Tools

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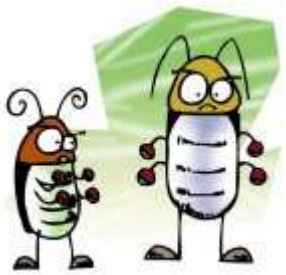
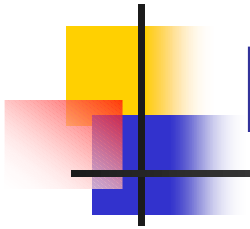
Tools

- CVS
- FogBUGZ (Bug Tracking)
- Unit Testing (JUnit, Jakarta Cactus)
- Catalyst Web Tools (BB and Surveys)
- Mailman (E-mail Lists)
- Ant (Build File Languages)
- Scripting Languages
- Shells
- Editors
- Code Metrics

FogBUGZ



- http://www.fogcreek.com/FogBUGZ/
- "At any given time, **every case is assigned to one person** who must resolve it or forward it to someone else.
- Cases can be **prioritized, documented, sorted, discussed, edited, assigned, estimated, searched,** and **tracked**."



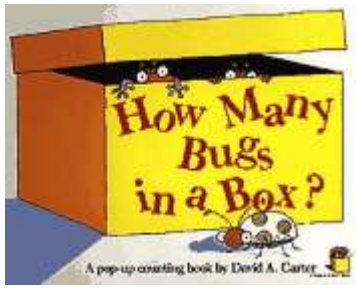
FogBUGZ – Example Case

- “A tester finds a bug, enters it, and assigns it to the development manager.
- The development manager assigns it to the programmer who is responsible for that area of the code.
- The programmer fixes it, and assigns it back to the tester to check that it's really fixed.
- The tester confirms that it's fixed and closes the bug.”

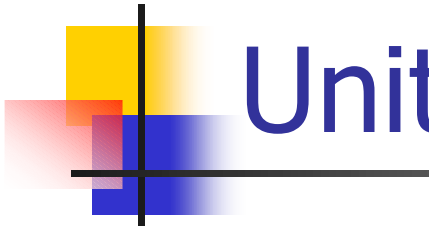
FogBUGZ - Demonstration

- http://trial.fogbugz.com/

Debugging



- The tester needs to document actions that trigger bugs very clearly; otherwise you will need to interview the bug reporter in order to understand the problem, which takes time.
- You need to test a multitude of cases, even those that seem unlikely – if it is possible, then someone will probably find it (better you than a customer).
- Traces can be written to a file.
- Explain the code to someone else.
- Assume that your code is broken before blaming the system.



Unit Testing

- JUnit
  - Regression Testing
  - http://www.junit.org
- Artima SuiteRunner
  - Conformance Testing
  - http://www.artima.com/suiterunner/tutorial.html
- Jakarta Cactus (Servlets)
  - Extends JUnit and uses Ant
  - http://jakarta.apache.org/cactus/

Catalyst Web Tools

- EPost – online discussion board
- QuickPoll – one question survey
- WebQ – full survey

- http://catalyst.washington.edu/home.html

UW Mailman

- E-mail Lists

- http://www.washington.edu/computing/mailman/

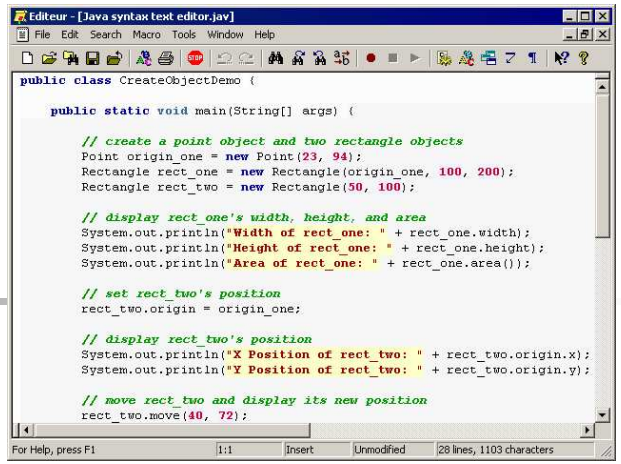
Scripting and Code Generators

- Scripting can be used to quickly implement tasks that could take much longer using a conventional language.
- Examples: Perl, awk, sed, Python, Tcl
- Shell Scripts (bash, csh, etc.)
- Code Generators
  - Good for making tables.
  - Good for reducing work.
  - Bad if not understood.

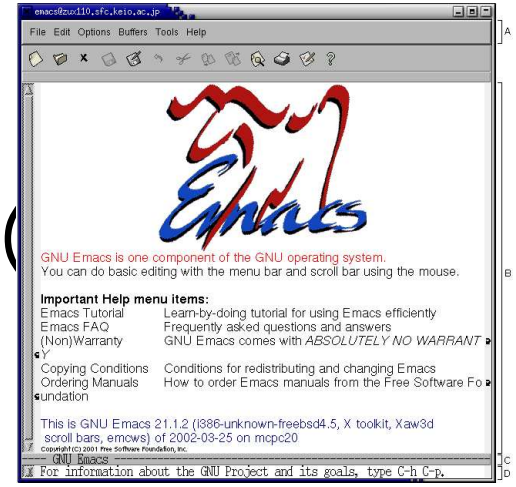
Plain Text

- Easier to read and interpret when the original software application is lost.
- Easier to manipulate and test.
- Large (but can be compressed)
- Modifiable with languages like Perl

Editors

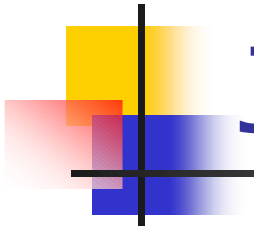


- Configurable
  - Custom looks, all keyboard interface
- Extensible
  - Works with all languages
- Programmable
  - Modifiable through programming (
- Emacs, VI, Eclipse, jEdit, etc?
- Do we believe this?



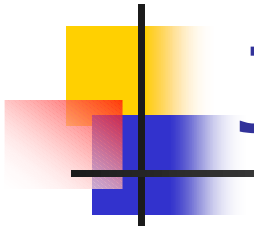
Code Metrics

- JavaNCSS
  - http://www.kclee.com/clemens/java/javancss/
- JDepend
  - http://www.clarkware.com/software/JDepend.html



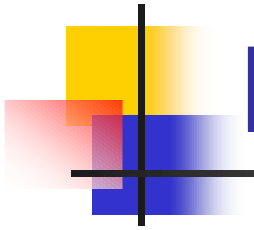
JavaNCSS Metrics

- Non Commenting Source Statements (NCSS).
- Cyclomatic Complexity Number (McCabe metric).
- Packages, classes, functions and inner classes are counted.
- Number of formal Javadoc comments per class and method.



JDepend Metrics

- **CC** - Concrete Class Count
- **AC** - Abstract Class (and Interface) Count
- **Ca** - Afferent Couplings (Ca)
- **Ce** - Efferent Couplings (Ce)
- **A** - Abstractness (0-1)
- **I** - Instability (0-1)
- **D** - Distance from the Main Sequence (0-1)
- **V** - Volatility (0-1)
- **Cyclic** - If the package contains a dependency cycle



Project Comments

- You may be using an emulator, but don't make absurd design decisions unless you can justify them.
- We expect you to use some kind of bug tracking.
- We expect you to use CVS or something similar.
- Why? Well, don't you want to learn these tools in this class? ☺ Don't wait for your job.