Problem 1

Part a

```
chan in(int)
chan out1(int)
chan out2(int)

process Partition:
    int v;
    receive in(v)
    while( !empty(in) ):
        int next;
        receive in(next)

        if next <= v:
            send out1(next)
        else:
            send out2(next)
```

We can make the following conclusions about the values present in the values entering and exiting the process:

out1: $i \leq v, \forall i \in \textbf{out1}$ **out2**: $i > v, \forall i \in \textbf{out2}$

in: $v \in \textbf{in} \ \wedge \textbf{in} = \textbf{out1} \cup \textbf{out2}$

Part b

Problem 2

Problem 3

```
chan fromA(A, B, int, int, chan response(bool))

process Server {
    while( (not empty(as)) and (not empty(bs)) ) {
        A a;
        B b;
        int numMetByA,
        int numMetByB,
        chan response;

        receive toServer(a, b, numMet, response)
```

```
            if (numMet
        }
}
```