

Introduction to C++ Standard Containers

Solutions

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

- 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

- What is meant by the term "key", in relation to C++ standard containers?
 - A key is some data item that is conceptually related to the value of 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

- 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

- 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()`