Homework 15

Due 11/02/16

October 28, 2016

Develop an *upper bound* for the complexity of the algorithm below, assuming that G is represented using an adjacency list and H is represented using an adjacency matrix. Justify your bound.

```
   Input: G = (V, E): graph to analyze
   Input: n, m: order and size of G
   Output: H: graph with n vertices where the neighbors of each vertex
           are those of distance one or two in G
 1 Algorithm: ExpandedNeighborhood
 2 H = Graph(n)
 3 for v ∈ V do
 4 |   for u ∈ N_G(v) do
 5 |   |   H.AddEdge(v, u)
 6 |   |   for w ∈ N_G(u) do
 7 |   |   |   H.AddEdge(v, w)
 8 |   |   end
 9 |   end
10 end
11 return H
```