CS 367 - Introduction to Data Structures
Thursday, February 25, 2016

Midterm Exam 1
- Tuesday, March 1, 5:00 pm
- Lec 1: room 3650 of Mosse Humanities Building
- Lec 2: room 1351 of Chemistry Building
- Lec 3: room 6210 of Social Sciences Building
- UW ID required
- See posted exam information and sample question on Learn@UW
- Email has been sent to those requesting a makeup/accommodation

Homework 5 due 10 pm tomorrow, February 26th
Program 2 due 10 pm Sunday, March 6th

Last Time
  Complexity Caveats
  Comparing ArrayList vs LinkedList
  Shadow Array - improving array resizing
  Stack ADT
  - concept
  - array implementations
  - chain of nodes implementations

Today
  Queue ADT (from last time)
  - concept
  - chain of nodes implementations
  Circular Array Data Structure
  Tree Terms
  Priority Queue ADT
  - concept
  - operations
  - implementation options

Next Time
  Exam mechanics
  Sample questions solution
Implementing a Queue ADT using Circular Array

Concept

enqueue(item)

dqueue()

expand()
1. Which is the root?

2. How many leaves are there?

3. How many nodes are in the right branch/subtree of B?

4. Which is the parent of G?

5. How many children does E have (degree of E)?

6. Which is the sibling of E?

7. How many descendants does B have?

8. What are the ancestors of C?

9. What is the length of the path from B to D?

10. What is the height of the tree?

11. What is the depth/level of J?
Priority Queue ADT

Priorities

Concept

goal:

Operations
## Options for Implementing a Priority Queue ADT

<table>
<thead>
<tr>
<th>data structure</th>
<th>insert</th>
<th>removeMax</th>
</tr>
</thead>
<tbody>
<tr>
<td>unordered array</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ordered array</td>
<td></td>
<td></td>
</tr>
<tr>
<td>unordered chain of nodes</td>
<td></td>
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</tr>
<tr>
<td>ordered chain of nodes</td>
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