

***The University of Alabama
Department of Computer Science
Colloquium Series Speaker***

**Dr. Wolfram Schulte
Microsoft Research**

The Spec# Programming System

**Friday, Sept. 16
11:00a.m., HO 108**

Abstract:

The Spec# programming system is a new attempt at a more cost-effective way to develop and maintain high-quality software. It does so by guaranteeing the consistency of program data structures even in the presence of inter-object relationships, callbacks, and multiple threads.

The Spec# system consists of three components: The Spec# programming language is an extension of the object-oriented language C#. It extends the type system to include non-null types and checked exceptions. It provides method contracts in the form of pre- and postconditions as well as object invariants. The Spec# compiler is integrated into the Microsoft Visual Studio development environment for the .NET platform. The compiler statically enforces non-null types, emits run-time checks for method contracts and invariants, and records the contracts as metadata for consumption by downstream tools. The Spec# static program verifier (codenamed Boogie) generates logical verification conditions from a Spec# program. Internally, it uses an automatic theorem prover that analyzes the verification conditions to prove the correctness of the program or find errors in it.

Wolfram's Bio:

Since 2003 Wolfram Schulte has been the manager of the Foundations of Software Engineering (FSE) group at Microsoft Research in Redmond, Washington, USA. He leads research projects focusing on advanced technologies for software modeling and verification that include Contracts for C# (The Spec# project) and advanced test-generation and verification tools (The Spec Explorer and MUTT project). Wolfram also researched data access integration with C# (The Cw project) and worked with Abstract State Machines. In principle, Wolfram's research concerns the practical application of formal techniques. He has published a variety of papers in the areas of language design, verification, testing, program derivation and compilation. Before joining Microsoft Research in 1999, Wolfram worked at the University of Ulm (1993-1999), at sd&m, a German software company (1992-1993), and at the Technical University Berlin (1987-1992)