Midterm Exam 2
- Tuesday, April 12, 5:00 pm – 7:00 pm
- Lec 1: room 272 of Bascom Hall
- Lec 2: room 1351 of Chemistry Building
- Lec 3: room 6210 of Social Sciences Building
- UW ID required
- See posted exam information
- exam makeup emails sent
- GET A GOOD NIGHT’S REST MONDAY NIGHT!

Homework 8 due 10 pm tomorrow, April 8th

Program 4 due 10 pm Sunday, April 17th

Last Time
   Red-Black Trees
   - insert

Today
   ADTs/Data Structures Revisited (from last time)
   Graphs
   - terminology
   - implementation
   - edge representations

Next Time
   Exam mechanics
   Sample questions solution
Graph Terminology
Implementing Graphs

Graph ADT Ops

Graph Class

Graphnode Class
Representing Edges

Adjacency Matrix

Given the following graphs:

Graph 1

Graph 2

Show the adjacency matrix representation of the edges for each of the graphs:
Representing Edges

Adjacency Lists

Given the following graphs:

Graph 1

Graph 2

→ Show an adjacency list representation of the edges for each of the graphs:

<table>
<thead>
<tr>
<th>Graph 1</th>
<th>A:</th>
</tr>
</thead>
<tbody>
<tr>
<td>0:</td>
<td>B:</td>
</tr>
<tr>
<td>1:</td>
<td>C:</td>
</tr>
<tr>
<td>2:</td>
<td>D:</td>
</tr>
<tr>
<td>3:</td>
<td>E:</td>
</tr>
<tr>
<td>4:</td>
<td></td>
</tr>
</tbody>
</table>
Using Edge Representations

→ Write the code to be added to a Graph class that computes the degree of a given node in an undirected graph.

1. Adjacency list:

    public int degree( Graphnode<T> n) {

2. Adjacency matrix:

    public int degree( Graphnode<T> n) {
Comparison of Edge Representations

Ease of Implementation

**Space** (memory)

AM

AL

**Time** (complexity of ops)

node’s degree?

AM

AL

edge exit between two given nodes?

AM

AL