Data Structure

Linked List

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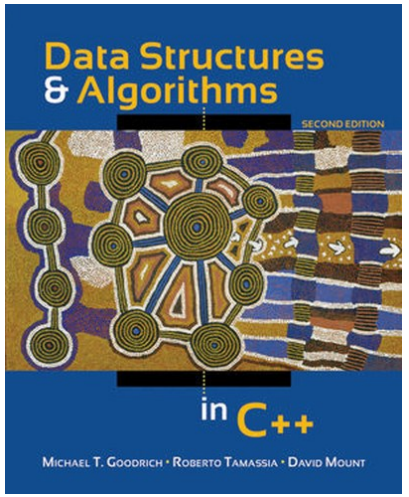


DS&A
- Sec. 3.2 Singly Linked Lists

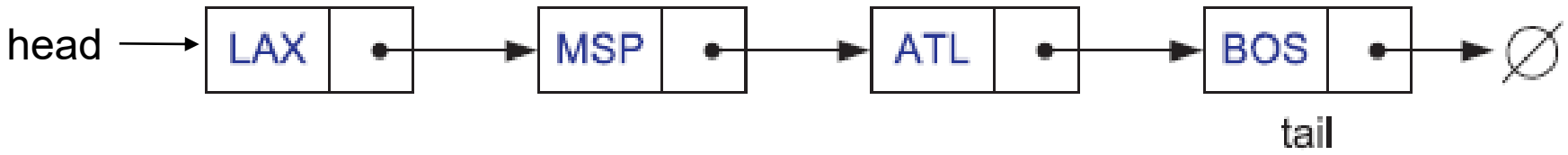
Foundation of Computer Science http://infolab.stanford.edu/~ullman/focs.html
- Ch. 6. The List Data Model

Motivation

- allocate new memory space on demand
- together with the space for an element, allocate a memory space for storing a pointer
  - store the pointer to the (i+1)-th node in the i-th node

Singly Linked List

- A linked list is a collection of nodes that form a linear ordering
  - allocate a memory space for each element together with a pointer
    - a node is a pair of element and next pointer
  - the next pointer inside a node is a link to the next node, or null when the node is terminal



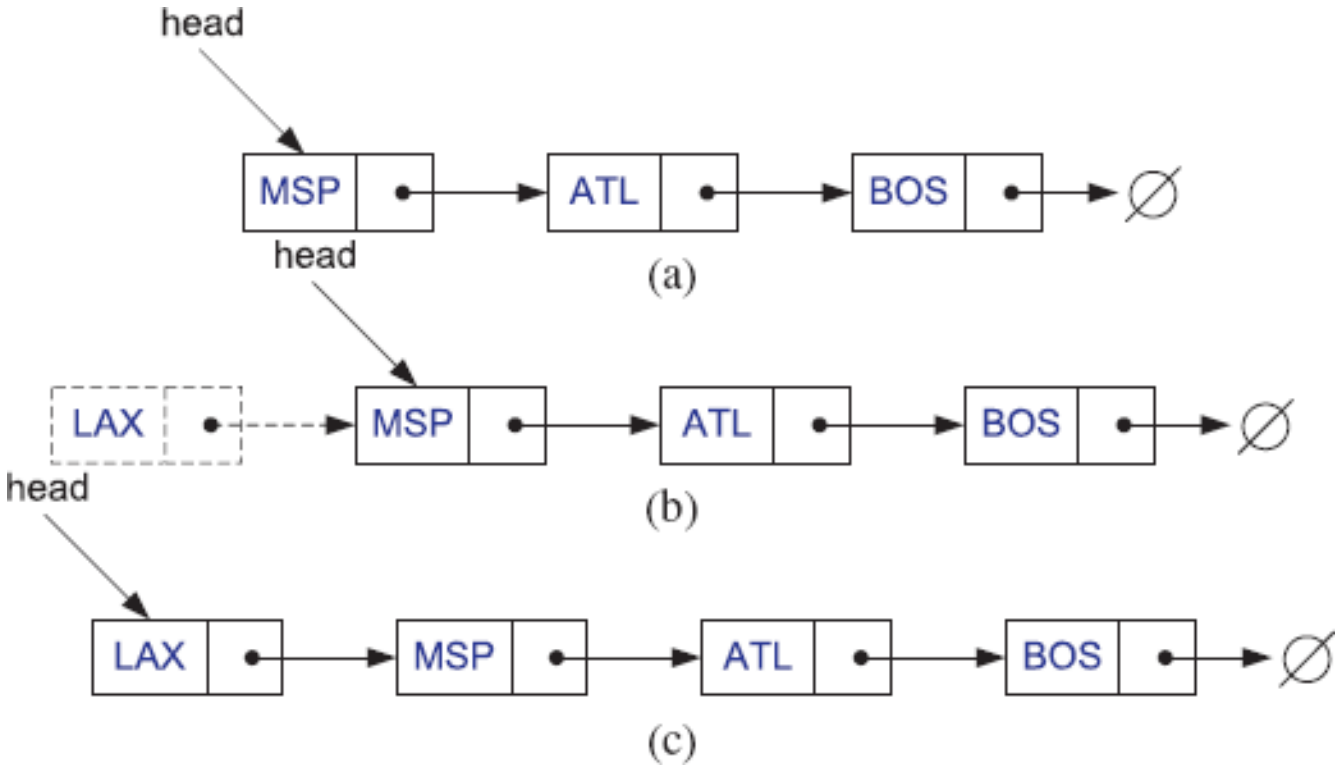
Linked List Structure

- Node
  - a pair of a data element and a Node pointer

- Linked List
  - head: a Node pointer to the first Node object
  - tail: a Node pointer to the last Node object
    - optional

Insertion to the List Front

- Create a new node, and then set its next link to point to the current head node



Removal from the List Front

- Save the pointer of the current head node
- Update the head node as the next pointer of the current head node