Type refinement in the abstract

Type systems as categories

Equality of expressions

Pullbacks

Definition: we say that an expression $S$ subtypes a type $A$, written $S \subseteq A$, if $p : S$ is an e-type $S \rightarrow A$ and an e-type $T$. We indicate a typing judgment by writing $S \in T$ or an arrow from $S$ to $T$.

Completeness theorems

Intuitionistic

Equality of expressions

Pullbacks

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Pullbacks

Definition: we say that a type refinement $S \subseteq A$ is just a functor $p : S \rightarrow A$.

Pullbacks

Definition: we say that a type refinement system is just a set $\text{SubSet} \rightarrow \text{Set}$.

Equality of expressions

Pullbacks

Definition: we say that a type refinement system has pullbacks if the pullback of $f \downarrow g$ exists for every expression $f : A \rightarrow B$ and $g : C \rightarrow D$, and is given by $\text{SubSet} \rightarrow \text{Set}$.

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