

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;  
}
```