Assignment 1

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# Sonarlint Analysis

## A.1.1

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **S-Number** | **Description** | **Type** | **Severity** | **Number of Violations** |
| S2189 | Loops should not be infinite | Bug | Blocker | 1 |
| S2699 | Tests should include assertions | Code smell | Blocker | 1 |
| S1186 | Methods should not be empty | Code smell | Critical | 2 |
| S1948 | Fields in a "Serializable" class should either be transient or serializable | Code smell | Critical | 1 |
| S2479 | Whitespace and control characters in literals should be explicit | Code smell | Critical | 4 |
| S3252 | "static" base class members should not be accessed via derived types | Code smell | Critical | 1 |
| S3776 | Cognitive Complexity of methods should not be too high | Code smell | Critical | 1 |
| S106 | Standard outputs should not be used directly to log anything | Code smell | Major | 22 |
| S125 | Sections of code should not be commented out | Code smell | Major | 4 |
| S1066 | Collapsible "if" statements should be merged | Code smell | Major | 2 |
| S1161 | "@Override" should be used on overriding and implementing methods | Code smell | Major | 1 |
| S2142 | "InterruptedException" should not be ignored | Bug | Major | 1 |
| S2589 | Boolean expressions should not be gratuitous | Code smell | Major | 2 |
| S4973 | Strings and Boxed types should be compared using "equals()" | Bug | Major | 1 |
| S120 | Package names should comply with a naming convention | Code smell | Minor | 6 |
| S1126 | Return of boolean expressions should not be wrapped into an "if-then-else" statement | Code smell | Minor | 1 |
| S1130 | "throws" declarations should not be superfluous | Code smell | Minor | 1 |
| S1612 | Lambdas should be replaced with method references | Code smell | Minor | 1 |
| S1643 | Strings should not be concatenated using '+' in a loop | Code smell | Minor | 1 |
| S2160 | Subclasses that add fields should override "equals" | Code smell | Minor | 1 |
| S2272 | "Iterator.next()" methods should throw "NoSuchElementException" | Bug | Minor | 1 |

## A.1.2

**S106 - Standard outputs should not be used directly to log anything**

This warning has the highest frequency out of all warnings while also having major severity.

Text

Description automatically generated

**S2479 - Whitespace and control characters in literals should be explicit**

This has the highest frequency out of all critical warnings.

Text

Description automatically generated

The affected code fragments are located in the SQL connection manager and can be found in strings that are used to hold multi-line SQL queries. Since SQL queries require specific formatting, the code attempts to do so by concatenating strings and using newline characters.

**S2189 - Loops should not be infinite**

## A.1.3

# PMD Analysis

## A.1.4

|  |  |  |  |
| --- | --- | --- | --- |
| **PMD rule** | **Priority** | **Category** | **Number of Violations** |
| ClassWithOnlyPrivateConstructorsShouldBeFinal | High(1) | Design | 1 |
| UncommentedEmptyMethodBody | Medium(3) | Documentation | 3 |
| ImplicitSwitchFallThrough | Medium(3) | Error prone | 1 |
| ForLoopCanBeForeach | Medium(3) | Best practices | 1 |
| LiteralsFirstInComparisons | Medium(3) | Best practices | 2 |
| CompareObjectsWithEquals | Medium(3) | Error prone | 1 |
| UseEqualsToCompareStrings | Medium(3) | Error prone | 1 |
| CloseResource | Medium(3) | Error prone | 2 |
| SimplifyBooleanReturns | Medium(3) | Design | 1 |
| UnnecessaryImport | Medium low(4) | Code style | 1 |

## A.1.5

ClassWithOnlyPrivateConstructorsShouldBeFinal

UncommentedEmptyMethodBody

## A.1.6

# CodeQL Analysis

## A.1.7

High severity: Query built by concatenating with a possibly-untrusted string

Error severity: No clone method

Warning severity: Reference equality test on strings

Note severity: Inner class could be static

# Comparison

## A.1.8

# User Defined Queries

## A.1.9

## A.1.10

## A.1.11

## A.1.12

## A.1.13