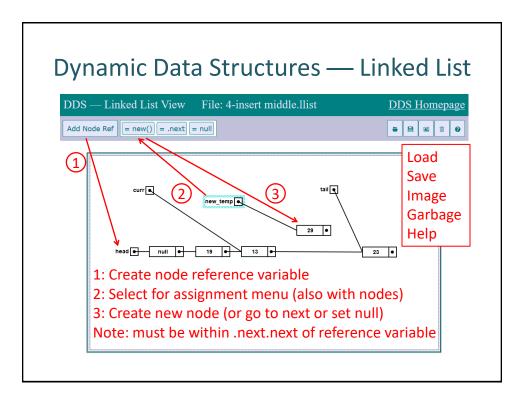# An HTML5 Browser Application for Modeling and Teaching Linked Lists
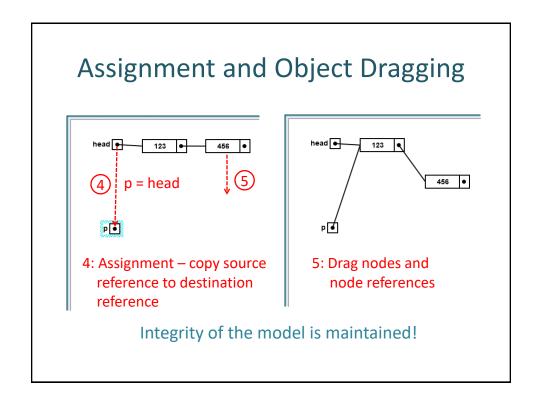
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Goals

- White boards are static
- Linked lists are dynamic
- Web based classroom teaching tool
  - **No hand drawing**
  - Model and manipulate linked lists
  - Syntactically correct, consistent with Java
  - Easy to use
- **Not an algorithm visualization system!**

Dynamic Data Structures — Linked List

DDS — Linked List View   File: 4-insert middle.llist   DDS Homepage

Add Node Ref | = new() | = .next | = null |

Load
Save
Image
Garbage
Help

curr

new_temp

tail

29

head null 19 13 23

1: Create node reference variable
2: Select for assignment menu (also with nodes)
3: Create new node (or go to next or set null)
Note: must be within .next.next of reference variable

Assignment and Object Dragging

head 123 456

④ p = head ⑤

p

4: Assignment – copy source
    reference to destination
    reference

head 123

456

p

5: Drag nodes and
    node references

Integrity of the model is maintained!

Availability

- www.dsviewer.org

- www.dsviewer.org/dds-llist

- www.dsviewer.org/dds/homepage

- www.dsviewer.org/dds-btree

Classroom Experience

- Used to model List, Stack, and Queue ADTs
- Motivate, develop and trace algorithms
- Benefits
  - Met objectives (no hand drawing!)
  - Focus on examples, not on drawing models
  - Post class examples to web/lms
  - Reload examples with clean model
  - Responding to student questions (unexpected)

Classroom Experience

- Problems and concerns
  - Student notebooks are not dynamic
    - Cannot capture behavior
    - Needs a record feature
  - Needs undo facility
  - Needs tabbed interface
  - Student usage?
- See DDS Homepage
  - Proposed enhancements (and related issues)
  - A prototype block language (Firefox only)

DDS is Seeking …

- Users
- Suggestions for features and improvements
- Bug reports
- Collaboration on classroom usage
- Ideas for student usage
- Evaluation of student usage

- Let us know about your DDS experiences