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

```
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!!

```
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!!

```
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??

```
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??

```
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
}
```