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Abstract dependences for alarm diagnosis. (English) Zbl 1159.68382

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Summary: We propose a framework for dependence analyses, adapted-among others-to the understanding of static analyzers outputs. Static analyzers like Astrée are sound but not complete; hence, they may yield false alarms, that is report not being able to prove part of the properties of interest. Helping the user in the alarm inspection task is a major challenge for current static analyzers. Semantic slicing, i.e. the computation of precise abstract invariants for a set of erroneous traces, provides a useful characterization of a possible error context. We propose to enhance semantic slicing with information about abstract dependences. Abstract dependences should be more informative than mere dependences: first, we propose to restrict to the dependences that can be observed in a slice; second, we define dependences among abstract properties, so as to isolate abnormal behaviors as source of errors. Last, stronger notions of slicing should allow to restrict slices to such dependences.

For the entire collection see [Zbl 1098.68007].

MSC:

68N15 Theory of programming languages

Software:

ASTREE; Consit; TVLA; CSSV

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