Abstract

The usual post-mortem approach to formal language semantics and verification, where the language is firstly implemented and used in production for many years before a need for formal semantics and verification tools naturally arises, simply does not work anymore. New blockchain languages or virtual machines are proposed at an alarming rate, followed by new versions of them every few weeks, together with programs (or smart contracts) in these languages that are responsible for financial transactions of potentially significant value. Formal analysis and verification tools are therefore needed immediately for such languages and virtual machines. We will present recent academic and commercial results in developing blockchain languages and virtual machines that come directly equipped with formal analysis and verification tools. The main idea is to generate all these automatically, correct-by-construction from a formal language specification.

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Bio

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