Teaching Programming with **DrJava**

Problem: Complex Development Environments
- Confusing interfaces, often huge and buggy
- Code generation: ineffective for teaching students

Solution: Simplicity & Interaction
- DrJava: simple to use, stable, and small
- Powerful, intuitive features
- Users interact with the code

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Support for Unit Testing (JUnit)

- Run a set of tests with the Test button
- Highlights tests that fail
- Encourages students to write tests
- Useful for grading projects

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Integrated Debugger

- Complements the Interactions Pane
- Tracks down bugs
- Useful for even advanced programmers
- Set Breakpoints
- Step through code
- Watch values

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Intuitive and Interactive

- Simple Toolbar
- Syntax Highlighting
- Automatic Indenting
- Brace Matching

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Interactions Pane:
- Evaluate expressions and statements on the fly
- Create objects, call methods
- Test program behavior
- Experiment with new classes and libraries

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Integrated Compiler:
- Highlights lines with complex errors
- Supports compiling with generics (J2 or JSR-14)

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Future Plans:
- Language Levels: simple subsets of Java
- View Classes as UML Diagrams

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Problem: Students are not prepared for Production Programming
- Assignments are written and forgotten
- No real customers to support
- No project maintenance

Solution: Extend DrJava as Course Project
- Students add features to DrJava in Software Engineering course
- Experienced TAs transfer knowledge, manage projects

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Extreme Programming

Fully Unit Tested
- Unit Tests keep DrJava stable, reliable
- Students can safely change the code: Tests are a safeguard

Active Customer Feedback
- Students themselves are customers (Users of DrJava)
- Used by universities and developers around the world
- Over 12,000 downloads in a year
- Students respond to feedback:
  - Feature Requests
  - Bug Reports

Required Pair Programming
- Better design, fewer bugs
- Knowledge transfer among students

Frequent Releases
- Students get feedback as course progresses

Leverage Existing Work:
- Ant:	Build Scripting Tool
- JUnit: Unit Test Framework
- DynamicJava: Java Interpreter

Students get experience with a production environment!

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DrJava is available at [http://drjava.org](http://drjava.org)