module BoundedBuffer
    op deposit(typeT), fetch(result typeT);
body
    typeT buf[n];
    int front = 1, rear = 1;
    # local operations used to simulate semaphores
    op empty(), full(), mutexD(), mutexF();
    send mutexD(); send mutexF();
    for [i = 1 to n]  # initialize empty "semaphore"
        send empty();
    proc deposit(item) {
        receive empty(); receive mutexD();
        buf[rear] = item; rear = (rear+1) mod n;
        send mutexD(); send full();
    }
    proc fetch(item) {
        receive full(); receive mutexF();
        item = buf[front]; front = (front+1) mod n;
        send mutexF(); send empty();
    }  
end BoundedBuffer

Figure 8.12  A bounded buffer using semaphore operations.

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