Let $G = (V, E)$ be an undirected graph. A *bridge* edge is an edge whose deletion increases the number of connected components in G. Think of this as a cut vertex from Task 1.09 but on edges instead. A *bridgeless graph* is a graph with no bridge edges. Finally, a *strong orientation* assigns each edge of G a direction such that G becomes a strongly connected graph.

Robbins' theorem says that a connected graph G has a strong orientation if and only if G is bridgeless. Therefore, we will only look at bridgeless and connected graphs. Let $G = (V, E)$ be a bridgeless and connected graph. Describe a linear-time algorithm to find a strong orientation of G.

Note. *A similar algorithm can be used to find ear decompositions. In the flow networks module, you will describe an algorithm to find k-orientations of undirected graphs.*

Rubric.

- You should state clearly why your algorithm is correct and runs in the allocated time complexity (or faster!).
- This task will form part of the portfolio.
- Ensure that your argument is clear and keep reworking your solutions until your lab demonstrator is happy with your work.