

OS Spring 2021 HW4

Friday, March 12

Read Instructions, download code and wrote pseudocode for steps 1 through 4.

Wednesday, March 17

Step 1

```
commit 748f9e0e748920c50d32c0cc5ba1ed7efa7f2aa8
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Wed Mar 17 14:15:55 2021 -0500
```

```
init
Commit base code.
```

```
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Wed Mar 17 14:21:53 2021 -0500
```

```
init
Copy Step-0 directory into Step-1
```

```
commit 31bcaadb89daf06bb505bbe8dd79e9711b81ffc5
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Wed Mar 17 15:46:40 2021 -0500
```

```
Terminate all threads gracefully
```

```
commit 907ce89676050ccadb1827de72a4c0941e7ac3f1
Add signal to all threads which stops the thread. Initially, all threads were set to run forever;
however, by allowing the while loop to stop, the thread is allowed to stop. This took some time
to realize.
```

Step 2

```
commit 55daf1a035fb6e33c493eebceaa5011c162e0a40
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Wed Mar 17 15:49:02 2021 -0500
```

```
init Step-2
Copy Step-1 directory into Step-2
```

```
commit 743529412779d6b2954e645961b69100cd95e169
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Wed Mar 17 16:06:42 2021 -0500
```

Remove Reindeers

Remove reindeer initialization in SantaScenario.java.

```
commit dfc4d6dece7f95491f6ce10e9528acf777428a8e
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date: Wed Mar 17 16:30:11 2021 -0500
```

```
When Elf is in trouble he goes to santas door.
When Elf is at santas door he wakes up santa.
When santa is woken up he helps all elves at his door.
```

When Elf is in trouble state he is set to Santa's door immediately.
When Elf is at door Santa is set to woken up by elves.
When Santa is woken up by elves he helps all the elves at his door.

Step 3

```
commit b793a78df07e1dd7136f9e4af7c6fb76b5f09c98
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date: Wed Mar 17 20:14:08 2021 -0500
```

```
init Step-3
```

Copy Step-3 into Step-4

```
commit 2d5f1685458a86eac2252bfb24533a139346e91f
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date: Wed Mar 17 20:17:41 2021 -0500
```

```
Elves will wait until three need help before waking santa
```

Particularly difficult step. All elves who are in trouble are added into a queue but only the first 3 are sent to Santa's door.

Thursday, March 18

Difficult day today. Could not figure out what was wrong with Step-3

Step 4

```
commit 24b6a155c36d21f4462e4ab95fee98f0de5a6b35
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date: Thu Mar 18 09:30:29 2021 -0500
```

```
init Step-4
```

Copy Step-2 into Step-4

Thursday, March 19

Step 3

```
commit 647c76bd26aa08e5030281abed4dd03c5545ef23
```

```
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Fri Mar 19 14:39:08 2021 -0500
```

```
fixup! Elves will wait until three need help before waking
santa
```

Santa will now go into “Woken up by elves state.” Santa will make sure to help 3 elves before he goes to sleep.

Step 4

```
commit c2378e6c4b5f4ec56f4e11a936446e06c0994c26
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Fri Mar 19 15:00:02 2021 -0500
```

```
add semaphores
Elves now acquire locks to wait for Santa.
```

```
commit 2f07e982f7c710e8cf5c32b7bb12fd7f790aa556
Merge: 647c76b c2378e6
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Fri Mar 19 15:02:57 2021 -0500
```

```
Merge branch 'Step_4'
Fast Forward Step_4 to master
Merge Step-4 to master
```

```
commit e3b1998e327149eaf16451d9970af7efb3670aaf
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Fri Mar 19 17:42:46 2021 -0500
```

```
fixup! Merge branch 'Step_4' Fast Forward Step_4 to master
```

All elves who were at the door were trying to wake him up. Only the first elf will wake up Santa.

Step 5

```
commit 39001ecf98c4ba2435cfe51cd54f9c3d1920b61b
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Fri Mar 19 16:01:41 2021 -0500
```

```
init Step-5
Copy Step-4 directory into Step-5
```

```
commit df686d070561b0a15b1eac072e0728834752d9fd
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date:   Fri Mar 19 16:04:37 2021 -0500
```

```
add reindeers to scenario
Instantiate reindeers in SantaScenario.
```

```
commit b63dd34e7179600e3428c1e59033f1e7b3354ce
Merge: df686d0 e3b1998
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date: Fri Mar 19 17:44:24 2021 -0500
```

```
    Merge branch 'master' into Step-5
          fast forward fixup
Apply Step-4 fix up to Step-5
```

```
commit 3a2e832a9b7fecc83f9477768147f8c77adc9833 (HEAD -> master)
Author: CoyTorreblanca <coydiego@knights.ucf.edu>
Date: Fri Mar 19 18:23:37 2021 -0500
```

```
    Reindeers wake up Santa who ties them to sleigh and is ready
for Christmas
```

In Step-5, the instructions say the the Reindeer must be awaiting (with Sephamore.acquire()) while they are at the shed. I am sad that I only now realized this would have been a more effective method for the Elves in Step-4.

Implemented a lock for waking up Santa for Elves/Reindeers to wait for Santa to sleep for waking him up. However, if Santa is ready for Christmas, elf will wait indefinitely.