

# Insert Iterators Solutions

# Insert Iterators

- Briefly explain what an insert iterator is and how it is used
  - An insert iterator is used to add new elements
  - To add a new element, we assign to the insert iterator

# Insertter Functions

- How can we obtain an insert iterator for a container object?
  - We pass the container object as the argument to the inserter
  - The function returns an insert iterator for that object

# back\_insert\_iterator

- Briefly explain what back\_insert\_iterator does
  - back\_insert\_iterator adds a new element at the back of the container
  - When a back\_insert\_iterator is assigned to, it calls the container's push\_back member function
  - The assigned-from value is passed as the argument to push\_back()
- Write a simple program which demonstrates the use of a back\_insert\_iterator

# front\_insert\_iterator

- Briefly explain what front\_insert\_iterator does
  - front\_insert\_iterator adds a new element at the back of the container
  - When a front\_insert\_iterator is assigned to, it calls the container's push\_front member function
  - The assigned-from value is passed as the argument to push\_front()
- Why do std::vector and std::string not support front\_insert\_iterator?
  - These classes do not have a push\_front member function

# insert\_iterator

- Briefly explain what insert\_iterator does
  - insert\_iterator adds a new element at a given position in the container
  - An iterator to this position is passed as the second argument to inserter()
  - When an insert\_iterator is assigned to, it calls the container's insert member function
  - The positional iterator is passed as the first argument to insert()
  - The assigned-from value is passed as the second argument to insert()
- Write a simple program which demonstrates the use of a back\_insert\_iterator

# insert\_iterator Caveat

- Are there any issues with using an insert\_iterator?
  - Insert operations can cause existing references and iterators to become invalid
  - e.g. if a vector reallocates its data buffer
  - After an insert\_iterator has been used, any stored iterators or references should not be used

# Applications of insert iterators

- Why are insert iterators useful?
  - Insert iterators can be used anywhere where a positional iterator is expected
  - Insert iterators are useful for populating containers
  - They can be passed as arguments to algorithms that copy iterator ranges
  - They can be used in conjunction with stream iterators
- Write a simple program to illustrate your answer