

520 Define relation $partmerge: nat \rightarrow nat \rightarrow bin$ as follows:

$$partmerge\ 0\ 0$$

$$partmerge\ (m+1)\ 0 = partmerge\ m\ 0 \wedge \mathcal{M}c_{uc+m} = \mathcal{M}a_{ra+m}$$

$$partmerge\ 0\ (n+1) = partmerge\ 0\ n \wedge \mathcal{M}c_{uc+n} = \mathcal{M}b_{rb+n}$$

$$partmerge\ (m+1)\ (n+1) = partmerge\ m\ (n+1) \wedge \mathcal{M}c_{uc+m+n+1} = \mathcal{M}a_{ra+m} \\ \vee partmerge\ (m+1)\ n \wedge \mathcal{M}c_{uc+m+n+1} = \mathcal{M}b_{rb+n}$$

Now $partmerge\ m\ n$ says that the first $m+n$ outputs on channel c are a merge of m inputs from channel a and n inputs from channel b . Define $merge$ as

$$merge = (a?.\ c!\ a) \vee (b?.\ c!\ b). merge$$

$$\text{Prove } merge = (\forall m. \exists n. partmerge\ m\ n) \vee (\forall n. \exists m. partmerge\ m\ n)$$

no solution given