

ETYMA: A Framework for Modular Systems*

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Abstract

Modularity, i.e. support for the flexible construction, adaptation, and combination of units of software, is an important goal in many systems. In most cases, however, systems achieve only a few aspects of modularity. The problem can be traced to the inflexibility, or the limited view of modularity taken by the underlying architecture of these systems. As a remedy, we show that the notions fundamental to object-oriented programming, i.e. classes and inheritance, can be formulated as a simple meta-level architecture that can be effectively reused in a wide variety of contexts. We have realized such an architecture as an O-O framework, and constructed two significant and distinct completions of it. Systems based on this framework benefit not only from design and code reuse, but also from the flexibility that the architecture offers. In addition, the architecture represents a unification of the fundamental ideas of several similar but subtly different module systems.

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