Announcements/Reminders:

• P2 due today

• HW5 assigned

Last class:

• Midterm solutions

• Trees (cont'd)

• Binary Trees

  • Types

Today:

• Tree traversals

• Priority Queues

• Comparable<E> interface

• Heaps
Tree traversals

Goal: Visit every node in the tree exactly once

Level-order

Pre-order

Post-order

In-order
Traversals: Practice
Priority Queues

Concept:

“For NASA, space is still a high priority.”

– Dan Quayle

Applications:

Operations:
Comparable\(<E>\) Interface

Only one method:

```java
public int compareTo(E other) { ... }
```

What should it return?

Example:

```java
public class Employee implements Comparable<Employee> {
    private String name;
    private int ID;
    ...

    public int compareTo(Employee other) {
        int otherID = other.ID;
        if (id == otherID) return 0;
        if (id > otherID) return 1;
        return -1;
    }
    ...
}
```
Heaps

Concept:

Implementing heaps (with example):

Using Binary Trees:

Using arrays:
Inserting into a heap

Strategy:

Example:
Inserting into a heap (cont'd)

Heap class data members:

    private Comparable[] items;
    private int nextLoc;

Pseudo-code:

    public void insert(Comparable newItem) {