ADS 1 — problem sheet 3

Exercise 1: Given an unoriented graph G and two vertices a, b. Compute number of shortest paths from a to b.

Exercise 2: Given oriented graph $G = (V, E)$ and set $R \subseteq V$ of vertices. Write algorithm to determine if G contains a cycle with at least one vertex in R.

Exercise 3: Modify algorithm for finding bridges to find all articulations in graph.

Exercise 4: Computer network can be described by a graph: vertices are routers and edges are cables between them. Naturally it is not desirable to have bridges in this graph: those are cables that if disconnected separates the network into two components. Design algorithm to add minimal number of cables to the network so there are no bridges in it.