Luke Ambray

COP 4600

NID: 4562758

**Homework 4 Journal**

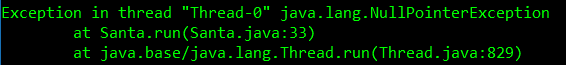
March 25, 2022

Step 1 (5 minutes)

* Comprehending how to accomplish “deferred termination” took a longer than I’d like to admit
* Noticed all threads ran using a while-loop and made a function that set the loops’ condition to false when day 370 was reached

Step 2 (30 minutes)

* Getting the elves to go to Santa’s door was straightforward
* Created a function that would be called in order to wake Santa up
* Problem: Santa wakes up but doesn’t solve any problems & NullPointerException



* + Reason: forgot to add “scenario” as an attribute to Santa
  + After assigning “scenario” to Santa, problem was fixed

March 26, 2022

Step 3 (45 minutes)

* Created a queue for elves to wait for 2 other elves
  + when queue size was 3, call function to move elves to a list of elves at Santa’s door
* Very little modification for Santa.java, just remove elf from list when their problem is solved

Step 4 (1.25 hrs)

* TRIAL AND ERROR
* Problem: Deadlocks... a lot of them
  + Solution: reorder instructions so that deadlock shouldn’t be possible
* Problem: Random null pointer exceptions that involve the elves added to the queue
  + Happened maybe 1 out of every 10 runs
  + Conveniently could not replicated in order to get a screenshot
  + Solution: Based on the behavior of the error, I concluded that 2 elves were trying to add to the queue simultaneously. Adding a semaphore such that only one elf could enter the queue at a time appears to have fixed the problem.

Step 5 (1 hr)

* Sat for around 20 minutes trying to figure out how to get the program to know that 8 reindeer had entered the warming shed
* Went through at least 3 iterations of code that resulted in deadlocks involving the last reindeer
* Eventually came to the realization that I could have 2 semaphores: one that protects the reindeer counter and one that waits for the last reindeer
* Copied the code for WOKEN\_UP\_BY\_ELVES into WOKEN\_UP\_BY\_REINDEER
  + Made it so Santa released the 8 waiting reindeer and set all 9 to AT\_THE\_SLEIGH
* instructions didn’t really say what to do afterward
  + assumed if all the reindeer were at the sleigh, Santa was ready for Christmas