Exercises

Write down individual answers first and then discuss with each other

- How can you find if a graph possesses the following property: There is a vertex (which we do not know) such that you can reach to every other vertex from that vertex? How can you find that vertex?
- How can you find a vertex in a graph such that you can reach to that vertex from every other vertex in the graph?
- How can you verify the following property: For every pair of vertices, $u, v \in V$, if there is a path from u to v then there is no path from v to u?
- How can you verify the following property: For every pair of vertices, $u, v \in V$, if there is a path from u to v then there is a path from v to u?

Exercises

Write down individual answers first and then discuss with each other

- How can you find if a graph possesses the following property: For every pair of vertices u, $v \in V$, there is at least one simple path from u to v?
- How can you verify that for every pair of vertices u, $v \in V$, there is at most one simple path from u to v?
- How can you verify the following property: For at least one pair of vertices, $u, v \in V$, if there is a path from u to v then there is a path from v to u?

Homework

- How can the number of SCC's change if a new edge is added in the original graph?
- How can the number of SCC's change if a new edge is removed from the original graph?
- **Articulation Point:** Given a connected undirected graph, an articulation point is a vertex whose removal disconnects the graph. Write an algorithm to compute all articulation points of a graph.
- **Bridge:** Given a connected undirected graph, a bridge is an edge whose removal disconnects the graph. Write an algorithm to compute all bridges of a graph.
- How will SCC's help to compute transitive closure (reachability matrix) of a given graph?