STL Output
Iterators
**STL Output Iterators**

- *Output* iterator is a type that provides a mechanism for storing (but not accessing) a sequence of values.

```cpp
template<typename InputIterator, typename OutputIterator>
OutputIterator copy
    (InputIterator first,
     InputIterator last,
     OutputIterator result) {
  for (; first != last;
      ++first, ++result)
    *result = *first;
  return result;
}

vector<int> v;

copy (istream_iterator<int> (cin),
     istream_iterator<int>(),
     back_inserter(v));
```

See [www.cplusplus.com/reference/iterator/OutputIterator](http://www.cplusplus.com/reference/iterator/OutputIterator)
STL Output Iterators

- *Output* iterators are in some sense the converse of input iterators, but have a more restrictive interface:
  - Must support non-const operator *
    - *e.g.,* \*iter = 3
  - Operators = & == & != need not be defined (but could be)

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OutputIterator copy
    (InputIterator first, InputIterator last, OutputIterator result) {
    for (; first != last; ++first, ++result)
        *result = *first;
    return result;
}

vector<int> v;

copy (istream_iterator<int> (cin), istream_iterator<int>(), back_inserter(v));
```
STL Output Iterators

- Intuitively, an output iterator is like a tape where you can write a value to the current location & you can advance to the next location
- However, but you cannot read values & you cannot back up or rewind
STL Output Iterator Example

```cpp
int main () {
    // An initially empty vector.
    vector<int> v;

    // copy contents of cin as "int" and store at the end of vector v.
    for (istream_iterator<int> i (cin);
        i != istream_iterator<int> ();
        ++i)
        // Add int to the end of the vector.
        v.push_back (*i);

    // Use STL copy() algorithm along with back_inserter()!
    copy (istream_iterator<int> (cin),
          istream_iterator<int>(),
          back_inserter(v));
}
```

See github.com/douglascraigschmidt/CPlusPlus/tree/master/STL/S-04/4.4/4.4a