Introduction to the STL

CPE 212 -- Lecture 19

** Notes based on
The C++ Standard Library: A Tutorial and Reference, by Niicolai M. Josuttis

What is the STL?

- ***Standard Template Library*** (STL)
  - Contains prewritten **container** and **algorithm** templates

Goals of the STL

- Speed software development
  - No need to rewrite standard container classes or algorithms each time they are needed
- Improve product quality
  - Prewritten templates have been extensively debugged
  - Templates provide an efficient implementation to improve performance
  - No need to use a component of unknown quality when an efficient, high-quality component is available

STL Container Classes - 1

- **Sequence Containers**
  - Vector
  - List
  - Deque (double-ended queue) “deck”

- Sequence containers are “ordered”
  - Elements stored in the order they are inserted

STL Container Classes - 2

- **Associative Containers**
  - Set
  - Multiset
  - Map
  - Multimap

- Associative containers are sorted
  - Order depends upon element value and not the order of insertion

STL Algorithms

- Some algorithms will modifying the contents of the container while some will not

- Examples of non-modifying algorithms
  - count, min_element, max_element, find, ...
- Examples of modifying algorithms
  - sort, stable_sort, fill, replace, make_heap, …