

# Container Introduction Solutions

# Sequential Containers

- Give some examples of standard containers that you have already used in this course
  - `std::string`
  - `std::vector`

# Associative Containers

- What is the main difference between a sequential container and an associative container in C++?
  - In a sequential container, the elements are stored in an order which is determined by the program
  - Elements are accessed by their position
  - In an associative container, the elements are stored in an order which is determined by the container and depends on their value
  - Elements are accessed by a "key" which the container uses to look up the element

# Associative Containers

- What is meant by the term "key", in relation to C++ standard containers?
  - A key is some data item that can be used to search for an element
  - e.g. name in telephone directory, part number in inventory
- What is the key used for?
  - The container uses the key to determine the position of the element
  - The container uses the key to look up an element

# Sets and Maps

- What are the two main types of associative container?
  - `std::set` and `std::map`
- Describe briefly these two associative container types
  - Each element in a set has a single value, which is used as its key
  - The key is used to find whether an element is present
  - Each element in a map consists of a pair of items, a key and a value
  - The key is used to locate an element

# Associative Container Operations

- Describe some operations that can be performed on associative containers
  - `insert()` and `erase()` to add and remove elements
  - `begin()` and `end()` to iterate over the entire container
  - Algorithm-like member functions such as `find()` and `sort()`