

CS 537: Intro to Operating Systems (Summer 2017)

Worksheet 9 - Semaphores

July 24th, 2017 (Monday)

The code snippet below uses semaphores to achieve something useful. Can you figure out what? Explain what this code snippet is trying to achieve in your own words.

```
typedef struct _foo_t {
    sem_t lock1;
    sem_t lock2;
    int count;
} foo_t;

void foo_init(foo_t *f) {
    f->count = 0;
    sem_init(&f->lock1, 1); // init value of lock to 1
    sem_init(&f->lock2, 1); // same thing here for lock2
}

void do1(foo_t *f) {
    sem_wait(&f->lock1);
    f->count += 1;
    if (f->count == 1)
        sem_wait(&f->lock2);
    sem_post(&f->lock1);
}

void undo1(foo_t *f) {
    sem_wait(&f->lock1);
    f->count -= 1;
    if (f->count == 0)
        sem_post(&f->lock2);
    sem_post(&f->lock1);
}

void do2(foo_t *f) {
    sem_wait(&f->lock2);
}

void undo2(foo_t *f) {
    sem_post(&f->lock2);
}
```