CSCI 2270 – Data Structures and Algorithms

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Recitation 12

Revision

Revision Exercise:

Print all adjacent vertices in a graph whose value is divisible by the value of the parent vertex encountered in a breadth-first search (BFS).

You need to fill in the appropriate code in the following function, *findAdjacentDivisibleByParentVertex*. Copy the code into the coding window and add the missing lines to solve the problem.

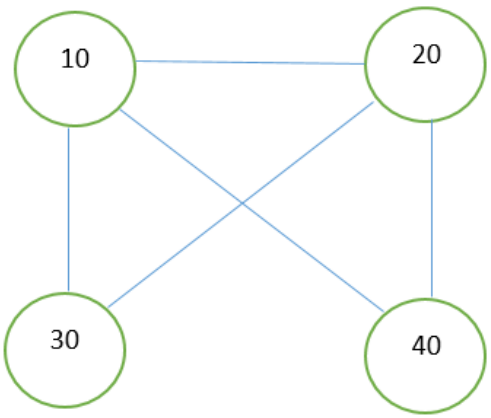
void Graph::findAdjacentDivisibleByParentVertex(int startVertex);

The function should print the starting vertex and the vertices whose value is divisible by the value of the parent vertex in the order they are visited in a BFS. Do not visit a vertex that has already been visited.

The vertex structure includes a "visited" variable, set to false by default. You can use this variable in the findAdjacentDivisibleByParentVertex function.

The starter code is given on Moodle as GraphRec12StarterCode.cpp

Example Input:



Expected Output:

Test case 1:
findAdjacentDivisibleByParentVertex(10)

Output: 10 20 30 40

Explanation: 10 is the starting vertex. 20, 30 and 40 are its adjacent vertices. All of the adjacent vertices are divisible by 10. Hence print them.
In the next iteration, all of the nodes in the queue would have been visited and hence we don't have any other nodes to print.

Test case 2:
findAdjacentDivisibleByParentVertex(20)

Output: 20 40

Explanation: 20 is the starting vertex. 10, 30 and 40 are its adjacent vertices. However only 40 is divisible by the parent vertex 20. Hence print it.

Best of Luck for an amazing midterm! 👍