Concurrent Dictionary Demo



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Module 3 Overview



App based on Geek Clothing Store



AddOrUpdate() lets us update stock levels no matter what other threads are doing



Need to be careful how we write lambdas that may execute multiple times

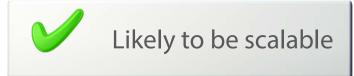


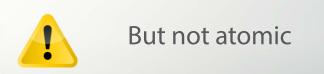
You can write thread-safe code without any explicit locks!

Grey area must not appear in the recorded course

Avoiding Locks

BuyStock()
has no explicit locks!



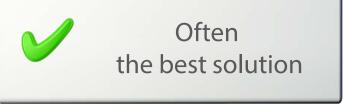


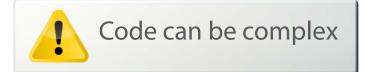
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Thread-safe Conditional Updates

Put logic in delegate:



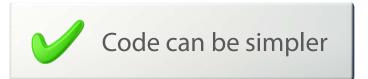




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Thread-safe Conditional Updates

Break into Simpler Operations:



But in this case...





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Thread-safe Conditional Updates

Lock threads:

```
lock (_syncObj)
{
    if (_stock[item] == 0)
        return false;
    _stock[item]--;
    _totalQuantitySold++;
    return true;
}
```



One-method rule doesn't apply



Scalability



Often not a good solution

Module 3 Summary



Demo with multiple threads updating a ConcurrentDictionary

- One concurrent dictionary method call for each operation
- We worked around this by breaking an operation into multiple simpler operations
- Delegates to AddOrUpdate() and GetOrAdd() can execute multiple times so beware of side-effects