Implementation Smell

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| Smell Name | Coding Rule | Tool |
| Inconsistent Naming Convention | Local Variable Naming Convention / Local Variable Name | PMD / CheckStyle |
|  | Formal Parameter Naming Convention | PMD |
|  | Method Naming Convention / Method Name | PMD / CheckStyle |
|  | Class Naming Convention | PMD |
|  | GenericsNaming | PMD |
|  | AbbreviationAsWordInName | CheckStyle |
|  | AbstractClassName | CheckStyle |
|  | CatchParameterName | CheckStyle |
|  | ConstantName | CheckStyle |
|  | IllegalIdentifierName | CheckStyle |
| Excessive Complex | Simplify Boolean Expression | CheckStyle |
|  | Simplify Conditional | PMD |
|  | Simplify Boolean Return | PMD/CheckStyle |
|  | Simplified Ternary | PMD |
|  | Line Length | CheckStyle |
|  | Method Length/Long Method | CheckStyle / DesigniteJava |
|  | Excessive Parameter List | PMD / DesigniteJava |
| Redundancy | Redundant Import | CheckStyle |
|  | Redundant Modifier | CheckStyle |
|  | Copy Paste Detector | PMD |
| Incompleteness | Missing Switch Default | CheckStyle |
|  | Todo Comment | CheckStyle |
|  | Empty Control Statement | PMD |
|  | Empty Catch Block | PMD / CheckStyle |
|  | EmptyBlock | CheckStyle |
| Improper Alignment and placement | Indentation | CheckStyle |
|  | FileTabCharacter | CheckStyle |
|  | NeedBraces | CheckStyle |
|  | UselessParatheses | PMD |
|  | LeftCurly | CheckStyle |
|  | RightCurly | CheckStyle |
|  | ParenPad | CheckStyle |
|  | MethodParamPad | CheckStyle |
|  | Variable Declaration Usage Distance | CheckStyle |
|  | Declaration Order | CheckStyle |
| Magic Number | Magic Number | CheckStyle |
| Dead Code | Unused Formal Parameter | PMD |
|  | Unused Local Variables | PMD / CheckStyle |
|  | Unused Private Fields | PMD |
|  | Unused Private Method | PMD |
|  | Unused Imports | CheckStyle |
| Resource Handling | Close Resource | PMD |
|  | Avoid Instantiating Objects In Loops | PMD |
| Documentation | Comment Required | PMD |
|  | Comment Size | PMD |
|  | Comment Content | PMD |
|  | Javadoc Method | CheckStyle |
|  | Javadoc Type | CheckStyle |
|  | Missing Javadoc Package | CheckStyle |
|  | Javadoc Variable | CheckStyle |

Design Smell

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| --- | --- | --- |
| Modularity | God Class | PMD |
|  | Data Class | PMD |
|  | Too Many Methods | PMD |
|  | Too Many Fields | PMD |
|  | Use Utility Class | PMD |
|  | Hide Utility Class Constructor | CheckStyle |
|  | Broken Modularization | DesigniteJava |
|  | Cyclically-dependent Modularization | DesigniteJava |
|  | Hub-like Modularization | DesigniteJava |
|  | Insufficient Modularization | DesigniteJava |
|  | Law of Demeter | PMD |
|  | Coupling Between Objects | PMD |
|  | Class Fan Out Complexity | CheckStyle |
| Encapsulation | Visibility Modifier | CheckStyle |
|  | Excessive Public Count | PMD |
|  | Deficient Encapsulation | DesigniteJava |
|  | Final Parameters | CheckStyle |
|  | Final Class | CheckStyle |
|  | Hidden Field | CheckStyle |
|  | Unexploited Encapsulation | DesigniteJava |
| Hierarchy | Broken Hierarchy | DesigniteJava |
|  | Cyclic Hierarchy | DesigniteJava |
|  | Deep Hierarchy | DesigniteJava |
|  | Missing Hierarchy | DesigniteJava |
|  | Multipath Hierarchy | DesigniteJava |
|  | Rebellious Hierarchy | DesigniteJava |
|  | Wide Hierarchy | DesigniteJava |
|  | Dependency Cycles between Packages/Subsystems | DesigniteJava |
| Abstraction | Imperative Abstraction | DesigniteJava |
|  | Multifaceted Abstraction | DesigniteJava |
|  | Unnecessary Abstraction | DesigniteJava |
|  | Unutilized Abstraction | DesigniteJava |
| Cyclomatic Complexity | Cyclomatic Complexity | PMD |
| Cognitive Complexity | Cognitive Complexity | PMD |