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CS 4348-001

Project 2

**Summary**

**Simulation discussion:**

There are four main threads: Hotel, Guest, Bellhop and FrontDesk.

The Hotel class starts the simulation and initializes two front desk employees, two bellhops and 25 guests and all the semaphores and arrays for the project.

1. Initialize the front desk employee threads.
2. Initialize the bellhop threads.
3. Initialize the guest threads.
4. Guest enters hotel with bags and gets added to guest queue.
5. Then a front desk employee removes a guest from the guest queue and registers the guests and gives a room key.
6. The guest then receives the room key from the front desk employee.
7. Then guest requests for bellhop (if guest has more than two bags) and then added to bellhop queue.
8. Then a bellhop removes a guest from bellhop queue and receives bags from the guest.
9. Then guest enters their room.
10. Then the guest waits for their bags.
11. Then bellhop delivers bags to the guest.
12. Then guest retires for the evening.
13. Then guest thread is joined.

**Difficulties encountered:**

It took me a while to realize that I needed mutexes for some queue operations.

I wasn’t very comfortable with semaphores when I started this project and thus used them incorrectly which often led to deadlocks.

I didn’t know how to store the front desk employee number and the bellhop number in the guest class, until I realized I could store them in an array.

**What was learned:**

The purpose of semaphores and how to use them.

How multiple threads are executed on a multiprocessor.

When to use mutexes.

That you cannot “throw” “exception” and must use a try catch block for it.