Monitors and One-Way Bridges -- !!non-exclusion!!

```java
monitor Bridge {
    cond northbound, southbound; // conds are waiting stations
    int northOnBridge, southOnBridge;
    procedure enterSouthbound( ) {
        if (northOnBridge>0) wait(southbound);
        southOnBridge++;
    }
    procedure leaveSouthbound( ) {
        southOnBridge--;
        if (southOnBridge==0)
            signal_all(northbound);
    }
    // + northbound versions
    // note: the bridge crossing is not in monitor
}
```

Monitors and One-Way Bridges -- !!impolite!!

```java
monitor Bridge {
    cond northbound, southbound;
    int northOnBridge, southOnBridge;
    procedure enterSouthbound( ) {
        while (northOnBridge>0) wait(southbound);
        southOnBridge++;
    }
    procedure leaveSouthbound( ) {
        southOnBridge--;
        if (southOnBridge==0)
            signal_all(northbound);
    }
    // + northbound versions
    // note: the bridge crossing is not in monitor
}
```
Monitors and One-Way Bridges -- !!too polite -- deadlock!!

```c
monitor Bridge {
    cond northbound, southbound;
    int northOnBridge, southOnBridge;
    procedure enterSouthbound( ) {
        if ((northOnBridge>0) || !empty(northbound))
            wait(southbound);
        southOnBridge++;
    }
    procedure leaveSouthbound( ) {
        southOnBridge--;
        if (southOnBridge==0)
            signal_all(northbound);
    }
    // + northbound versions
    // note: the bridge crossing is not in monitor
}
```

Monitors and One-Way Bridges -- ??just right??

```c
monitor Bridge {
    cond northbound, southbound;
    int northOnBridge, southOnBridge;
    procedure enterSouthbound( ) {
        while ((northOnBridge>0) ||
            ((southOnBridge>0) &&
            !empty(northbound))) wait(southbound);
        southOnBridge++;
    }
    procedure leaveSouthbound( ) {
        southOnBridge--;
        if (southOnBridge==0)
            signal_all(northbound);
    }
    // + northbound versions
    // note: the bridge crossing is not in monitor
}
Monitors and One-Way Bridges -- ??better??

```c
monitor Bridge {
    cond northbound, southbound;
    int northOnBridge, southOnBridge;
    procedure enterSouthbound() {
        if ((northOnBridge>0) || !empty(northbound))
            wait(southbound);
        while (northOnBridge>0) wait(southbound);
        southOnBridge++;
    }
    procedure leaveSouthbound() {
        southOnBridge--;
        if (southOnBridge==0)
            signal_all(northbound);
    }
    // + northbound versions
    // note: the bridge crossing is not in monitor
}
```