

Assignment 3 Due 6pm Thursday 20 July 2006.

Dropbox outside Department Office.

Test 3: Last class.

- Need 40% to pass the course
- Materials:
 - 25% sorting + divide-and-conquer
 - 25% greedy + dynamic programming
 - 50% graph search + flow network.

Last week

- Breadth-first search
- Computing all distances to a node s
- Bipartite graphs and the Bipartiteness Checking Problem. (aka. 2-Colorability Problem).
- Depth-first search

Depth-first search

DFS(G):

1. For all v in V do: $color(v) \leftarrow White$ End For
2. For all v in V do
3. If $color(v) = White$ do DFS-Visit(v) End If
4. End For

DFS-Visit(v):

1. $color(v) \leftarrow Gray$
2. **Computation on v** % First time at v
3. For each neighbor u of v do
4. If $color(u) = White$ do
5. DFS-Visit(u)
6. End If
7. End For
8. **Computation on v** % Completely visited v

Application: Topological sorting

Input: A directed graph G

Output: An ordering of the nodes in G so that

If $(u, v) \in E$ then u comes before v