NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

SC1007 Data Structures and Algorithms **2021/22 Semester 2**

Tutorial 5: BFS & DFS

School of Computer Science and Engineering *Nanyang Technological University*

Q1 Manually execute breadth-first search on the undirected graph in Figure 5.1, 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. s r v w t u x y?

(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.

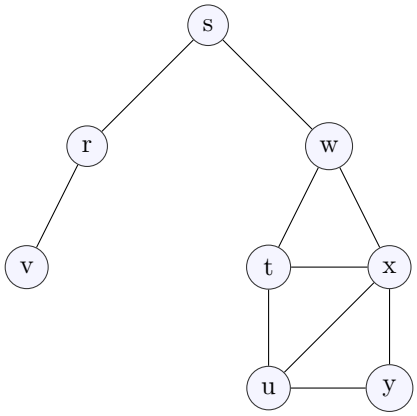

Figure 5.1: The graph for Q1

Q2 Give a pseudocode of checking whether an undirected graph is connected or not by using breadth-first search.

Q3 Give a pseudocode of finding a simple path connecting two given vertices in an undirected graph by using depth-first search.