Lecture notes for Week 2: Recursion

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1. Topics

1. MergeSort Analysis (continued).
2. Lab remarks.
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1.1. Textbook portions covered

Engineering Algorithms...(Clowes "online book")

Chapter 2

2. Lecture 4 (Friday, 14 January 2005)

2.1. Announcements

- Lecture notes now available (http://www.ee.ryerson.ca/~courses/ele428/clowesNotes) .

2.2. Remarks on Lab 1

1. **Good:** In Lab 1 many students are trying to implement `mySort(...)` themselves (instead of "cutting and pasting" some C implementation they found).
2. **Bad:** Alas, some are coding `mySort(...)` directly with no abstract algorithm clearly identified.
3. **Remarks:** Recall that:
   - ELE428 is fundamentally a *theory* course.

2.3. Analysis of MergeSort (continued)

1.

3. Lectures 5/6 (Tuesday, 18 January 2005)

3.1. Announcements

- **NONE**

3.2. Introduction to Recursion

Covered most of Chapter 2 in *Engineering Algorithms...(Clowes "online book")*; i.e.:

- What is recursion? (divide and conquer)
- Addition example (add with counting and no loops)

- How it works
- Tail recursion
- Example: Fibonacci numbers
- Example: Towers of Hanoi
- Example: Counting ways to make change

Note:

The *Ways to Make Change* was covered only briefly in class. Recommended for self-study.

4. Suggested Problems

Engineering Algorithms...(Clowes "online book")

- 2.2
- 2.3
- 2.4
- 2.5
- 2.10
- 2.12
- 2.16
- 2.20