

8. Q5

```
$ cat test-and-set.s
.var mutex
.var count

.main
.top

.acquire
mov  $1, %ax
xchg %ax, mutex    # atomic swap of 1 and mutex
test $0, %ax       # if we get 0 back: lock is free!
jne  .acquire      # if not, try again

# critical section
mov  count, %ax     # get the value at the address
add  $1, %ax        # increment it
mov  %ax, count     # store it back

# release lock
mov  $0, mutex

# see if we're still looping
sub  $1, %bx
test $0, %bx
jgt  .top

halt
```