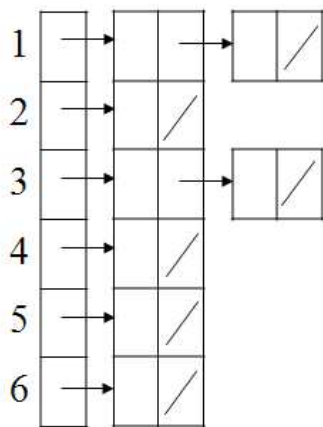# Review 12-1
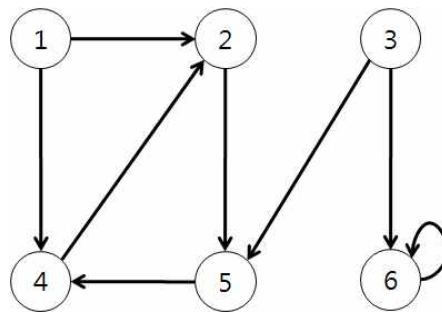
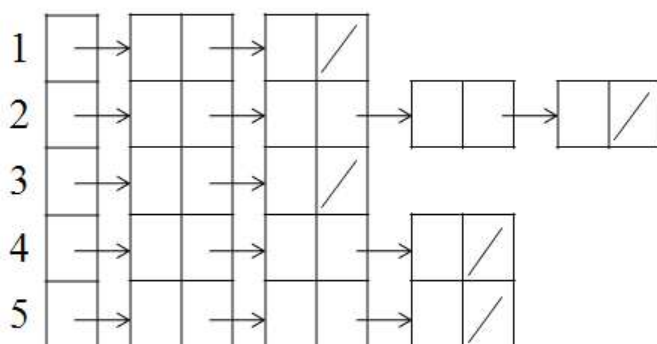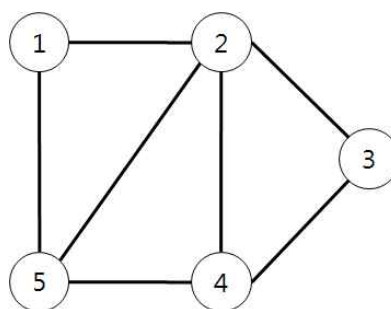**1.** Show the adjacency-list and adjacency-matrix representations of given graphs.

(1) A directed graph

(2) An undirected graph

2. Show the breadth-first tree of the following graph and the distance from the source to each vertex. (Each adjacency list is ordered alphabetically.)