

CX1107 Data Structures and Algorithms

2020/21 Semester 2

Tutorial 6: Graph

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Q1 Manually execute breadth-first search on the undirected graph in Figure 6.1, starting from vertex s . Then, use it as an example to illustrate the following properties:

- (a) The results of breadth-first search may depend on the order in which the neighbours of a given vertex are visited.
- (b) With different orders of visiting the neighbours, although the BFS tree may be different, the distance from starting vertex s to each vertex will be the same.

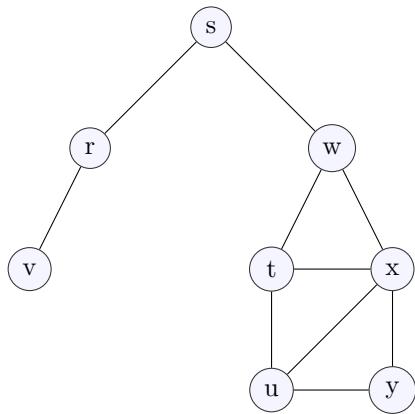


Figure 6.1: Graph for Q1

Q2 Give a psuedocode of finding a simple path connecting two given vertices in an undirected graph in linear time.

Q3 Give a psuedocode of a backtracking algorithm to print out all possible permutation of a given sequence. For example, input is given as “1234”. The 24 output permutations are printed out from “1234” to “4321”.