Report of Project Checkpoint 3

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1. Screenshots for compilation

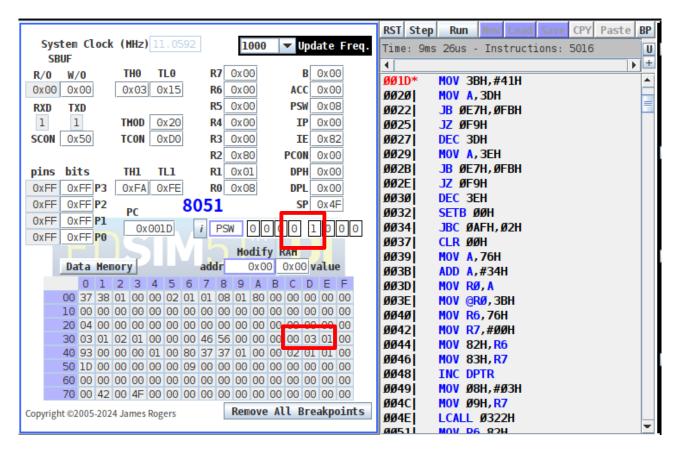
```
misubrian@misubrian-Katana-15-B13VFK:~/OS/project/CP3/misu$ make clean
rm *.hex *.ihx *.lnk *.lst *.map *.mem *.rel *.rst *.sym *.asm *.lk
rm: 無法刪除 '*.ihx': 沒有此一檔案或目錄
rm: 無法刪除 '*.lnk': 沒有此一檔案或目錄
make: *** [Makefile:25: clean] 錯誤 1
misubrian@misubrian-Katana-15-B13VFK:~/OS/project/CP3/misu$ make
sdcc -c testpreempt.c
sdcc -c preemptive.c
preemptive.c:214: warning 85: in function ThreadCreate unreferenced function arg
ument : 'fp'
sdcc -o testpreempt.hex testpreempt.rel preemptive.rel
misubrian@misubrian-Katana-15-B13VFK:~/OS/project/CP3/misu$
```

2. Addresses:

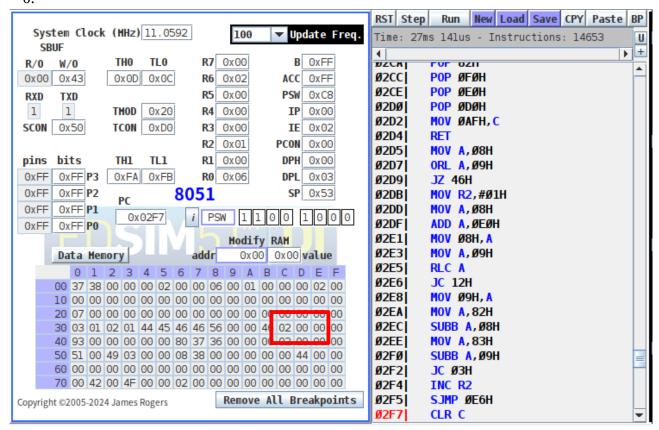
Producer: 0x001D Consumer: 0x007F Semaphore full: 0x3C Semaphore empty: 0x3D Semaphore mutex: 0x3E

(a)

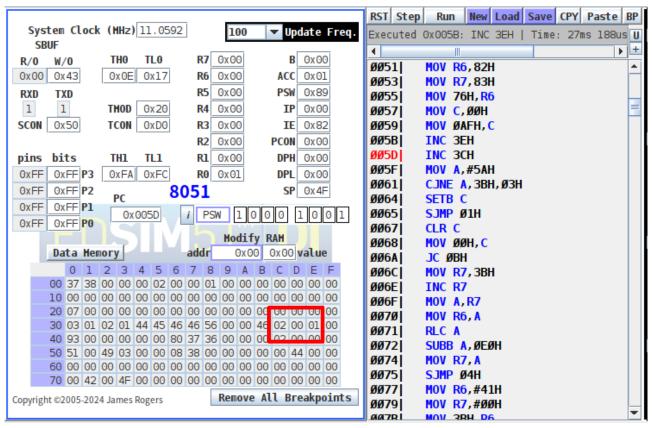
(I) Producer starts running. Initially, full = 0, empty = 3, mutex = 1.



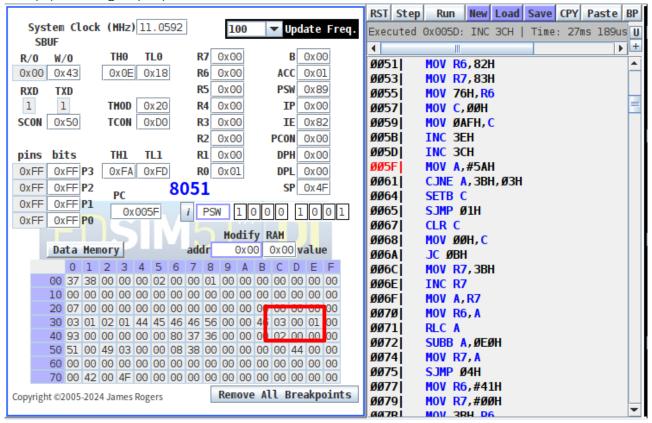
(ii) Producer is in its critical section because mutex = 0. It has gotten out of "wait(empty)", therefore, "empty" has been minus one. Now full = 2, and empty = 0.



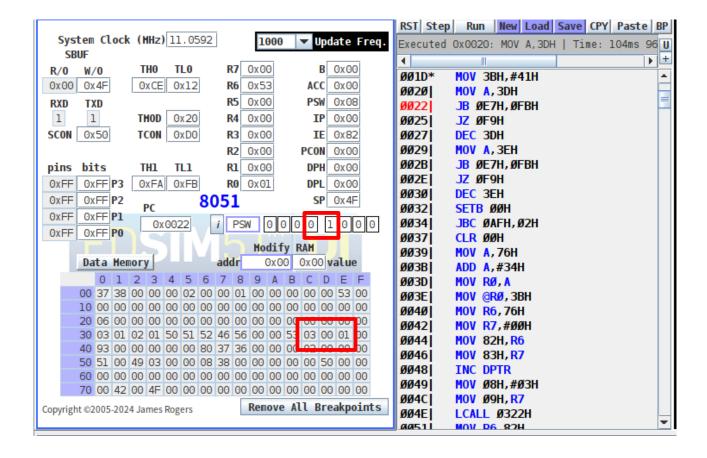
(iii) The mutex has been unlocked.



(iv) After signal(full), full = 3.

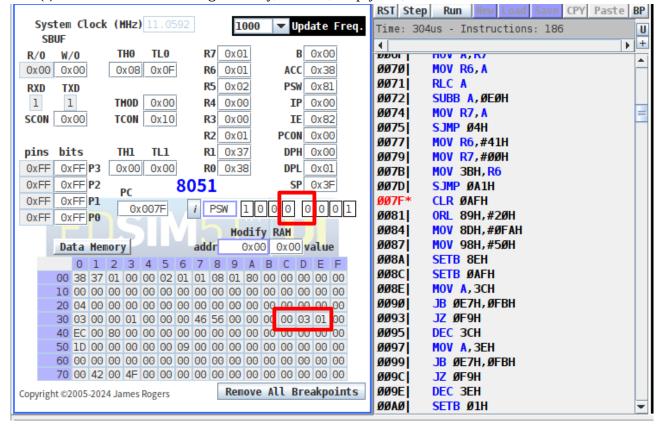


(v) After a while, producer is running now, but it gets stuck due to full = 3, i.e. buffer is full now.



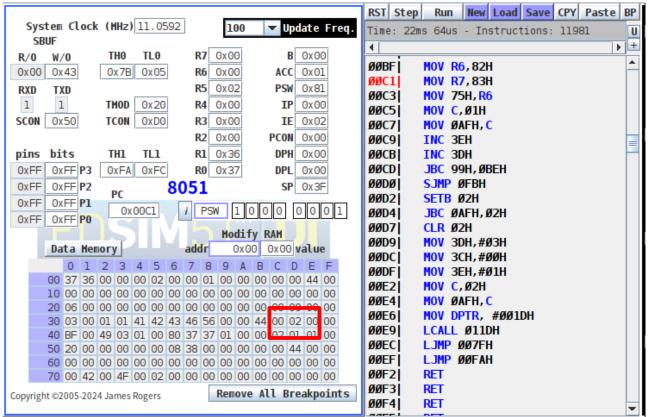
2. (b)

(I) Consumer starts running. Initially, full = 0, empty = 3, and mutex = 1.

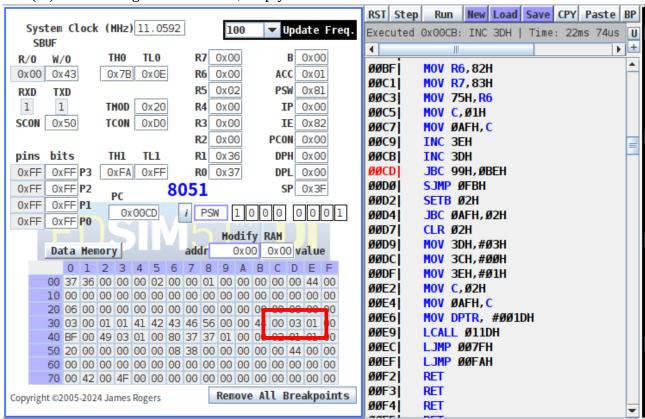


(ii) Consumer is in its critical section because mutex = 0.

It has gotten out of "wait(full)", therefore, full has been minus one. Now full = 0, and empty = 2.



(iii) After exiting critical section, empty becomes 3 and mutex becomes 1.



(iv) After a while, consumer is running but gets stuck, because the buffer is empty now. (empty = 3)

