Fundamentals of Computer Algorithms
Homework 3 Additional Problems

Prof. Matthew Moore

Due: 2018-09-11

1. Implement the class method `AdjList.degree`. In your homework submission, include only the function `Adjlist.degree`.

2. Use the function `randgraph` in the attached python file to generate a graph with 10 nodes. Call this graph $\mathbb{G}$.
   (i) Write down the adjacency list of $\mathbb{G}$. If `A=randgraph(...)`, you can just execute `print A`.
   (ii) Draw $\mathbb{G}$.
   (iii) Pick two distinct points s, t in a connected component of $\mathbb{G}$. Use the `BFS` function to generate the BFS tree for each of the two points. Draw these two trees. The function `BFS(...)` returns two values – `BFS_Tree` and `dist`. You can do `B, d = BFS(...)` to get just the `BFS_Tree` return value.

3. Implement the function `DFS` in the attached python file. In your homework submission, include only the function `DFS`. Repeat the previous problem, but using DFS instead.