PMD

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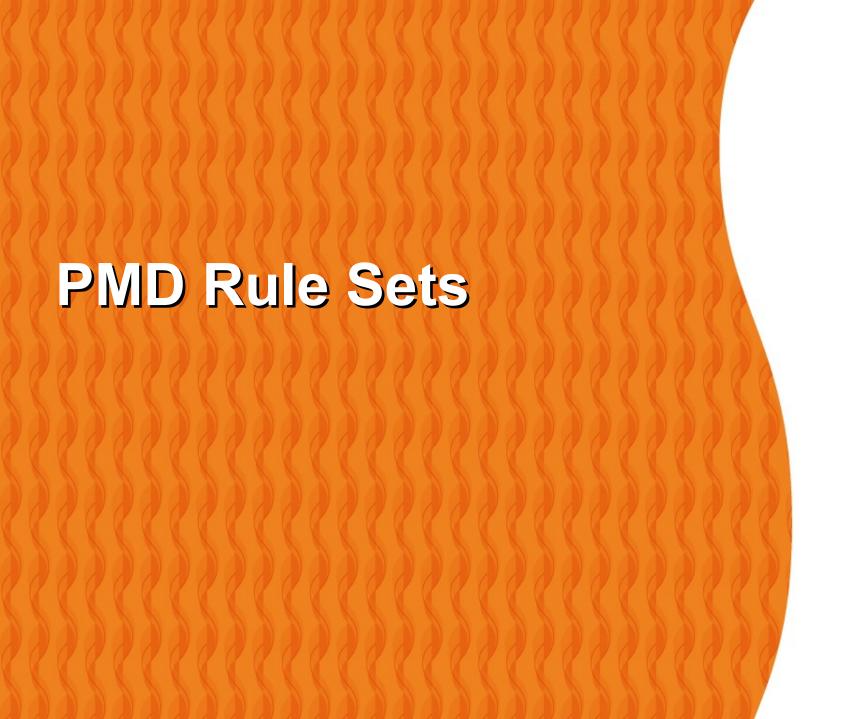**www.jPassion.com**
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Topics

- What is & Why PMD?
- PMD Rule Sets
- How to get started
- Integration with other tools
- Best practices

What is & Why PMD?

What is PMD?

- PMD is a static Java source code analysis tool - it checks your code for
  - > unused fields
  - > empty try/catch/finally/if/while blocks
  - > unused method parameters
  - > etc.
- Based on a code ruleset
  - > Unused code rules (represented by class UnusedPrivateFieldRule.java) – checks unused private field, unused local variable, unused private method, unused parameter
  - > Many ready-to-use rulesets
  - > You can create your own ruleset

PMD Rule Sets

Ready to use Rulesets (1)

- Basic JSF rules
- Basic JSP rules
- Basic rules
- Braces rules
- Code size rules
- Design rules
- Import statement rules
- J2EE rules
- JavaBean rule
- JUnit rules
- Java logging rules

Ready to use Rulesets (2)

- Optimization rules
- Strict Exception rules
- String and StringBuffer rules
- Security code guidelines
- Type resolution rules
- Unused code rules

Understanding these rules teaches you a good coding practice!

Basic Rules Examples (1)

- EmptyCatchBlock
  - > Empty Catch Block finds instances where an exception is caught, but nothing is done. In most circumstances, this swallows an exception which should either be acted on or reported
- JumbledIncrementer
  - > Avoid jumbled loop incrementers - it's usually a mistake, and it's confusing even if it's what's intended
- ForLoopShouldBeWhileLoop
  - > Some for loops can be simplified to while loops - this makes them more concise
- UnnecessaryConversionTemporary
  - > Avoid unnecessary temporaries when converting primitives to Strings

Basic Rules Examples (2)

- OverrideBothEqualsAndHashcode
  - > Override both public boolean Object.equals(Object other), and public int Object.hashCode(), or override neither
- ReturnFromFinallyBlock
  - > Avoid returning from a finally block - this can discard exceptions
- EmptyStaticInitializer
  - > An empty static initializer was found
- UnconditionalIfStatement
  - > Do not use "if" statements that are always true or always false
- BooleanInstantiation
  - > Avoid instantiating Boolean objects; you can reference Boolean.TRUE, Boolean.FALSE, or call Boolean.valueOf() instead

Basic Rules Examples (3)

- UselessOperationOnImmutable
  - > An operation on an Immutable object (String, BigDecimal or BigInteger) won't change the object itself. The result of the operation is a new object. Therefore, ignoring the operation result is an error.
- AvoidThreadGroup
  - > Avoid using java.lang.ThreadGroup; although it is intended to be used in a threaded environment it contains methods that are not thread safe.
- BrokenNullCheck
  - > The null check is broken since it will throw a NullPointerException itself.

How to Get Started

Steps for Getting Started

- Command line
  - > Download PMD from PMD website (http://sourceforge.net/projects/pmd/files/pmd/4.3/pmd-bin-4.3.zip/download)
  - > Run the pmd command
- IDE environment (recommended)
  - > Install PMD plug-in

Integration with other Tools

Integration with other tools

- Ant
- Maven
- IDE
  - > Eclipse, NetBeans, IntelliJ IDEA, JDeveloper, etc
- Continuous Integration Tool
  - > Hudson, Jenkins
- Continuous Inspection Tool
  - > Sonar

Maven Support - report

- To include the mvn report in the project reports section add the following lines under the reports element in your pom.xml:

```
<project>
  ...
   <reporting>
    <plugins>
     <plugin>
       <groupId>org.apache.maven.plugins</groupId>
       <artifactId>maven-pmd-plugin</artifactId>
     </plugin>
    </plugins>
   </reporting>
  ...
 </project>
```

Maven Support - manual

- To run PMD on a Maven project without adding it as a report, simply run

  mvn pmd:pmd

- The PMD plugin writes the report in XML which will then be formatted into more readable HTML.

PMD Best Practices

Integration with other tools

- Choose the rules that are right for you
  - > Running every ruleset will result in a huge number of rule violations, most of which will be unimportant.
  - > Start with some of the obvious rulesets - just run unusedcode and fix any unused locals and fields. Then, run basic and fix all the empty if statements and such-like.
- Use PMD with IDE
  - > Using PMD within your IDE is much more enjoyable than flipping back and forth between an HTML report and your IDE. Most IDE plugins have the "click on the rule violation and jump to that line of code" feature

Thank you!

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