4 types of edges in a DFS forest: tree edge, forward edge, back edge and cross edge. Modify DFS so that it can determine the type of each edge

6. 在投影片Unit 7 P. 39的地方有提到另一個DFS的實作，但其輸出的order可能會不同，試問該DFS的實作是否可以用來解Topological Sorting以及Strongly-Connected-Components?

7. Given an undirected graph G = (V, E), if we remove the cut-vertex, the graph will be disconnected. Design an algorithm to find the set of cut-vertices.