Software Agitation:
Your Own Personal Code Reviewer

Introduction:

'Software Agitation' refers to the process of exercising your code by automatically creating dynamic test cases, synthesizing sets of variable input data against such test cases, and analyzing the results.

'Agitation' provides a unique interactive understanding of code behavior as a Developer writes or modifies Java classes or methods.

To fully and completely unit test code, every line and every branch outcome must be tested. That is a daunting problem. It's simply not practical, and too time consuming, to create such exhaustive tests manually, even with the assistance of, and collaboration with, code review peers… who have their own time constraints and deadlines.

How can AgitarOne help?

Code review responsibilities include answering the following diagnostics:

1. Is the code an accurate representation of the requirements/design?
2. Does the code contain coding errors (problems with the use of the programming language)?

While area one may still be best left to the human eye, area two is where Agitation using AgitarOne - *Agitator*® technology can stand in as your own Personal Code Reviewer.

Agitator usually provides the greatest value when you use it at the start of a project. It helps you debug your code while you write it – a benefit that no other existing Java Testing tool can claim. *Agitator* can also be extremely beneficial when run on legacy code - even code that has been reviewed by other developers and deemed to be "sufficient" and "properly written".

An Example:

Take this snippet of Java code, one simple method in one class of a large legacy project:

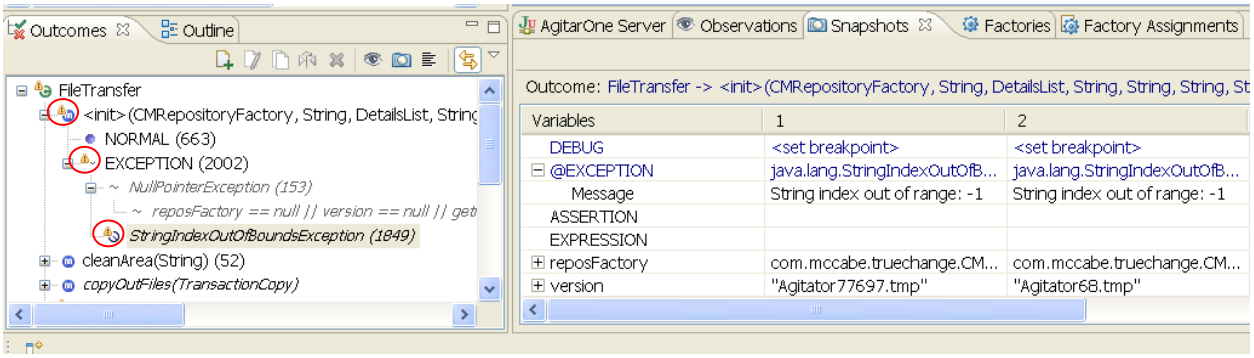
```
public FileTransfer(CMRepositoryFactory reposFactory,
                                        String version,
                                        DetailsList getFilesList,
                                        String workDir,
                                        String LM,
                                        String reposName,
                                        String userName,
                                        String noproj) {

    this.reposFactory = reposFactory;
    this.version = version;
    this.getFilesList = getFilesList;
    this.workDir = workDir;
    this.LM = LM;
    this.userName = userName;
    this.reposName = reposName;
    this.noproj = noproj;
    // if noproj == false, need to create the project directory
    if (this.noproj.equals("false")) {
        String project = version.substring(0, version.indexOf("_"));
        File fWorkDir = new File(workDir, project);
        this.workDir = fWorkDir.getAbsolutePath();
    }
    String hDir1=workDir.concat(net.sourceforge.cruisecontrol.sourcecontrols.tool.hiddenDirName);
    File fHiddenDir1 = new File(hDir1, reposName);
    fHiddenDir = new File(fHiddenDir1, version);

}
```

This snippet seems fairly simple with not really much going on other than setting many global variables. Accordingly, during the code review, the code review team took a quick look and said it looks “OK”, and moved on to more complex and interesting parts of the project.

Then *Agitator* was applied to this class. See what is observed. In fact, *Agitator* uncovers something unexpected. See the circled symbols below in the partial screen shot of the AgitarOne perspective in Eclipse.



We see in the Outcomes, after the code was Agitated, that many test cases that AgitarOne ran against this method during the Agitation process caused “StringIndexOutOfBoundsException”. Now, maybe a real sharp developer should have looked at the code and thought of that at the time. But, given the time constraints and size of the project, this error was missed during the peer Code Review. Good catch AgitarOne!

The code was patched and new versions built with the fix. If Agitation had been used while the code was being first written, this problem would never have made it out the door to your customers

Conclusion:

AgitarOne - *Agitator* acts like Your Own Personal Code Reviewer – helping you uncover errors that might otherwise go unnoticed.

Additional Note:

AgitarOne - *Agitator* also comes with a code rules tool, which can be used to identify potential problems relative to hundreds of user-configurable and user-created code rules.