Static Code Review Report – PMD Analysis

This report summarizes the results of static code analysis performed using the PMD plugin in IntelliJ IDEA. The goal was to detect code quality issues, measure structural metrics, and provide recommendations for improving maintainability, readability, and correctness.

Summary Metrics

Metric	Value
Total Files Analyzed	15
Total Violations	338
Rule Sets Used	8
Code Size Violations	134
Documentation Violations	125
Best Practices Violations	39
Design Violations	24
Error Prone Violations	9
Multithreading Violations	7

Key Findings:
• The majority of issues come from Code Size and Documentation categories.
• Several design issues indicate tight coupling and large monolithic classes.
• Mutable static state and Law of Demeter violations pose architectural concerns.
• Error-prone issues like null assignments and unclosed resources can cause runtime issues.
• Multithreading findings suggest unsafe shared state.

Recommendations

Recommendations:
1. Refactor classes with TooManyMethods and TooManyFields to reduce complexity.
2. Remove or rewrite mutable static state for thread safety.
3. Improve documentation coverage across all modules.
4. Clean unused fields, parameters, and private methods.
5. Replace printStackTrace with structured logging.
6. Introduce helper methods to break down long methods.