

## ECE-357 Assignment #6 Program Running Samples

Prof. Jeff Hakner

Di (David) Mei

### Problem 1: The Spinlock Mutex

- Program Compiling:

```
gcc lock.c tas.S -o lock
```

- Running Samples:

Setting: number of processes = 6, number of iterations = 1000000

Without spinlock:

```
[Davids-MacBook-Pro:pset6 davidmei$ gcc -o lock lock.c tas.S
[Davids-MacBook-Pro:pset6 davidmei$ ./lock
The last updated value for each process is 433437
The last updated value for each process is 695352
The last updated value for each process is 726053
The last updated value for each process is 773355
The last updated value for each process is 1080793
The last updated value for each process is 1171438
Davids-MacBook-Pro:pset6 davidmei$
```

With spinlock:

```
[Davids-MacBook-Pro:pset6 davidmei$ gcc -o lock lock.c tas.S
[Davids-MacBook-Pro:pset6 davidmei$ ./lock
The last updated value for each process is 1000000
The last updated value for each process is 2000000
The last updated value for each process is 3000000
The last updated value for each process is 4000000
The last updated value for each process is 5000000
The last updated value for each process is 6000000
Davids-MacBook-Pro:pset6 davidmei$
```

## Problem 2~5: The Slab Allocator

- Program Compiling:

```
gcc lock2.c tas.S -o lock2
```

- Running Sample:

Setting: number of processes = 6, number of iterations = 1000000, number of slots=20

With spinlock on slab and anchor node:

(Because there are 6\*1000000 operations in total, outputs are partially shown below.)

```
process(23108) insert 18
process(23108) fails to allocate a slot for 18
process(23108) try to delete 10
process(23108) find node with value 1
process(23108) insert 12
process(23108) try to delete 4
process(23108) find node with value 8
process(23108) insert 17
process(23108) try to delete 1
process(23108) find node with value 8
process(23108) insert 8
process(23108) try to delete 1
process(23108) insert 13
process(23108) try to delete 15
process(23108) try to delete 6
process(23108) cannot find node with value 2
process(23108) insert 14
process(23108) find node with value 6
process(23108) insert 17
last updated values of slots in circular linked list:
value: 4
value: 4
value: 6
value: 7
value: 8
value: 8
value: 8
value: 9
value: 10
value: 11
value: 12
value: 13
value: 13
value: 13
value: 14
value: 17
value: 17
value: 18
value: 20
Davids-MacBook-Pro:pset6 davidmei$ █
```