Announcements
- HW up later today
- Lab as usual next week
Lists:

Motivation: Insert in vectors is slow! (Running time?) $O(n)$

Idea: If I know where the element should go, inserting should be easy.

Base setup: similar to Slinked List
Doubly Linked Lists

Sentinel nodes

head

tail

Insert (ORD) - where? given locator and pointer updates
Problem: Pointers!

What do we need in order to know where we should insert?

pointer! (= Seg faults)

Solution: Iterator: wrap up pointers and provide very limited functionality.
Iterators

An iterator will give the user a “pointer”, but with a heavily controlled structure. (So they can’t touch nodes directly.)

Compromise: Functionality versus info. encapsulation
STL functions
Usage:

```cpp
list <int> mylist;
list <int> it = iterador it;
mylist. insert (it, 11);
mylist. insert (it, 13);
it++;
```
Code:

2 internal classes
\[ i = 2 \]

\[ A[i++] = 6 \]

\[ A[3] = 6 \quad \downarrow \quad i = 3 \]

\[ A[i++] = 6 \quad \downarrow \quad i = 3 \]