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## Shortest Path with BFS

1. Modify the BFS graph algorithm so that it computes the shortest path from the start vertex to all other vertices.

```
FUNCTION BFS(G, start_vertex)

    found = {v: FALSE FOR v in G.vertices}

    found[start_vertex] = TRUE

    visit_queue = [start_vertex]

    WHILE visit_queue.length != 0

        vFound = visit_queue.pop()

        FOR vOther IN G.edges[vFound]

            IF found[vOther] == FALSE

                found[vOther] = TRUE

                visit_queue.add(vOther)

    RETURN found
```

2. How would you use our BFS procedure (not the shortest path procedure) to find groups of connected components?