



CS 312

Algorithm Design

Homework 3

Graphs

Due: February 21, 1:15 PM

1. Go to Google Maps (<http://maps.google.com/>) and ask for the map for South Hadley. Zoom in on the section showing the Mt. Holyoke campus. For this assignment, you only need to consider the portion that is darker gray on the Google Map. This is bounded on the west by 116 and on the south by Morgan St.
 - a. Draw a graph that represents the roads on campus. The nodes are the intersections and the roads are the edges. Label the nodes with numbers and then provide a key indicating which intersections each number represents. (Don't worry if the graph is not very precise geographically!)
 - b. Do a Breadth-First Search beginning at the intersection of Church St. and College St. Indicate which layer each intersection is in. Draw the BFS tree that you end up with. How long is the shortest path from the Church St. & College St. intersection to the Park St. and Morgan St. intersection (in number of edges, not actual distance!). What is this shortest path?
 - c. Do a Depth-First Search beginning at the intersection of Church St. and College St. Draw the DFS tree that you end up with.
2. Do chapter 3, question 4.
3. Do chapter 3, question 9.
4. Do chapter 3, question 10.