```
typedef struct {
   int value;
   struct process *L;
} semaphore;

void wait(semaphore S) {
   S.value--;
   if (S.value < 0) {
      [add this process to S.L]
      block();
   }

void signal(semaphore S) {
   S.value++;
   if (S.value <= 0) {
      [remove a process P from S.L]
      wakeup(P);
   }
}
```