

CSD 201: Data Structures and Algorithms using Java

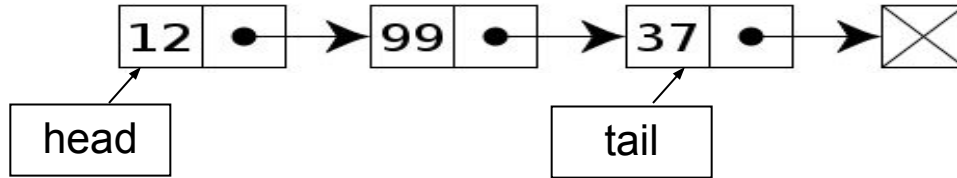
Linked Lists Exercises

Today

- Take Attendance
- Review Linked Lists and Java “pointer”
- Work on Linked Lists Exercises
- Discuss Solutions

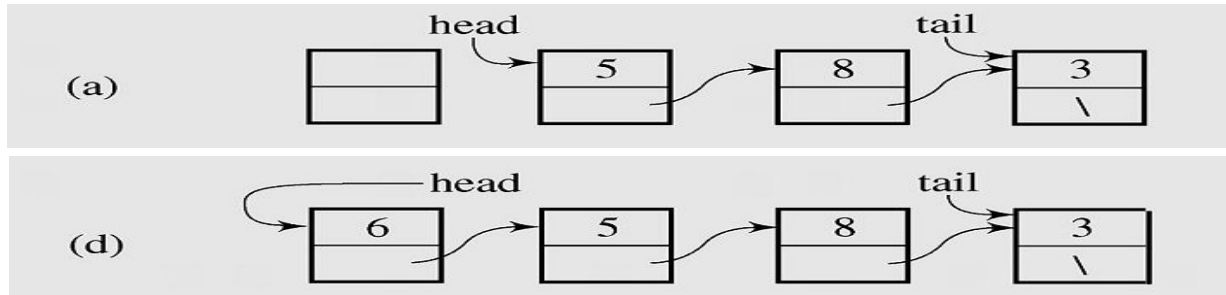
Linked Lists

- Node:
 - Data (e.g. int)
 - Pointer to next Node
 - Pointer to previous Node (for doubly Linked Lists)
- Linked List:
 - Nodes that are linked by pointers
 - Special pointers: head and/or tail



Linked Lists: Operations

- Insert, delete Nodes
- At the beginning (head) or end (tail) or a given location (i)
- Implementation Techniques:
 - Find location: from head/tail follow pointers
 - Create new Nodes
 - Fix Node's pointers and head/tail pointers



Inserting a new node at the beginning of a Singly Linked List

“Pointers” in Java

- Java has no explicit pointers
- Instead, Java has references
 - A reference is pointer that is restricted (can't do pointer arithmetic)
 - Object variables are references

```
// n1 is reference which contains the address of the actual Node  
  
Node n1 = new Node();  
  
// n2 points to the same location as n1  
  
Node n2 = n1;  
  
n1.info = 1;  
  
n2.info = 2;  
  
// Now n1.info and n2.info are both 2
```

Linked Lists Exercises

- `linkedListExercises.zip` from CMS
- TODO:
 - Quit this Google meeting, work on exercises (as many as you can)
 - Difficulties, Questions: come back to this Google meeting
 - Come back to this Google meeting to discuss solutions at: 3:32