Educational Edition

A modern approach to Formal Methods

Used in industry to develop critical software, *Perfect Developer* brings formal methods into the modern world of object-oriented software development. With its ability to import UML models and its generation of ready-to-compile Java, C# and C++, it integrates well with today's software engineering courses. Its powerful automated theorem prover discharges proof obligations without user intervention.

State-based specification

Perfect Developer supports state-based specifications based on preconditions, class invariants and complete postconditions. Abstract data types such as sets, sequences and mappings are provided, allowing specifications to be kept simple. Behavioural properties of the specification can be expressed and the corresponding verification conditions will be generated.

Data and method refinement

Abstract data models can optionally be supplemented or replaced by implementation data. Method specifications can be refined into efficient implementations. Refinements can be verified against the original specifications.

Formally-verified behavioural subtyping

Perfect Developer supports single inheritance with dynamic binding. Verification conditions are generated to ensure that derived types conform to the behaviour defined by their ancestors.

Build and run real programs

Perfect Developer generates ready-to-compile Java, C# or C++. Unrefined abstract data types are directly supported by library classes. Refined and unrefined specifications can be quickly turned into working programs, helping to maintain student motivation.

Powerful automated theorem prover

Perfect Developer uses advanced automated reasoning technology to discharge verification conditions without user interaction. Users do not need a detailed understanding of logic or proof techniques. Human-readable proofs can be output in Tex, HTML or plain text formats.

Easy to learn and use

Perfect Developer uses an easy-to-learn notation based on syntax and concepts drawn from programming languages. Mathematical notation is avoided and the system is easy for ordinary software developers to use.

Free Educational Edition

Perfect Developer Free Edition is a fully-featured, limited capacity version of *Perfect Developer* specially suited to universities. It runs on personal computers under either Windows or Linux, and works with most text editors. It imports models from leading UML tools.

Equipping tomorrow's graduates

With the globalization of the software development market, tomorrow's graduates will need tomorrow's skills. Traditional software development methods are failing to cope with ever-increasing project size and cannot deliver the security guarantees required in many applications. Modern, high-productivity formal methods provide the way forward.

Features

Object oriented foundation
- Compatible with modern methods of software development and UML visualization tools
- Higher productivity
- Facilitates re-use

Unified specification and programming language based on programming language syntax
- Easy for developers to learn
- No semantic gap between specification and programming

"Verified Design By Contract" paradigm
- Builds on "Design By Contract" paradigm already familiar to many developers

Automatic refinement
- Many specifications can be refined to code automatically by the system
- Fully functional prototypes can be rapidly generated

Powerful automated reasoning engine for theorem proving
- Users do not need to understand proof techniques or mathematical notation
- No need to develop proofs manually

Choice of output language
- Java 1.5/1.6
- C# 2.0
- ISO C++

Technical Specifications

Development platform requirements
PC with Intel Pentium, AMD Athlon or compatible processor and 1Gb or more main memory.

Windows XP, Vista or 7, or Linux operating system.

Text editor (syntax configuration files supplied for TextPad 5, Multi-Edit 2008, Crimson,, XEmacs, Vim and Kate).

Java, C# or C++ compiler (e.g. Sun Java SDK 1.6, gcc 4.3, Visual C# or C++ Express Edition).

Output
C++ code to ISO/IEC 14882:1998 specification.

C# 2.0 code to ISO/IEC 23270:2006 specification.

Java code to Sun Microsystems Inc. Java Language Specification, third edition (J2SE 1.5/1.6 compatible).

About Escher Technologies

Escher Technologies was founded in 1995 to research and develop leading-edge software development technology.

Our mission is to raise the quality and reliability of software to a level where even minor software bugs are an exceptional occurrence rather than the norm.

Our research and development team maintains close links with the automated reasoning community in leading universities worldwide.

For more information visit **www.eschertech.com** or email **education@eschertech.com**

PERFECT DEVELOPER
Making software bugs extinct!

ESCHER TECHNOLOGIES