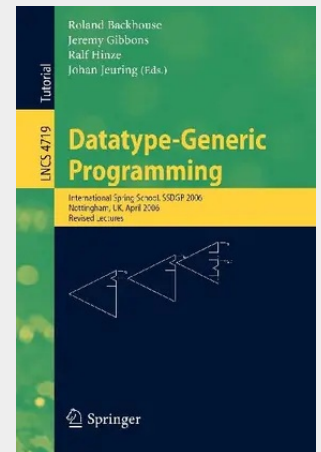


Datatype-Generic Programming

International Spring School, SSDGP 2006, Nottingham, UK, April 24-27, 2006, Revised Lectures

A leitmotif in the evolution of programming paradigms has been the level and extent of parametrisation that is facilitated — the so-called genericity of the paradigm. The sorts of parameters that can be envisaged in a programming language range from simple values, like integers and floating-point numbers, through structured values, types and classes, to kinds (the type of types and/or classes). Datatype-generic programming is about parametrising programs by the structure of the data that they manipulate. To appreciate the importance of datatype genericity, one need look no further than the internet. The internet is a massive repository of structured data, but the structure is rarely exploited. For example, compression of data can be much more effective if its structure is known, but most compression algorithms regard the input data as simply a string of bits, and take no account of its internal organisation. Datatype-generic programming is about exploiting the structure of data when it is relevant and ignoring it when it is not. Programming languages most commonly used at the present time do not provide effective mechanisms for documenting and implementing datatype genericity. This volume is a contribution towards improving the state of the art. The emergence of datatype genericity can be traced back to the late 1980s.

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