

CS 225: Lecture 3

Cliff Sun

August 30, 2024

Lecture Span

- Templates

Templates

A way to write generic code, whose type is determined at compilation. Compiler will not use the recipe until you explicitly use it.

Example template in C++

```
T sum (T a, T b) {  
  
}
```

List ADT

A list is an ordered collection of items. It can either be homoeogenous or hetergenous, and can be of fixed size or resizeable.

A minimal set of operations can be used to achieve all tasks

1. Insert
2. Delete
3. isEmpty
4. getData
5. Create an empty list

List Implementations

1. Linked List (series of objects linked together using pointers)
2. Array List

```
1  class ListNode {  
2      T& data; \\ houses the current data  
3      next; \\ points to the next object  
4  }
```

Listing 1: Example Linked List Single Object

Some things to note:

1. data is stored as a reference because we don't care about its memory management
2. next is a pointer because a reference cannot point to null