CS 225
Data Structures

August 24 – C++ Design in CS 225
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What about C++

Lectures from Previous Semesters Covering C++ Available Here
https://mediaspace.illinois.edu/playlist/dedicated/177553201/1_s10ctiib/1_z2cz05fi
Encapsulation - Files
Encapsulation - Namespaces

- cs225
  - Cube
  - PNG
  - HSLAPixel

- std
  - cout
  - vector
  - queue
  - ...

...
Encapsulation - Classes
Memory Management

• Stack

• Heap

• Global
Memory Management - Ownership
Memory Management - Classes

• Constructors

• Destructors
Memory Management - Parameters

• Value

• Value – Pointer

• Reference
Const

- Values

- References

- Methods
Overloading

<table>
<thead>
<tr>
<th>Operators that can be overloaded in C++</th>
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<tbody>
<tr>
<td><strong>Arithmetic</strong></td>
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<td>+          -          *          /          %          ++          --</td>
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<td><strong>Bitwise</strong></td>
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<td><strong>Assignment</strong></td>
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<td><strong>Comparison</strong></td>
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<td>==          !=          &gt;          &lt;          &gt;=          &lt;=</td>
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<tr>
<td><strong>Logical</strong></td>
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<td>!          &amp; &amp;</td>
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<tr>
<td><strong>Other</strong></td>
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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
Inheritance
Templates
ADT
Open Lab This Week

This week lab are open office hours to help you get your machine setup and can be reached at this link.