

Processes Sharing an OS: Semaphores

- Semaphore == an integer that can only be accessed via two special functions
- Semaphore S=1; // Max number of allowed accessors

1. **wait(S)** (or **P(S)** or **down(S)**):

```
enter() while(1) { // each execution of the while loop is atomic
        if (S > 0) {
            S--;
            break;
        }
    }
```

Each while loop execution and S++ are each **atomic** operations – supported via hardware instructions such as compare-and-swap, test-and-set, etc.

exit() 2. **signal(S)** (or **V(S)** or **up(s)**):

```
S++; // atomic
```