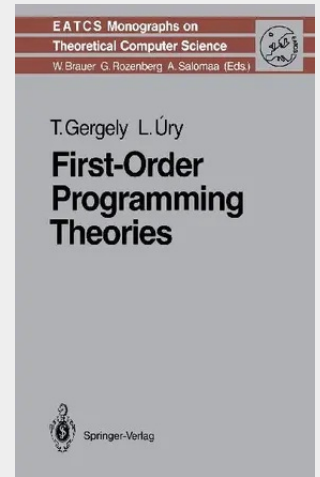


First-Order Programming Theories

This work presents a purely classical first-order logical approach to the field of study in theoretical computer science sometimes referred to as the theory of programs, or programming theory. This field essentially attempts to provide a precise mathematical basis for the common activities involved in reasoning about computer programs and programming languages, and it also attempts to find practical applications in the areas of program specification, verification and programming language design. Many different approaches with different mathematical frameworks have been proposed as a basis for programming theory. They differ in the mathematical machinery they use to define and investigate programs and program properties and they also differ in the concepts they deal with to understand the programming paradigm. Different approaches use different tools and viewpoints to characterize the data environment of programs. Most of the approaches are related to mathematical logic and they provide their own logic. These logics, however, are very eclectic since they use special entities to reflect a special world of programs, and also, they are usually incomparable with each other. This Babel's mess irritated us and we decided to peel off the eclectic components and try to answer all the questions by using classical first-order logic.

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