Beyond Blocks: Python Session #3

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Ranges

- Range syntax (start, stop, step)
  - Start: Inclusive; stop: exclusive
  - "Lazy Evaluation"
    - Results in an iterable object
    - `list(range(x))` is a list.
      - `range(start, stop)` or `range(stop)` also work.
      - Default start is 0, Default step is 1.
- http://docs.python.org/library/stdtypes.html#xrange-type

Iterators

- Syntax
  - i = iter(object)
- Usage
  - next(i) #In Python3!
  - Python 2.x: i.next()
- Why does Python have them?
  - You'll see...
- http://docs.python.org/library/stdtypes.html#iterator-types

Sequence (general) Operators

- elem in & not in sequence
- + & *
- slice [::]

- len()
- min() & max()
- even map() filter() & reduce() !
- Many, many more:
  - http://docs.python.org/library/stdtypes.html#typesseq

Sets

- NO duplicate members (unique)
- Unordered
- Syntax: set([1,2,3,4]) or set("blah")
- NO array-like indexing (e.g., s[0])
  - Iterators are used instead...
- Faster (for large number of entries)

Set Operators

- len(s)
- s.add(elem)
- elem in & not in s
- remove & pop & -
- Iteration
- Union, intersection, isdisjoint, etc.
- Much, much more:
  - help("set")
  - http://docs.python.org/library/stdtypes.html#set

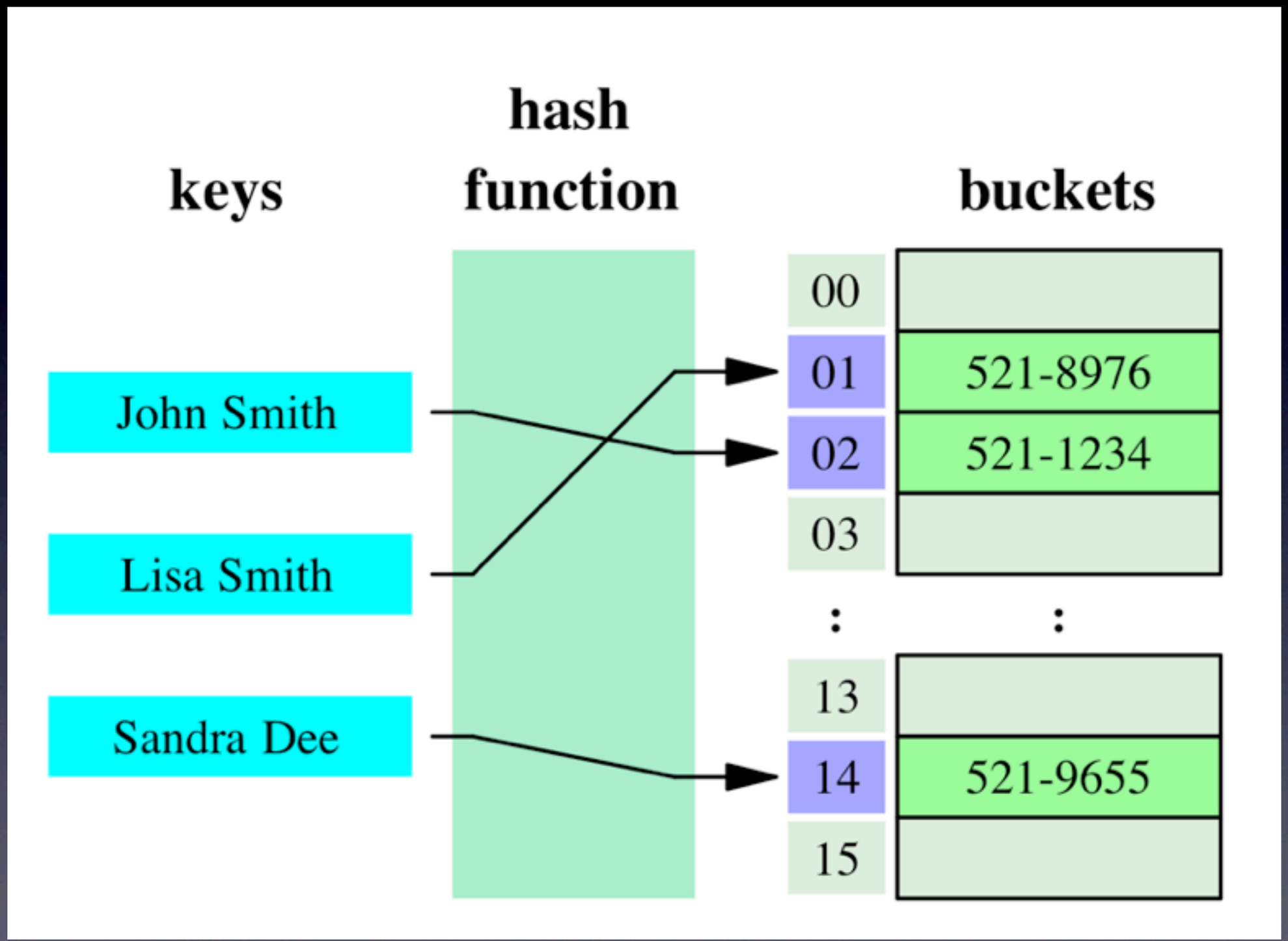
Dictionaries

- Syntax
  - {key:value}
- Adding elements
  - dict[key]=value
- Accessing elements
  - dict[key]
- Keys
  - Looking for specific keys (has_key() & “in”)
  - Iterating over (iterkeys())
- http://docs.python.org/library/stdtypes.html#dict

How Do Dictionaries Work, and Why Use Them?

- Hash table based
  - Hash codes & array indexes
- Very fast look-up time (i.e., O(1))
- Classic trade-off:
  - Speed and space

Dictionaries = Hash



http://en.wikipedia.org/wiki/File:Hash_table_3_1_1_0_1_0_0_SP.svg