Class 07 - Revised ListInterface and List Classes

CSIS 3475

Data Structures and Algorithms

Revised ListInterface

- Error handling
  - Methods return null or false if they do not complete
  - No exceptions thrown
- getEntry() and removeEntry() exist
  - remove() is replaced
- getLength() is now size()
- See summary in next slide
- Review ListInterface.java

Revised ListInterface

boolean	add(int newPosition, T newEntry) Adds a new entry at a specified position within this list.
boolean	add(T newEntry) Adds a new entry to the end of this list.
void	clear() Removes all entries from this list.
boolean	contains(T anEntry) Sees whether this list contains a given entry.
T	getEntry(int givenPosition) Retrieves the entry at a iven position in this list.
boolean	isEmpty() Determines whether the list is empty, or size() == 0
T	remove(int givenPosition) Removes the entry at a given position from this list.
boolean	removeEntry(T anEntry) Removes the first or only occurrence of a specified entry from this sorted list.
T	replace(int givenPosition, T newEntry) Replaces the entry at a given position in this list.
int	size() Gets the size of this list.
T[]	toArray() Retrieves all entries that are in this list in the order in which they occur in the list.

Revised AList and LList implementations

- Use revised ListInterface
- Item positions are now zero offset (rather than 1)
- No CheckCapacity or CheckIntegrity for AList
- Use of public Node class for LList
  - but private within the implementation
- Use of isInRange() method to check to see if a position is in the list range
- Use of isFull() and hasRoom()
  - Needed for sorted lists
- Review the code for both

DemoUtilities

- Creating a random list of integers for use in sorting
  - generateListOfNumbers
  - copyListOfNumbers – copies the list to another, using add() method
- Display a list
- All use ListInterface

ListDemo

- Shows use of AList and LList
- Demonstrates use of various methods
- Uses DemoUtilities