We want to repeatedly read an input on either channel $c$ or channel $d$, whichever comes first, and write it on channel $e$. At each reading, if input is available on both channels, read either one; if it is available on just one channel, read that one; if it is available on neither channel, wait for the first one and read that one (in case of a tie, read either one).

(a) Write the specification formally, and then write a program.

(b) Prove

$$T_{e \leftarrow c} = \uparrow ((T_{c \leftarrow r} \downarrow (T_{d \leftarrow r} + 1))$$

$$\forall m, n \cdot T_{e \leftarrow c + m + n + 1} \leq (T_{c \leftarrow r} + m) \uparrow (T_{d \leftarrow d} + n) \uparrow (T_{e \leftarrow c + m + n} + 1)$$