

Live Sessions with Responses

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(Binary) Session types

- Buyer:

$$\mu t. \oplus \left\{ \begin{array}{l} \text{offer} :!(\text{int}). \&\{ \text{more} : t, \text{ok} : t \}, \\ \text{stop} : t \end{array} \right\}$$

- Seller:

$$\mu t. \& \left\{ \begin{array}{l} \text{offer} :?(\text{int}). \oplus \{ \text{more} : t, \text{ok} : t \}, \\ \text{stop} : t \end{array} \right\}$$

Consider the liveness property “every offer is eventually followed by an ok or a stop”.

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- We propose annotating branching labels in e.g.

$$\mu t. \& \left\{ \begin{array}{l} \text{offer} :?(int). \oplus \{ \text{more} : t, \text{ok} : t \}, \\ \text{stop} : t \end{array} \right\}$$

by *disjunctive responses*:

$$\mu t. \& \left\{ \begin{array}{l} \text{offer}[\text{ok} \vee \text{stop}] :?(int). \oplus \{ \text{more} : t, \text{ok} : t \}, \\ \text{stop} : t \end{array} \right\}$$

Work in progress

- Soundness and Completeness of typing rules
- Complexity - and type inference
- Progress & more general properties
- Extending calculus (parametrized recursion, bounded loops, fairness, time)
- Multiparty Session Types