Contributions

- Formulation of both styles in a common framework
- Comparison
- Principled soundness proofs for both styles of analyses
- Identify weaknesses and propose improved versions

Side-Effecting Equation Systems[1]

Accumulate flow-insensitive information for globals during flow-sensitive analysis of locals

\[
\begin{align*}
\eta &= \text{Let } \sigma' = \ldots \text{ In } \\
&\quad \{ \{g \mapsto (\eta[u])g \mid g \in \ldots \}, \sigma' \}
\end{align*}
\]

Side-Effects

Consider further finite abstraction to exclude more reads

For each global \( g \)
- \( Wg \): Set of locksets held when last writing to \( g \)
- \( Pg \): Set of locksets held since last writing to \( g \)

For each mutex \( a \)
- \( La \): Set of locksets held when last acquiring \( a \)
- \( Va \): Set of globals that must have been written locally since last acquiring \( a \)

Combined

(\( L, V; W, P \))

Lock-Centered

(\( L, V \))

Write-Centered

(\( W, P \))

Miné

Protection-Based

(Vojdani-style)

References


