Lecture notes for Week 6: Hashing

by Ken Clowes

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1.1. Textbook portions covered

Introduction to Algorithms (Cormen et al.)

Chapter 11

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

Chapter 9

2. Lecture 17 (Friday, 11 February 2005)

2.1. Announcements

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2.2.

1.
2.

3. Lecture 17/18 (Tuesday, 15 February 2005)

3.1. Announcements

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3.1.1. Hash functions

1. Division method: $h(k) = k \bmod m$
2. Multiplication method: $h(k) = m\text{fractioanl}(kA)$

3.1.2. Example (java Hashtable)

```
    public synchronized boolean contains(Object value) {
        if (value == null) {
            throw new NullPointerException();
        }

        Entry tab[] = table;
        for (int i = tab.length ; i-- > 0 ;) {
            for (Entry<K,V> e = tab[i] ; e != null ; e = e.next) {
                if (e.value.equals(value)) {
                    return true;
                }
            }
        }
        return false;
```

```
    }
```

3.1.3. Example Java String hashCode()

```
     */
    public int hashCode() {
        int h = hash;
        if (h == 0) {
            int off = offset;
            char val[] = value;
            int len = count;

            for (int i = 0; i < len; i++) {
                h = 31*h + val[off++];
            }
            hash = h;
        }
        return h;
    }
```

4. Suggested Problems

Introduction to Algorithms (Cormen et al.)

- Exercise 11.1-1
- Exercise 11.1-2
- Exercise 11.1-3
- Exercise 11.2-2
- Exercise 11.2-3
- Exercise 11.4-1
- Exercise 11.4-2

Engineering Algorithms...(Clowes “online book”)

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