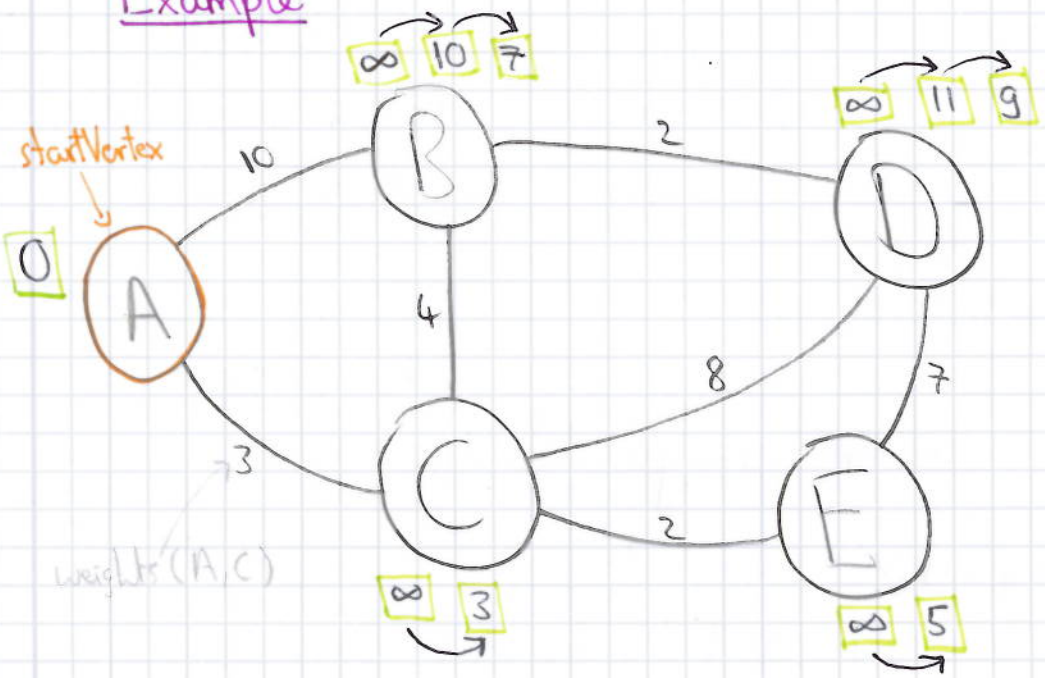
Generalisation: Finding shortest paths between all pairs of nodes

- Often we're interested in the shortest paths between <u>all</u> pairs of nodes, not just the ones from one distinguished node to the others (see Lab 12).
- The solution is simple: We just run Dijkstra inside a loop where each time around the start vertex is a different one, until every vertex has been the start vertex. This gives us the shortest paths between all pairs.
- ```
  for (int startNode = 0; startNode < graph.size; startNode++)
      Dijkstra (&graph, weights, startNode);
  ```

Example



Complexity of Generalisation (with Fibonacci Heap)

$O(V \cdot (E + V \cdot \log(V)))$
  ```