

1 CS3134 #24

12/2/03

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2 Administrivia

- HW#6 minor modification
 - Command-line parameters
- Today's lecture is the last content-filled lecture...
- Course evaluations!
 - Do it *now* – better chance of winning an iPod if you do it earlier
 - Detailed comments are good! ☺

3 Agenda

- Finish weighted graphs
- Discuss HW#6

4 Dijkstra's Algorithm: Basic idea

- Initialize an array of distances from starting node to each vertex – if there doesn't exist a direct edge to a vertex, consider it at "infinite" distance
- Add the closest node not already in the shortest-path tree
- Update weights based on edges from newest node plus distance from starting to new – and keep track of the node we used to get to that target
- Repeat
- To find a path to a node, go backwards through the parent nodes

5 Floyd's Algorithm

- For all-pairs shortest path, in V^3 time
- Idea based on Warshall's algorithm, but *add* weights together
- For all rows y ,
 - For all columns x in row y ,
 - If any value (x,y) is 1,
 - For all rows z in column y ,
 - If $(y,z) + (x,y)$ is less than (x,z) , then update (x,z)
- That's it!
 - Remember array references are "backwards" $[y][x]$

6 Next time

- Finish weighted graphs
- Finish up course