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 – !!Oops accident again!!

```plaintext
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 – !!too polite – deadlock!!

monitor Bridge {
    cond northbound, southbound;
    int northOnBridge, southOnBridge;

    procedure enterSouthbound( ) {
        while ((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
}
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
}