A Trick to Simplify List Implementation

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Typical List Implementation

Class List {
    Node head;
}

Class Node {
    Object value;
    Node next;
}
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;
    }
}
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

```java
public class List {
    // Value of first Node isn’t part of list
    final Node head = new Node(null);
}
```
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;
}