

Operating Systems Coursework

Compilation screen output.

```
oli@Device3:~/Nextcloud2/Computing Science/Operating Systems/Coursework/given$ make clean && make
rm -f main producer consumer *.o core
g++ -c -o helper.o helper.cc
g++ -Wall -c helper.cc main.cc
g++ -Wall -pthread -o main helper.o main.o
```

Demonstration of functionality with Queue size = 5, Number of Items produced per producer = 6, Number of producers = 2, and Number of consumers = 3.

```
oli@Device3:~/Nextcloud2/Computing Science/Operating Systems/Coursework/given$ ./main 5 6 2 3
Producer(1): Job ID 1 duration 7.
Consumer(1): Job ID 1 executing sleep duration 7.
Producer(2): Job ID 2 duration 5.
Consumer(2): Job ID 2 executing sleep duration 5.
Producer(1): Job ID 3 duration 1.
Consumer(3): Job ID 3 executing sleep duration 1.
Consumer(3): Job ID 3 completed.
Consumer(1): Job ID 1 completed.
Producer(2): Job ID 4 duration 6.
Consumer(3): Job ID 4 executing sleep duration 6.
Consumer(2): Job ID 2 completed.
Producer(1): Job ID 5 duration 4.
Consumer(1): Job ID 5 executing sleep duration 4.
Producer(2): Job ID 1 duration 5.
Consumer(2): Job ID 1 executing sleep duration 5.
Consumer(1): Job ID 5 completed.
Consumer(3): Job ID 4 completed.
Producer(1): Job ID 2 duration 7.
Consumer(1): Job ID 2 executing sleep duration 7.
Producer(2): Job ID 3 duration 8.
Consumer(3): Job ID 3 executing sleep duration 8.
Consumer(2): Job ID 1 completed.
Producer(1): Job ID 4 duration 5.
Producer(2): Job ID 5 duration 3.
Consumer(2): Job ID 4 executing sleep duration 5.
Producer(2): Job ID 1 duration 6.
Producer(2): No more jobs to generate.
Consumer(1): Job ID 2 completed.
Consumer(1): Job ID 5 executing sleep duration 3.
Consumer(3): Job ID 3 completed.
Consumer(3): Job ID 1 executing sleep duration 6.
Producer(1): Job ID 2 duration 1.
Producer(1): No more jobs to generate.
Consumer(2): Job ID 4 completed.
Consumer(2): Job ID 2 executing sleep duration 1.
Consumer(1): Job ID 5 completed.
Consumer(2): Job ID 2 completed.
Consumer(3): Job ID 1 completed.
Consumer(2): No jobs left.
Consumer(1): No jobs left.
Consumer(3): No jobs left.
```

Non integer argument error handling.

```
oli@Device3:~/Nextcloud2/Computing Science/Operating Systems/Coursework/given$ ./main 4 4 4 a
Incorrect usage. Try './main <queuesize> <jobs_per_producer> <num_producers> <num_consumers>' where the arguments are integers.
```

Demonstration of random seed, different output from the same arguments.

```
oli@Device3:~/Nextcloud2/Computing Science/Operating Systems/Coursework/given$ ./main 2 2 2 2
Producer(1): Job ID 1 duration 7.
Producer(2): Job ID 2 duration 3.
Consumer(1): Job ID 1 executing sleep duration 7.
Consumer(2): Job ID 2 executing sleep duration 3.
Producer(1): Job ID 1 duration 3.
Producer(1): No more jobs to generate.
Consumer(2): Job ID 2 completed.
Consumer(2): Job ID 1 executing sleep duration 3.
Producer(2): Job ID 2 duration 9.
Producer(2): No more jobs to generate.
Consumer(2): Job ID 1 completed.
Consumer(2): Job ID 2 executing sleep duration 9.
Consumer(1): Job ID 1 completed.
Consumer(2): Job ID 2 completed.
Consumer(1): No jobs left.
Consumer(2): No jobs left.
oli@Device3:~/Nextcloud2/Computing Science/Operating Systems/Coursework/given$ ./main 2 2 2 2
Producer(2): Job ID 1 duration 6.
Consumer(1): Job ID 1 executing sleep duration 6.
Producer(2): Job ID 2 duration 10.
Producer(2): No more jobs to generate.
Consumer(2): Job ID 2 executing sleep duration 10.
Producer(1): Job ID 1 duration 10.
Producer(1): Job ID 2 duration 1.
Producer(1): No more jobs to generate.
Consumer(1): Job ID 1 completed.
Consumer(1): Job ID 1 executing sleep duration 10.
Consumer(2): Job ID 2 completed.
Consumer(2): Job ID 2 executing sleep duration 1.
Consumer(2): Job ID 2 completed.
Consumer(1): Job ID 1 completed.
Consumer(2): No jobs left.
Consumer(1): No jobs left.
```