

CMSC 132: Object-Oriented Programming II



A Trick to Simplify List Implementation

Department of Computer Science
University of Maryland, College Park

Typical List Implementation

- **Class List {
 Node head;
}**
- **Class Node {
 Object value;
 Node next;
}**

Insert in Front of i'th Element

```
void insertInFrontOf(int pos, Object value) {  
    if (pos == 0) {  
        Node newNode = new Node(value, head);  
        head = newNode;  
    } else {  
        Node after = head;  
        for(int i = 1; i < pos; i++) after = after.next;  
        Node newNode = new Node(value, after.next);  
        after.next = newNode;  
    }  
}
```

Cool List Implementation Trick

- You must practice this technique if you expect to use it
- head is never null, even for an empty list
- head is set to first node when list is created
 - head is never changed
 - the value of the first node isn't ever looked at
- **Class List {**
 - // value of first Node isn't part of list**
 - final Node head = new Node(null);****}**

Insert in Front of i'th Element

```
void insertInFrontOf(int pos, Object value) {  
    Node after = head;  
    for(int i = 0; i < pos; i++)  
        after = after.next;  
    Node newNode = new Node(value, after.next);  
    after.next = newNode;  
}
```