Government Engineering College, Thrissur

CS334 – Network Programming Lab

Documentation -

Exp 9 – Second Reader Writer Problem

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Experiment 9

Implement the Second Readers-Writers problem (Using Process along with PIPE and Message Queue)

Executing program

- Code is provided in the **second.c** (Tested and verified on Ubuntu 20.04)

```
gcc second.c -lpthread -lrt && ./a.out
```

- **NOTE: This program is designed to accept only positive number. If the number is negative or zero, then corresponding error message will be displayed**

ALGORITHM

- Get number of readers and writers required from the console
- Initialize pipe variables
- Initialize threads reader and writer threads
- Run threads
- In reader thread – Readers can execute in parallel, but when ever a writer tries write the reader has to wait. In this problem readers are given less priority compared to writers.
- In writer thread – Writers should not wait for readers. Whenever a writer tries to write into shared memory space readers have to wait. **Writers are given more priority in second readers-writers problem**
- Wait until all threads complete execution

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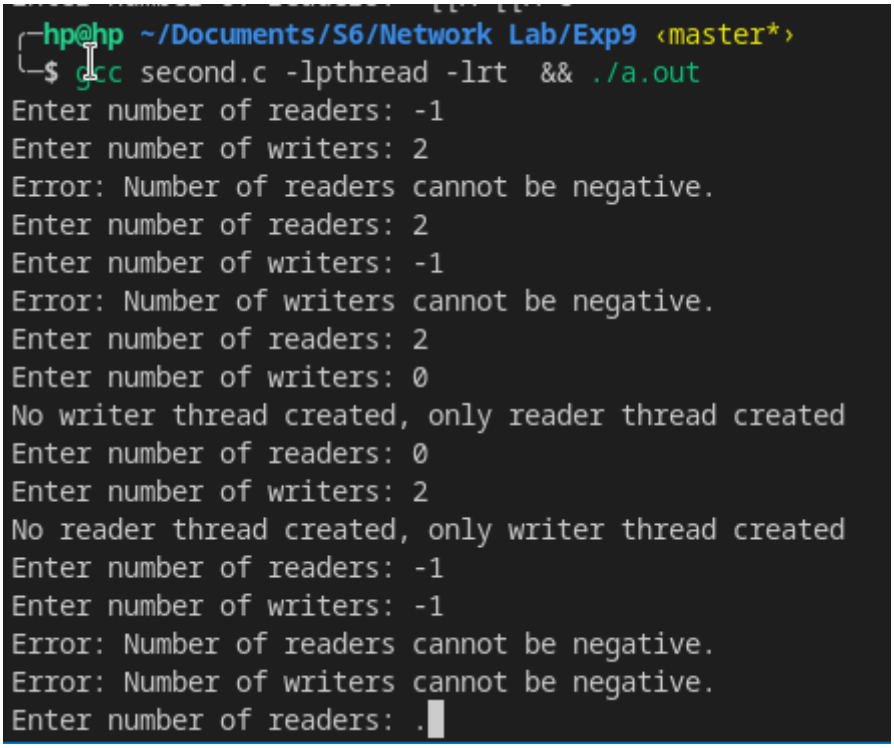
Output / Screenshots

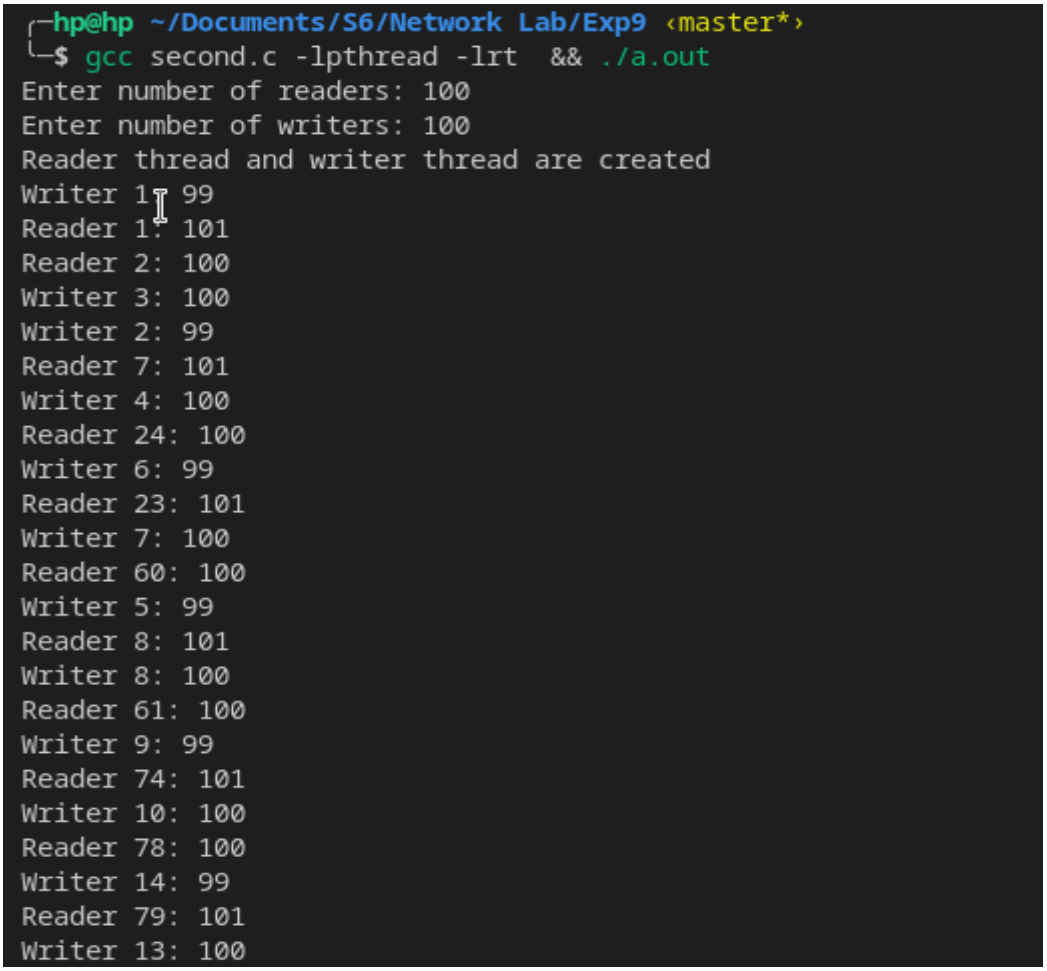
Error Messages

Error messages produced for non positive number of readers and writers



Thread Execution

Consider number of readers and writers as 100



Observation and Explanation

- Writers start execution and readers are kept waiting. We cannot see reader in between writers. This is because writers are given higher priority than readers
- We can see writers after reader threads have begun, during this period no reader is allowed to access shared memory space.