

# 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**

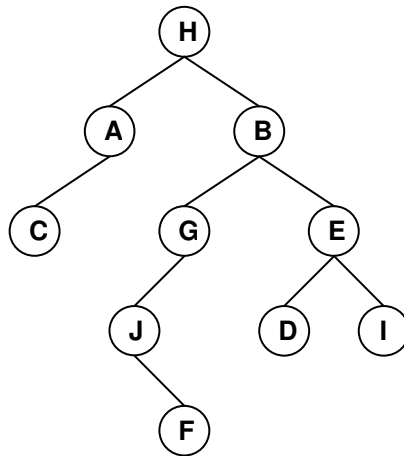
**enqueue(item)**

**dequeue()**

**expand()**



## Tree Terminology



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

<b>data structure</b>	<b>insert</b>	<b>removeMax</b>
unordered array		
ordered array		
unordered chain of nodes		
ordered chain of nodes		