Thread-safe Linked List Exercises

Thread-safety

- A program has a linked list object which is shared between multiple threads
- You have been asked to write a function which traverses the elements of the linked list
- What issues do you need to consider in relation to data races?

List Traversal

- Explain how adding a mutex member to the node can make your traversal function thread-safe

Hand-over-hand Locking

- What is meant by "hand-over-hand" locking?

Hand-over-hand Locking

- Which member functions of std::unique_lock are particularly helpful when implementing hand-over-hand locking?

Thread-safe List Traversal

- Modify the linked link class you implemented in the previous lecture's exercises, so that its traversal member function is thread-safe
- Write a program which
  - Creates an object of this list class and populates it, in the main thread
  - Starts two threads which call the traversal member function
- Check that your program compiles and runs correctly