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1 Notes

– A configuration $\mu \mid e \mid \varepsilon$ is well-typed if the expression e is closed under μ, and we have $e : \tau$ `with` ε according to some derivation.

2 Progress

2.1 Statement

For any well-typed configuration $\mu \mid e \mid \varepsilon$ either:

– e is a value.
– $\mu \mid e \mid \varepsilon \longrightarrow \mu' \mid e' \mid \varepsilon'$, for some configuration $\mu' \mid e' \mid \varepsilon'$.

3 Preservation

3.1 Statement

Suppose the following:

– $\mu \mid e \mid \varepsilon$ is a well-typed configuration.
– $\mu \mid e \mid \varepsilon \longrightarrow \mu' \mid e' \mid \varepsilon'$

Then $\mu' \mid e' \mid \varepsilon'$ is well-typed.

4 Soundness Of Terminating Programs

4.1 Statement

Suppose the following:

– $\mu_1 \mid e \mid \varepsilon_1$ is well-typed.
– $e : \tau$ `with` ε
– $\mu_1 \mid e \mid \varepsilon_1 \longrightarrow_* \mu_2 \mid v \mid \varepsilon_2$

Then $\varepsilon_2 \subseteq \varepsilon$.

5 Soundness Of All Programs

5.1 Statement

Suppose the following:

– $\mu_1 \mid e \mid \varepsilon_1$ is well-typed.
– $e : \tau$ `with` ε
– $\mu_1 \mid e \mid \varepsilon_1 \longrightarrow_* \mu_2 \mid e_2 \mid \varepsilon_2$

Then $\varepsilon_2 \subseteq \varepsilon$.