Lecture 24: More Lists

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For Loops

- for (1..10) do {index: Number -> action }
  - Called a range: (m .. n)
  - (2 .. 9).reversed gives range in reverse order
  - Can also use with lists:
    - for (list[1,3,5,6]) do {...}

Lists

- Linear sequence of elements

- Must say what kind of element held in list:
  - var scores: List[[Number]]
  - var names: List [[String]]
  - def pictures: List [[Graphic2D]]

Creating Lists

- Creating lists of strings:
    - var start: List[[String]] := emptyList[[String]]
    - var vowels: List[[String]] := list[[String]] ["a","e","i","o","u"]

Accessing Elements

- Example:
  - var vowels: List[[String]] := list[[String]] ["a","e","i","o","u"]
  - def first: String = vowels.at(1)
    - Numbering starts at 1 (Java & Python start at 0)
  - def last: String = vowels.at(5)
  - Can use like range in for loops:
    - for (vowels) do {letter: String ->
        print (letter)
      }

Examples

- Slides

  Last time!

  - Actions associated with buttons

  - http://www.cs.pomona.edu/classes/cs051G/demos/FacultySlides/FacultySlides.grace

- Drawing

  - No actions associated w/GUI items

  - Only recognize mouse actions on canvas

  - http://www.cs.pomona.edu/classes/cs051G/demos/DrawingList/DrawingList.grace

  - See especially indexOf method for search

Changing Lists

- Add elements:
  - add *(at beginning)*, addLast, addFirst

- Remove elements:
  - removeFirst, removeLast, removeAt(n), remove(elt)

- Update elements
  - at (i) put (newElt)

- Miscellaneous: ++, contains, reverse
  - *compare with reversed!*

Return statement

- Used to stop executing a method and go back to caller.

- for(1..100) do {index: Number ->
      if (index * index > 50) then {
          return index - 1
      }
  -1   // returns -1 only if no square > 50

More Examples

- Scribbling again:
  - http://www.cs.pomona.edu/classes/cs051G/demos/ScribbleList/
  - http://www.cs.pomona.edu/classes/cs051G/demos/ScribbleCollection/
  - Scribble represented as a list of Lines, while scribbleCollection is a list of scribbles
    - essentially a list of lists!
  - Notice use of return, e.g., in contains for Scribble & lots of places in ScribbleCollection
  - Also, see how for loops iterate over lists!

Questions?