Homework 3 due 10 pm Friday, February 12th
Program 1 due 10 pm Sunday, February 14th

Assignment questions? Post on Piazza or consult with a TA during scheduled hours.

Report exam conflicts or McBurney exam accommodations by this Friday, 2/12

Last Time
Exceptions Review
• throws and checked vs. unchecked
• defining
Java Primitives vs. References Review
Chains of Linked Nodes
• Listnode class
• practice with chains of nodes

Today
Chains of Linked Nodes
• more practice with chains of nodes
Java Visibility Modifiers
LinkedList Class

Next Time
Read: continue Linked Lists
LinkedListIterator Class
LinkedList Variations
• tail reference
• header node
• double linking
• circular linking
Recall Chain of Linked Nodes Data Structure

Listnode class

class Listnode<E> {
  private E data;
  private Listnode<E> next;

  public Listnode(E d)               { . . . }
  public Listnode(E d, Listnode<E> n){ . . . }
  public E getData()                 { return data; }
  public Listnode<E> getNext()       { return next; }
  public void setData(E d)           { data = d; }
  public void setNext(Listnode<E> n) { next = n; }
}

→ Show how the memory diagrams change as a result of executing the code beneath each:

head

head.setNext(head.getNext().getNext().getNext().getNext());

head

head getNext().getNext().setNext(head);

head

curr

n1

n1.setNext(curr.getNext());
curr.setNext(n1);
Practice: Making a Chain of Nodes

Create a chain of Listnodes containing the Strings "yippie", "ki", and "yay" (as shown below) in as few statements as you can.
Practice: Traversing a Chain of Nodes

Assume \textbf{head} points to the first node in a chain of \texttt{Listnode}s containing \texttt{Strings}.

\textbf{Write a code fragment} that counts the number of strings in the chain of nodes.

```c
int count = 0;
```
Practice: Adding a Node at the Chain’s End

Assume \texttt{head} points to the first node in a chain of \texttt{Listnode}s containing \texttt{Strings}.

\textbf{Write a code fragment} that adds a node containing “rear” to the end of the chain of nodes. You may assume the chain has at least one item.
Practice: Removing a Node from a Chain

Assume head points to the first node in a chain of Listnodes containing Strings.

▶ Write a code fragment that removes the third item from the chain of nodes. You may assume the chain has at least three items.

▶ How would you generalize your code so it removes the Nth item from the chain of nodes?
Practice: Challenge Question

Assume `head` points to the first node in a chain of `Listnodes` containing `Strings`.

→ Write a code fragment that reverses the order of the nodes in the chain.
Java Visibility Modifiers

public    public class ArrayList<E>

private   private Object[] items

protected protected String name

package    class Listnode<E>
public class LinkedList<E> implements ListADT<E> {

    private Listnode<E> head;
    private int numItems;

    public LinkedList() {

    }

    public void add(E item) {

    }
}