Assignment 4
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Approach to synchronization for each class:

Simulation:

Using Lock named finishedLock to ensure that all orders are finished. If the orders have not finished yet, the Lock will wait until all the orders have finished. After all orders have been finished, the cooks can be sent back home and shut down the machine.

Customer:

Each order has one unique order lock to ensure that every order can be taken in progress by one cook. When customer make the order, the order will be checked first to ensure the order is not in progress. If the order is in progress, the lock will get wait until the order is not in progress and then the lock will be released.

Cook:

Each new order can only be done for one cook. So, we lock the new order class to ensure the thread does only one order at the same time. If the cook does not have new order, he will wait until the new order come. If the cook gets the new order, he will continue to process the order.

Machine:

The synchronization will be done in the inner class named CookAnItem. We will lock the machine class to ensure it cannot be used by more than two cooks. Inside the lock, we check the status of the machine. If the machine is available, the lock will get wait status waiting for the new food coming. If the machine gets the food the number of cooking machine increased by 1.