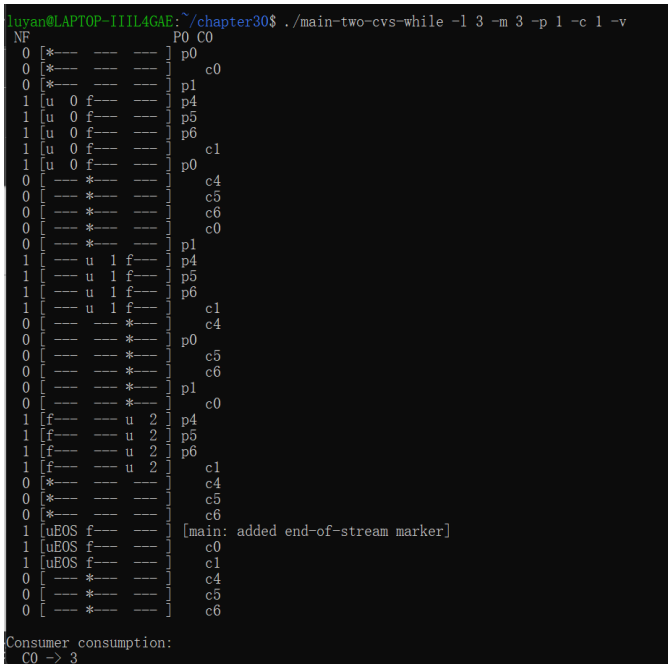
Chapter 30

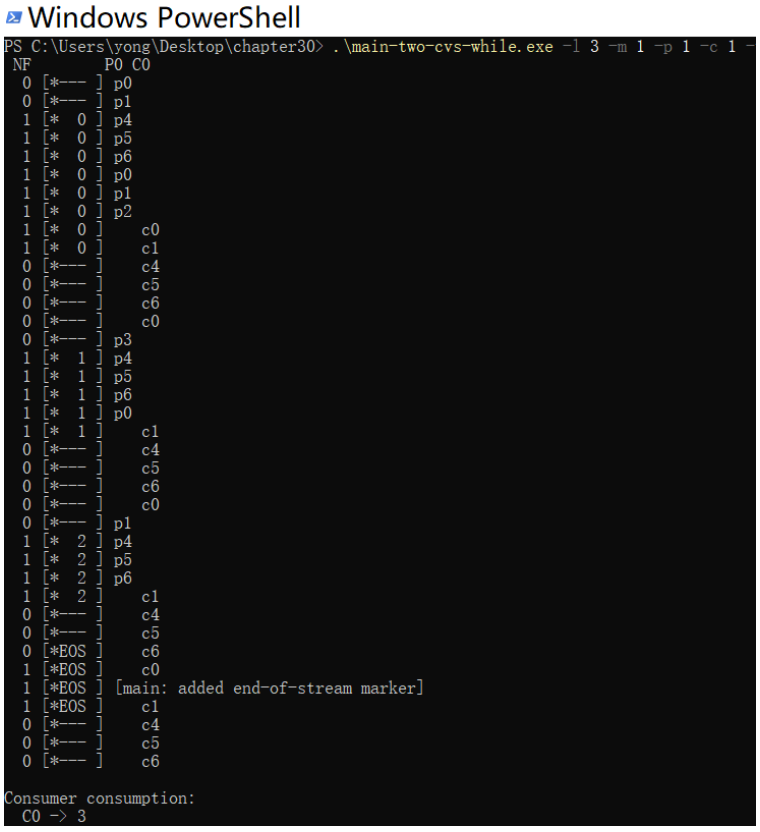
1.The file implements a producer and a consumer using conditional variables and locks.

2. Tried buffer sizes 1-3, behavior does not change.



The max value of num_full should be equal to buffer size.

3.



luyan@LAPTOP-IIIL4GAE: ~/chapter30

```
luyan@LAPTOP-IIIL4GAE:~/chapter30$ ./main-two-cvs-while -l 3 -m 1 -p 1 -c 1 -v
 NF        P0 C0
  0 [*---  ] p0
  0 [*---  ]    c0
  0 [*---  ] p1
  1 [*  0  ] p4
  1 [*  0  ] p5
  1 [*  0  ] p6
  1 [*  0  ]    c1
  1 [*  0  ] p0
  0 [*---  ]    c4
  0 [*---  ]    c5
  0 [*---  ]    c6
  0 [*---  ] p1
  1 [*  1  ] p4
  1 [*  1  ]    c0
  1 [*  1  ] p5
  1 [*  1  ] p6
  1 [*  1  ]    c1
  1 [*  1  ] p0
  0 [*---  ]    c4
  0 [*---  ]    c5
  0 [*---  ]    c6
  0 [*---  ] p1
  0 [*---  ]    c0
  1 [*  2  ] p4
  1 [*  2  ] p5
  1 [*  2  ] p6
  1 [*  2  ]    c1
  0 [*---  ]    c4
  0 [*---  ]    c5
  0 [*---  ]    c6
  1 [*EOS  ] [main: added end-of-stream marker]
  1 [*EOS  ]    c0
  1 [*EOS  ]    c1
  0 [*---  ]    c4
  0 [*---  ]    c5
  0 [*---  ]    c6

Consumer consumption:
  C0 -> 3
```

4.

./main-two-cvs-while -p 1 -c 3 -m 1 -C 0,0,0,1,0,0,0:0,0,0,1,0,0,0:0,0,0,1,0,0,0 -l 10 -v -t

```
Consumer consumption:
  C0 -> 0
  C1 -> 10
  C2 -> 0

Total time: 12.03 seconds
```

5. No changes.

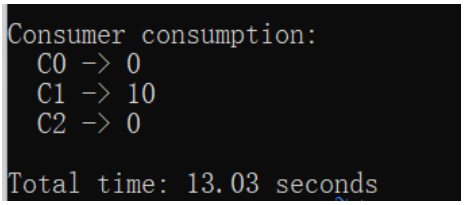
./main-two-cvs-while -p 1 -c 3 -m 3 -C 0,0,0,1,0,0,0:0,0,0,1,0,0,0:0,0,0,1,0,0,0 -l 10 -v -t

```
Consumer consumption:
  C0 -> 0
  C1 -> 0
  C2 -> 10

Total time: 12.03 seconds
```

6.

```
Consumer consumption:
  C0 -> 0
  C1 -> 10
  C2 -> 0

Total time: 13.03 seconds
```

7. The total time does not change.



8. No problem with one producer and one consumer.

9. Single cv might cause all threads (producer and consumers) all end up sleeping, when there are multiple consumers. (P10)

10. With a single producer and consumer, the code works. But with 2 consumers there might be problems. (P8)