## Le petit contrôle pour le TD7

## Execute us!

## Exercice 1. Dijkstra Execution

Execute Dijkstra's algorithm on the graph of Figure 1 starting at vertex A. If there are any ties, the vertex with the lower letter comes first. List the vertices in the order in which they are deleted from the priority queue and for each the shortest distance from $A$ to the vertex.


Figure 1: Graph for Problem 1.

## Exercice 1. Answer A,0 D,3 B,4 G,4 C,6 E, 6 F, 7

## Exercice 2. Prim Execution

Execute Prim's algorithm on the graph of Figure 1 starting at vertex $A$. If there are any ties, the vertex with the lower letter comes first. List the edges in the order in which they are added to the tree.

Exercice 2. Answer (A,D) (D,G) (E,G) (C,E) (C,F) (B,C)

## Exercice 3. Kruskal Execution

Execute Kruskal's algorithm on the graph of Figure 1 starting at vertex $A$. Assume that equal weight edges are ordered lexicographically by the labels of their vertices assuming that the lower labeled vertex always comes first when specifying an edge, e.g. $(C, E)$ is before $(C, F)$ which in turn is before $(D, G)$. List the edges in the order in which they are added to the developing forest.

Exercice 3. Answer (C,E) (C,F) (D,G) (B,C) (A,D) (E,G)

## Exercice 4. BFS and DFS Execution

Give BFS and DFS trees for the following graph. Assume that BFS and DFS are initially called with the vertex a and that the edges are stored in the
adjacency lists in alphabetical order. Make sure you label which tree is a BFS tree and which is a DFS tree


Exercice 4. Answer The edge set $(a, b),(b, c),(c, d)(d, e)$ is the DFS tree. The edge set $(a, b),(b, c),(b, d)(d, e)$. is the BFS tree

