Last Time
- RBT example
- Hashing

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

Next Time
- Hashing (finish)
- Open addressing (finish)
- Hashing in Java
- Sorting
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**

% tablesize

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():

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