

1. Original Output

```
Writer 0 is drafting an article.
Writer 1 is drafting an article.
Writer 2 is drafting an article.
Writer 3 is drafting an article.
Writer 4 is drafting an article.
Editor 1 is checking for an article to review.
Writer 3 is waiting for a review slot.
Writer 3 has submitted an article for review.
Editor 0 is checking for an article to review.
Editor 0 is reviewing an article.
Writer 2 is waiting for a review slot.
Writer 2 has submitted an article for review.
Writer 1 is waiting for a review slot.
Writer 1 has submitted an article for review.
Writer 0 is waiting for a review slot.
Writer 0 has submitted an article for review.
Writer 4 is waiting for a review slot.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 0 is stopping as all reviews are complete.
Writer 4 has submitted an article for review.
Editor 1 is reviewing an article.
Editor 1 has finished reviewing an article.
Editor 1 is stopping as all reviews are complete.
All articles have been submitted and reviewed.
```

2.

TO-DO 1 commented out:

If line 51 `review_slots.release()` is commented out: This would cause the semaphore to be useless, and the buffer to have no effect. This is reflected in the output as all writers will always be able to submit an article for review. This can be best seen in the a situation where there is a lot of writers and only one slot.

```
PS C:\Users\josep\Projects\Cisc324-F24> &
C:/Users/josep/AppData/Local/Programs/Python/Python312/python.exe
c:/Users/josep/Projects/Cisc324-F24/Lab3/lab3-boilerplate.py
Writer 0 is drafting an article.
Writer 1 is drafting an article.
Writer 2 is drafting an article.
Writer 3 is drafting an article.
```

Writer 4 is drafting an article.
Writer 5 is drafting an article.
Writer 6 is drafting an article.
Writer 7 is drafting an article.
Writer 8 is drafting an article.
Writer 9 is drafting an article.
Writer 10 is drafting an article.
Writer 11 is drafting an article.
Writer 12 is drafting an article.
Writer 13 is drafting an article.
Writer 14 is drafting an article.
Writer 15 is drafting an article.
Writer 16 is drafting an article.
Writer 17 is drafting an article.
Writer 18 is drafting an article.
Writer 19 is drafting an article.
Writer 4 is waiting for a review slot.
Writer 4 has submitted an article for review.
Writer 2 is waiting for a review slot.
Writer 2 has submitted an article for review.
Editor 1 is checking for an article to review.
Editor 1 is reviewing an article.
Writer 14 is waiting for a review slot.
Writer 14 has submitted an article for review.
Writer 17 is waiting for a review slot.
Editor 0 is checking for an article to review.
Writer 13 is waiting for a review slot.
Writer 11 is waiting for a review slot.
Writer 1 is waiting for a review slot.
Writer 10 is waiting for a review slot.
Writer 6 is waiting for a review slot.
Writer 3 is waiting for a review slot.
Writer 19 is waiting for a review slot.
Writer 16 is waiting for a review slot.
Writer 12 is waiting for a review slot.
Writer 9 is waiting for a review slot.
Writer 5 is waiting for a review slot.
Writer 8 is waiting for a review slot.
Writer 0 is waiting for a review slot.
Writer 15 is waiting for a review slot.
Writer 7 is waiting for a review slot.
Writer 18 is waiting for a review slot.
Editor 1 has finished reviewing an article.

Editor 0 is reviewing an article.
Writer 17 has submitted an article for review.
Editor 0 has finished reviewing an article.
Writer 13 has submitted an article for review.
Writer 11 has submitted an article for review.
Writer 1 has submitted an article for review.
Writer 10 has submitted an article for review.
Writer 6 has submitted an article for review.
Writer 3 has submitted an article for review.
Writer 19 has submitted an article for review.
Writer 16 has submitted an article for review.
Writer 12 has submitted an article for review.
Writer 9 has submitted an article for review.
Writer 5 has submitted an article for review.
Writer 8 has submitted an article for review.
Writer 0 has submitted an article for review.
Writer 15 has submitted an article for review.
Writer 7 has submitted an article for review.
Writer 18 has submitted an article for review.
Editor 1 is checking for an article to review.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 0 has finished reviewing an article.
Editor 1 is checking for an article to review.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.

```
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 0 is stopping as all reviews are complete.
Editor 1 is stopping as all reviews are complete.
All articles have been submitted and reviewed.
```

3. TO-DO 7 commented out:

If line 84 `articles_submitted -= 1` is commented out: This would cause the program to never terminate because: The `articles_submitted` counter would only increase but never decreases. The condition `if articles_submitted == 0 and TOTAL_ARTICLES == NUM_WRITERS` that sets the `stop_editors` event would never be true. The editors would keep running forever checking for

articles Even though all articles have been reviewed, the program wouldn't recognize this fact
The editor threads would never exit their while loop since stop_editors would never be set

```
PS C:\Users\josep\Projects\Cisc324-F24> &
C:/Users/josep/AppData/Local/Programs/Python/Python312/python.exe
c:/Users/josep/Projects/Cisc324-F24/Lab3/lab3-boilerplate.py
Writer 0 is drafting an article.
Writer 1 is drafting an article.
Writer 2 is drafting an article.
Writer 3 is drafting an article.
Writer 4 is drafting an article.
Editor 1 is checking for an article to review.
Editor 0 is checking for an article to review.
Writer 3 is waiting for a review slot.
Writer 3 has submitted an article for review.
Writer 1 is waiting for a review slot.
Writer 1 has submitted an article for review.
Editor 1 is checking for an article to review.
Editor 1 is reviewing an article.
Writer 4 is waiting for a review slot.
Writer 4 has submitted an article for review.
Writer 2 is waiting for a review slot.
Writer 2 has submitted an article for review.
Writer 0 is waiting for a review slot.
Writer 0 has submitted an article for review.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
Editor 0 is checking for an article to review.
Editor 1 has finished reviewing an article.
Editor 0 is reviewing an article.
Editor 1 is checking for an article to review.
Editor 0 has finished reviewing an article.
Editor 1 is reviewing an article.
```

```
Editor 0 is checking for an article to review.  
Editor 1 has finished reviewing an article.  
Editor 0 is reviewing an article.  
Editor 1 is checking for an article to review.  
Editor 0 has finished reviewing an article.  
Editor 1 is reviewing an article.  
Editor 0 is checking for an article to review.  
Editor 1 has finished reviewing an article.  
Editor 0 is reviewing an article.  
Editor 1 is checking for an article to review.  
Editor 0 has finished reviewing an article.  
Editor 1 is reviewing an article.  
Editor 0 is checking for an article to review.  
Editor 1 has finished reviewing an article.  
Editor 0 is reviewing an article.  
Editor 0 has finished reviewing an article.  
Editor 1 is checking for an article to review.  
Editor 1 is reviewing an article.  
Editor 0 is checking for an article to review.  
Editor 1 has finished reviewing an article.  
Editor 0 is reviewing an article.  
Editor 1 is checking for an article to review.  
Editor 0 has finished reviewing an article.  
Editor 1 is reviewing an article.  
Editor 0 is checking for an article to review.  
Editor 1 has finished reviewing an article.  
Editor 0 is reviewing an article.  
Editor 1 is checking for an article to review.  
Editor 0 has finished reviewing an article.  
Editor 1 is reviewing an article.  
Editor 0 is checking for an article to review.  
Editor 1 has finished reviewing an article.  
Editor 0 is reviewing an article.  
Editor 1 is checking for an article to review.  
Editor 0 has finished reviewing an article.  
Editor 1 is reviewing an article.  
Editor 0 is checking for an article to review.
```

```
Editor 1 has finished reviewing an article.  
Editor 0 is reviewing an article.  
Editor 1 is checking for an article to review.  
Editor 0 has finished reviewing an article.  
Editor 1 is reviewing an article.  
...
```