CS 225
Data Structures

January 20 – C++ Design in CS 225
G Carl Evans
SPRING OPEN HOUSE
Thursday, January 26th, 6 - 9PM
Campus Instructional Facility 0027 & 0035
What about C++

Lectures from Previous Semesters Covering C++ Available Here
https://mediaspace.illinois.edu/playlist/dedicated/177553201/1_s10ctiib/1_z2cz05fi
Material from CS 128
https://learncpp.online/lessons
Encapsulation - Classes
The “Rule of Three/Five”

If it is necessary to define any one of these three functions in a class, it will be necessary to define all three of these functions:

1.

2.

3.
The “Rule of Zero”

Corollary to Rule of Five

Classes that **declare** custom destructors, copy/move constructors or copy/move assignment operators should deal exclusively with ownership. Other classes should not **declare** custom destructors, copy/move constructors or copy/move assignment operators

—Scott Meyers
Memory Management - Ownership
## Overloading

Operators that can be overloaded in C++

<table>
<thead>
<tr>
<th>Category</th>
<th>Operators</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arithmetic</td>
<td>+  -  *  /  %  ++  --</td>
</tr>
<tr>
<td>Bitwise</td>
<td>&amp;</td>
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<tr>
<td>Assignment</td>
<td>=</td>
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<tr>
<td>Comparison</td>
<td>==  !=  &gt;  &lt;  &gt;=  &lt;=</td>
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<tr>
<td>Logical</td>
<td>!  &amp;&amp;</td>
</tr>
<tr>
<td>Other</td>
<td>[ ]  ()  -&gt;</td>
</tr>
</tbody>
</table>
Const

• Values

• References

• Methods
Templates
T maximum(T a, T b) {
    T result;
    result = (a > b) ? a : b;
    return result;
}
Inheritance