Announcements/Reminders:

Last class:

• RBT example
• Hashing (intro)

Today:

• Hashing (cont'd)
  • Examples of hash functions
  • Non-Integer Keys
  • Advanced Collision Handling
Hashing

What problem are we solving?

Idea:

Terminology:

- Key
- Hash table
- Table Size (TS)
- Load Factor (LF)
- Hash function
- Collision
- Ideal hashing
Choosing a good hash function

Properties:

Two-step process:
Some Hashing Techniques

% tables

Extraction

Folding

Mid-square

Multiplication

Rotation/Weighting/Use-your-imagination/...
What if the keys are not integers?

Java's built-in hash function for Strings:
Collision Handling: Buckets
Collision Handling (advanced): Open Addressing

Linear probing

Quadratic probing

Double Hashing
Hashing in Java

hashCode() method:

- All Objects have it
- returns an int
- default is computed from memory address (NOT good!)

Overriding hashCode():