OS 2022fall 10.13 hw5

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运行环境：LInux (Ubuntu20)

1. **第三十一章**

**（代码详见附件）**

**4、会出现饿死的情况。由于reader-writer.c是读者优先的设置，当读者数量远大于写者时，写者可能饿死。相比于写者，读者不需要锁就能进入临界区，同时只要有一个读者获得锁，其他读者线程就能运行，在某个读者放出锁时获得锁，导致写者无法拿到锁。若读者数量一直大于0，写者就始终无法获取锁。**

**操作代码：./reader-writer.c 5 5 10，以下为结果：**

begin

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

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read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

write 1

write 2

write 3

write 4

write 5

write 6

write 7

write 8

write 9

write 10

write 11

write 12

write 13

write 14

write 15

write 16

write 17

write 18

write 19

write 20

write 21

write 22

write 23

write 24

write 25

write 26

write 27

write 28

write 29

write 30

write 31

write 32

write 33

write 34

write 35

write 36

write 37

write 38

write 39

write 40

write 41

write 42

write 43

write 44

write 45

write 46

write 47

write 48

write 49

write 50

end: value 50

[1] + Done "/usr/bin/gdb" --interpreter=mi --tty=${DbgTerm} 0<"/tmp/Microsoft-MIEngine-In-nj4pscug.saa" 1>"/tmp/Microsoft-MIEngine-Out-dglpr0my.han"

**5、考虑到reader-writer.c中reader可能会一直有读者导致写着无法写入，故再加一个信号量compete\_turn，无论是读者或是写者只有抢到这个锁才能进行读/写，从而避免了饥饿现象的发生。**

**操作代码：./reader-writer-nostarve.c 5 5 10，以下为结果：**

begin

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

read 0

write 1

write 2

write 3

write 4

write 5

read 5

read 5

read 5

read 5

read 5

read 5

read 5

read 5

read 5

read 5

write 6

write 7

write 8

write 9

write 10

read 10

read 10

read 10

read 10

read 10

read 10

read 10

read 10

read 10

read 10

write 11

write 12

write 13

write 14

write 15

read 15

read 15

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read 15

read 15

write 16

write 17

write 18

write 19

write 20

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write 37

write 38

write 39

write 40

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read 40

read 40

read 40

read 40

read 40

read 40

write 41

write 42

write 43

write 44

write 45

read 45

read 45

read 45

read 45

read 45

read 45

read 45

read 45

read 45

read 45

write 46

write 47

write 48

write 49

write 50

end: value 50

[1] + Done "/usr/bin/gdb" --interpreter=mi --tty=${DbgTerm} 0<"/tmp/Microsoft-MIEngine-In-w0gn0xwe.5a2" 1>"/tmp/Microsoft-MIEngine-Out-jpgskko5.oga"