

## CS367 Lecture 25

Tuesday 29 July 2014

### Announcements/Reminders:

- P3 due tonight
- HW7, P4 assigned

### Last class:

- Hashing (finish)
  - Open addressing (finish)
  - Hashing in Java

### Today:

- Sorting (basic)

## HW5 Recursion: Reverse a queue

# Sorting

Problem

Solutions

Complexity (comparison sorts vs. others)

In-place Sorting

## Bubble Sort

Strategy:

Pseudo-code:

```
int passes = A.length-1;
for (int i = 0; i < passes ; i++) {
    for (int j = A.length-1; j > i; j--) {
        if (A[j] < A[j-1]) {
            swap(A[j], A[j-1]);
        }
    }
}
```

Analysis:

Best-case

Worst-case

Description

# comparisons

# swaps

Total

## Insertion Sort

Strategy:

Pseudo-code:

```
for (int i = 1; i < A.length; i++) {
    int temp = A[i];

    int j;
    for (j = i-1; j >= 0 && A[j] > temp; j--)
        A[j+1] = A[j];

    A[j+1] = temp;
}
```

Analysis:

Best-case

Worst-case

Description

# comparisons

# shifts

Total

## Selection Sort

### Strategy:

### Pseudo-code:

```
int passes = A.length-1;
for (int i = 0; i < passes; i++) {
    int minIndex = i;

    for (int j = i+1; j < A.length; j++) {
        if (A[j] < A[minIndex])
            minIndex = j;
    }

    swap(A[minIndex],A[i]);
}
```

### Analysis:

Best-case

Worst-case

Description

# comparisons

# swaps

Total