Reflective Access Control in Model-Based Information Systems

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Large information systems are now an essential component of our intellectual, economic and social infrastructure. Yet the practical tools used to build and maintain such systems, including object-oriented programming languages, relational databases, and role-based security models, where largely designed with different requirements and platforms in mind. We are currently witnessing a period of intense experimentation to find new approaches to software development that can scale to address these new opportunities and challenges, including model-driven development, alternative storage models, complex design patterns, and dynamic and reflective approaches to code.

In this course I will present a model-based approach to information systems development, with a focus on security policies and access control. The presentation centers on key components of information systems, including user interface, service interfaces, security, workflow, and data modeling. I will present a high-level view of many of the problems that arise in building information systems and outline areas of recent research that seek to address these problems, using domain-specific languages, model interpretation, and program staging.

References

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