Map Insertion Solutions

Operator []

- What is meant "insert or assign" functionality, when inserting an element into an std::map object?
  - If there already is an element in the map with the requested key its value is overwritten
  - Otherwise, a new element is inserted into the map

Operator []

- The [] operator can be used to insert a new element into an std::map
- Give some disadvantages of this approach
  - Has "insert or assign" functionality, but does not say which one was used
  - Requires the value's type to have a default constructor
  - If an exception is thrown during the assignment, a partially-initialized object is left behind
- Write a program which uses operator [] to insert a new element into an std::map
- Check your program works both for inserting a new element and assigning an existing element

insert()

- The insert member function can be used to insert a new element into an std::map
- Give some disadvantages of this approach
  - The new element must be passed as an std::pair (can use initializer list in C++11)
  - If we want "insert or assign" functionality, we have to write code to check the return value and perform the assignment if the insertion failed
- Write a program which uses the insert member function to insert a new element into an std::map
- Check your program works both for inserting a new element and assigning an existing element

"Insert or assign" in C++17

- The insert_or_assign member function can be used to insert a new element into an std::map
- Give some advantages of this approach
  - The return value indicates whether the operation performed an insertion or an assignment
  - The value's type does not need to have a default constructor
  - If an exception is thrown during the operation, the insertion has no effect
  - The value and key of the new element are passed separately, instead of having to be combined into an std::pair

insert_or_assign()

- Briefly describe the interface of std::map's insert_or_assign member function
  - insert_or_assign() takes two arguments, the new element's key and its value
  - The returned value is similar to insert()
  - An std::pair whose first member is an iterator to the element that was inserted or updated
  - The second member is a bool which is true if inserted and false if updated
- Write a program which uses the insert_or_assign member function to insert a new element into an std::map
- Check your program works both for inserting a new element and assigning an existing element