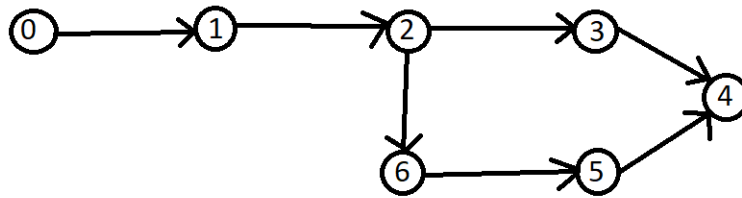


**Exercise 4.2.19:** Topological sort and BFS. Explain why the following algorithm does not necessarily produce a topological order: Run BFS, and label the vertices by increasing distance to their respective source.

**Solution:**

No, counterexample below. Recall BFS is level order traversal due to the use of a Queue.



**BFS** gives the following order: 0,1,2,6,3,4,5. This is not correct order as a cycle occurs. So not topological as incorrect order and cycle formation.