Qualifying Exam, Jan 2014

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A graph is said to be 2-connected if deleting any one of its edges does not disconnect the graph. (A connected graph means that there exists a path between any two nodes).

a) Describe an algorithm to check if a graph is 2-connected?
b) What is the running time of your algorithm?
c) A well-known fact about 2-connected graphs is that there are two edge disjoint paths between any two nodes (edge disjoint paths means that the paths do not have any edges in common). Use this fact to design an algorithm to check if a graph is 2-connected that runs in O(E+V) time? (E = # of edges, V = # of nodes)