Static Analysis Report
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CS 576

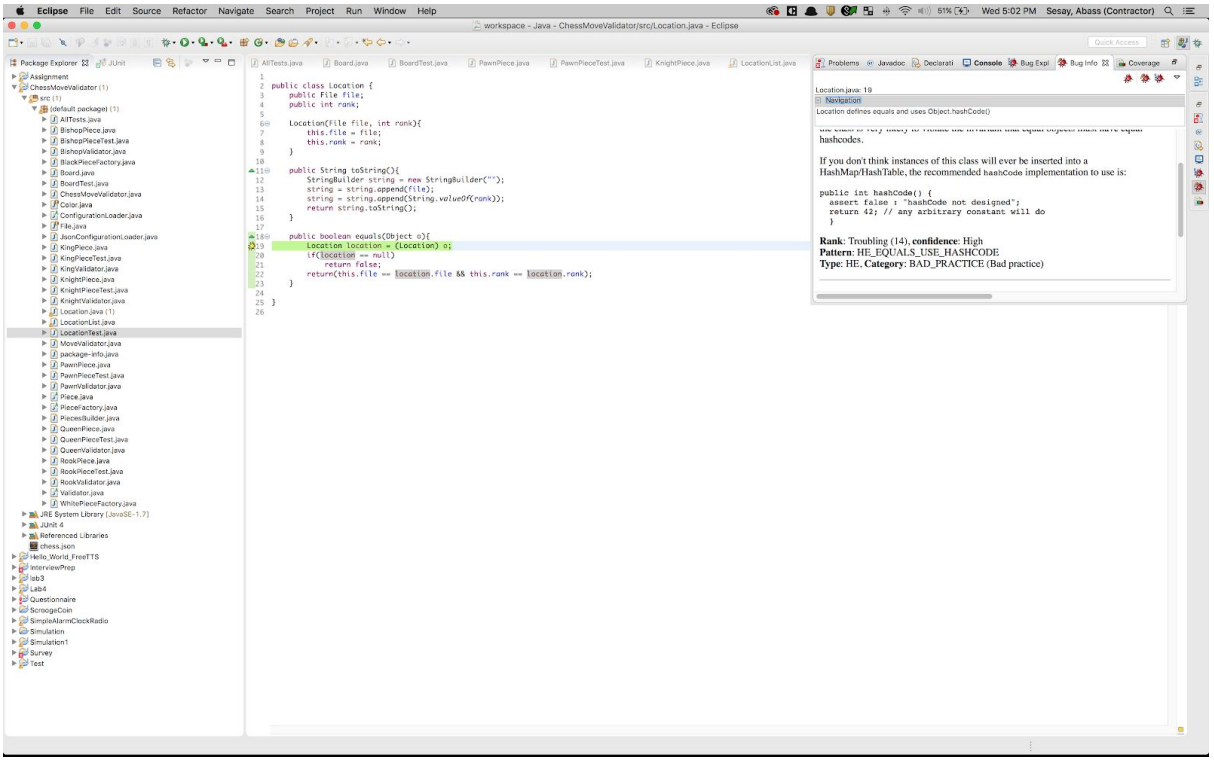
Tools used

FindBugs - Used to identifies bugs within the codebase.

EclEmma - JaCoCo Code coverage tool.

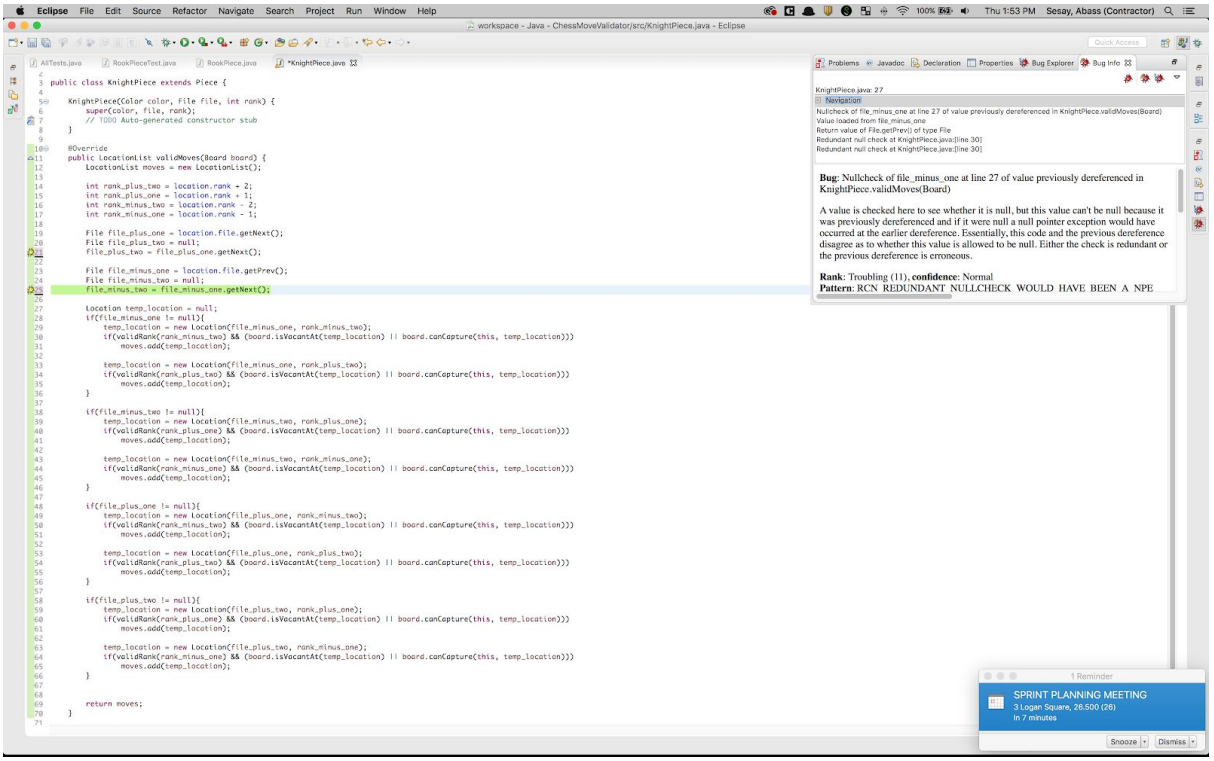
Codacy - automated code analysis/quality tool that helped with cyclomatic complexity, duplication and code unit test coverage changes in every commit.

FindBugs - Used to identifies bugs within the codebase.

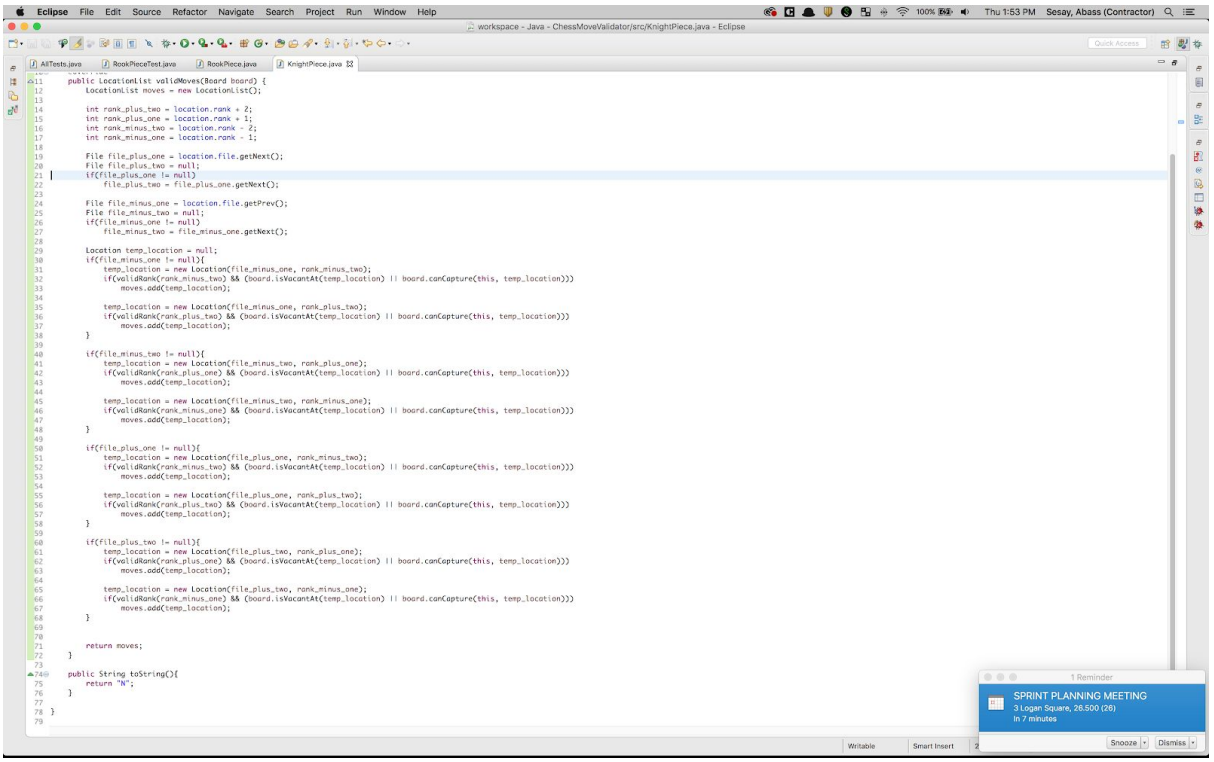


Above is an example of an error found by FindBugs. I override the equals method of the Location class but did not override the hashCode method. This is a bug that would create issue if I was to use Location in a HashMap or HashTable. This issue was fixed by overriding the HashCode functions.

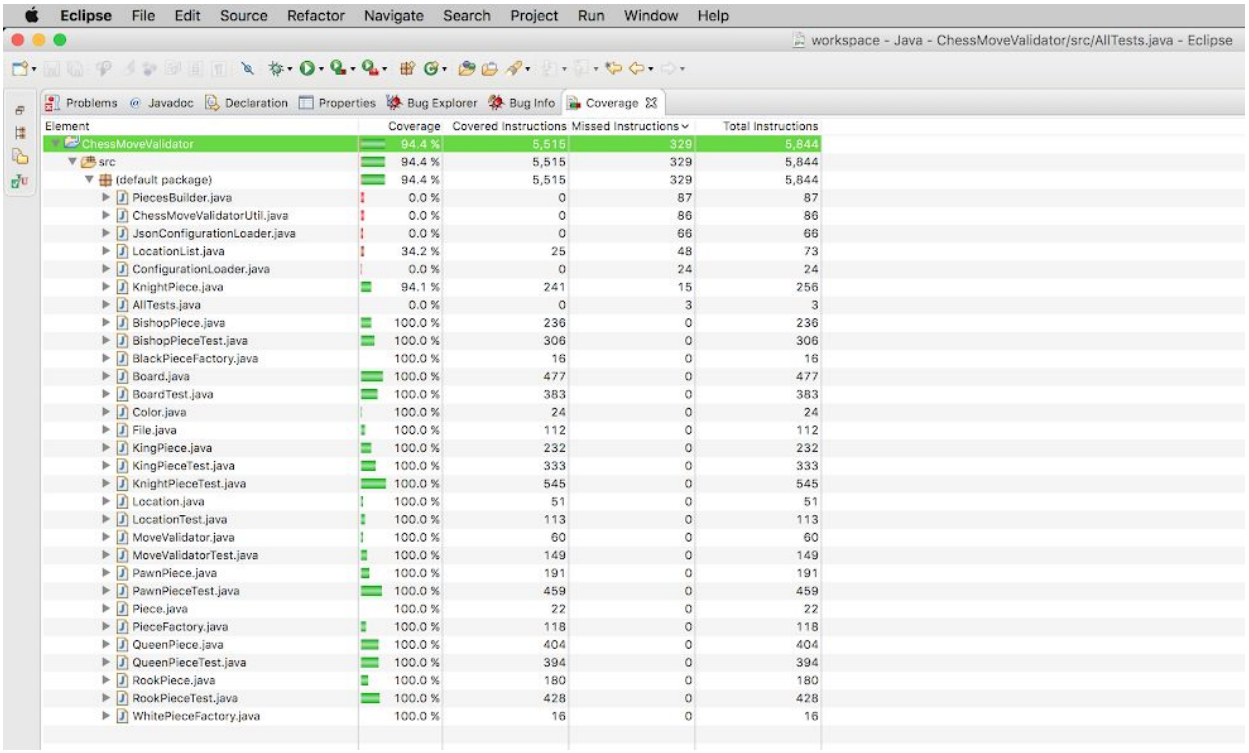
Another example of a bug found by FindBug is Nullcheck



This issue is fixed by checking the value before using it.



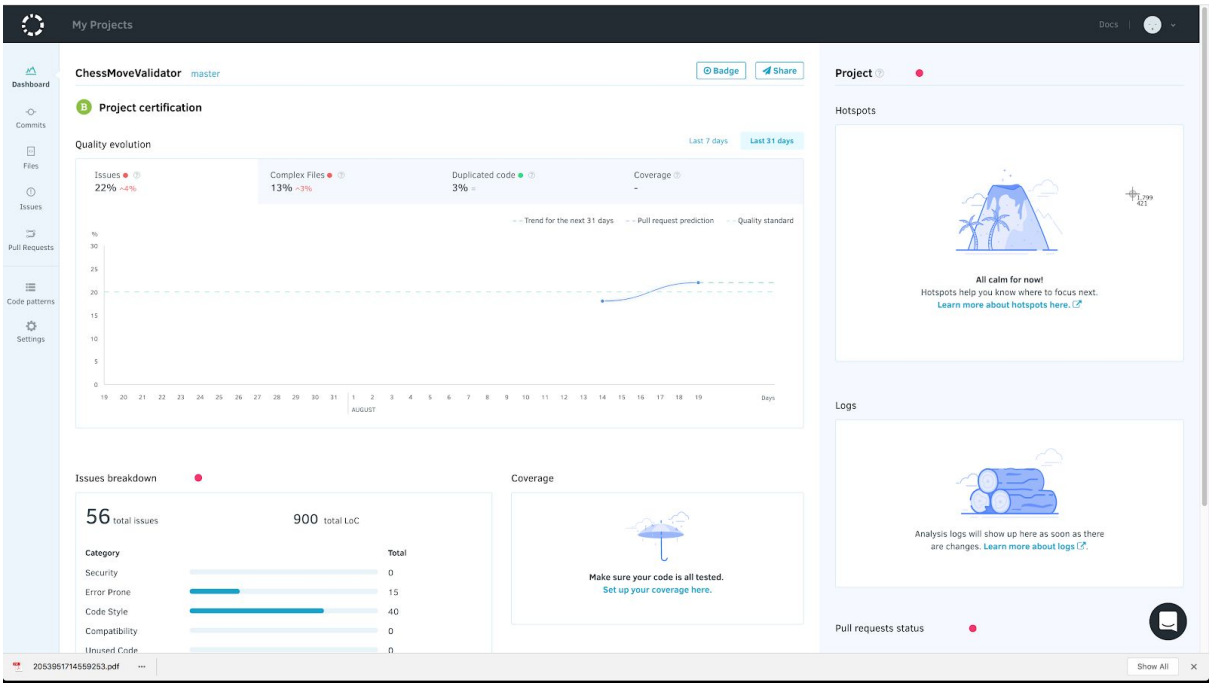
EclEmma - JaCoCo Code coverage tool.
This tool was used to determine the extent to which the code base is tested. I would admit here that the test cases where written after the code was written. The was primarily because the design was change multiple times -- attributed to the fact that I don't know how to play chess.
At the time of writing this report code coverage is at 94.4%. The pieces that are currently remaining are mainly utility components.



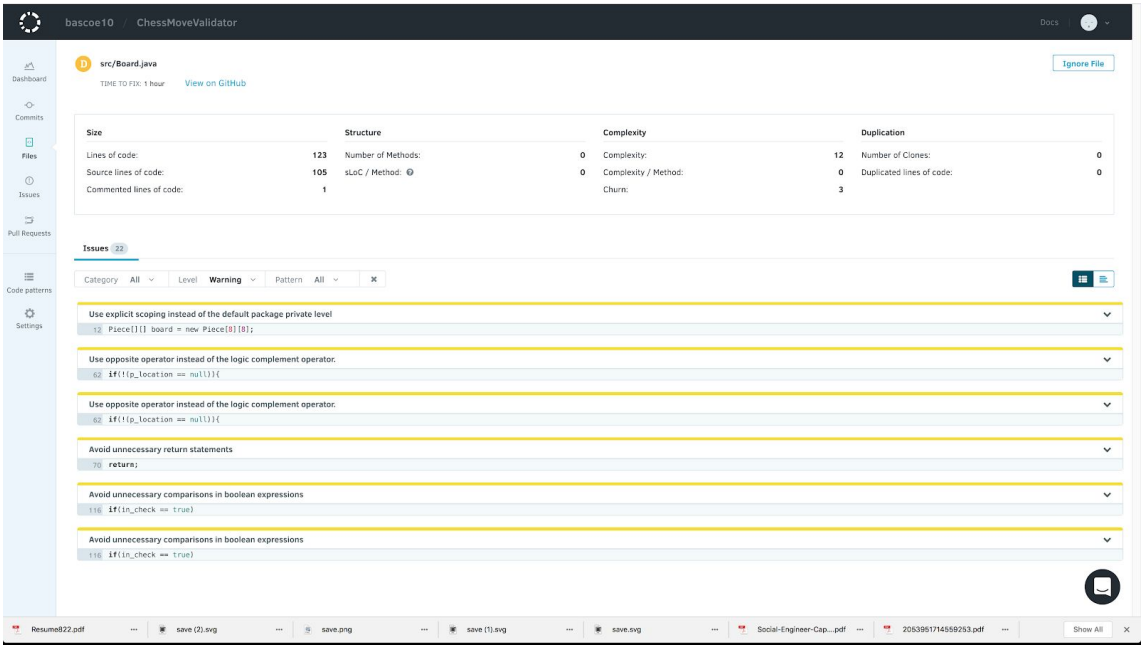
Element	Coverage	Covered Instructions	Missed Instructions	Total Instructions
ChessMoveValidator	94.4 %	5,515	329	5,844
src	94.4 %	5,515	329	5,844
(default package)	94.4 %	5,515	329	5,844
PiecesBuilder.java	0.0 %	0	87	87
ChessMoveValidatorUtil.java	0.0 %	0	86	86
JsonConfigurationLoader.java	0.0 %	0	66	66
LocationList.java	34.2 %	25	48	73
ConfigurationLoader.java	0.0 %	0	24	24
KnightPiece.java	94.1 %	241	15	256
AllTests.java	0.0 %	0	3	3
BishopPiece.java	100.0 %	236	0	236
BishopPieceTest.java	100.0 %	306	0	306
BlackPieceFactory.java	100.0 %	16	0	16
Board.java	100.0 %	477	0	477
BoardTest.java	100.0 %	383	0	383
Color.java	100.0 %	24	0	24
File.java	100.0 %	112	0	112
KingPiece.java	100.0 %	232	0	232
KingPieceTest.java	100.0 %	333	0	333
KnightPieceTest.java	100.0 %	545	0	545
Location.java	100.0 %	51	0	51
LocationTest.java	100.0 %	113	0	113
MoveValidator.java	100.0 %	60	0	60
MoveValidatorTest.java	100.0 %	149	0	149
PawnPiece.java	100.0 %	191	0	191
PawnPieceTest.java	100.0 %	459	0	459
Piece.java	100.0 %	22	0	22
PieceFactory.java	100.0 %	118	0	118
QueenPiece.java	100.0 %	404	0	404
QueenPieceTest.java	100.0 %	394	0	394
RookPiece.java	100.0 %	180	0	180
RookPieceTest.java	100.0 %	428	0	428
WhitePieceFactory.java	100.0 %	16	0	16

Codacy - automated code analysis/quality tool that helped with cyclomatic complexity, duplication and code unit test coverage changes in every commit.

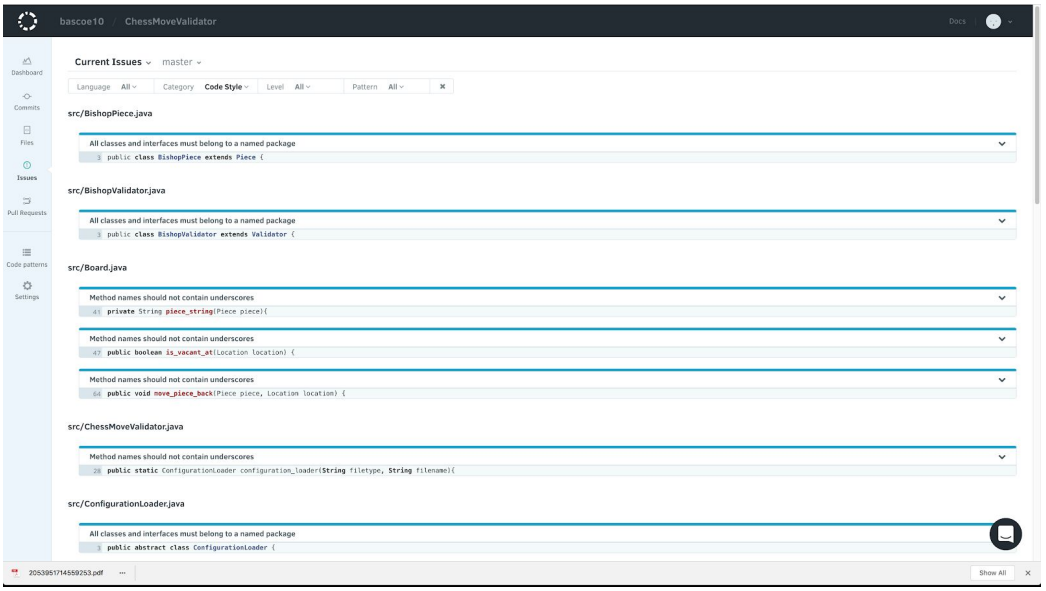
Codacy provided a more comprehensive view of the the project. Codacy gives warning not only on potential runtime bugs but also flag things that violate design principles.



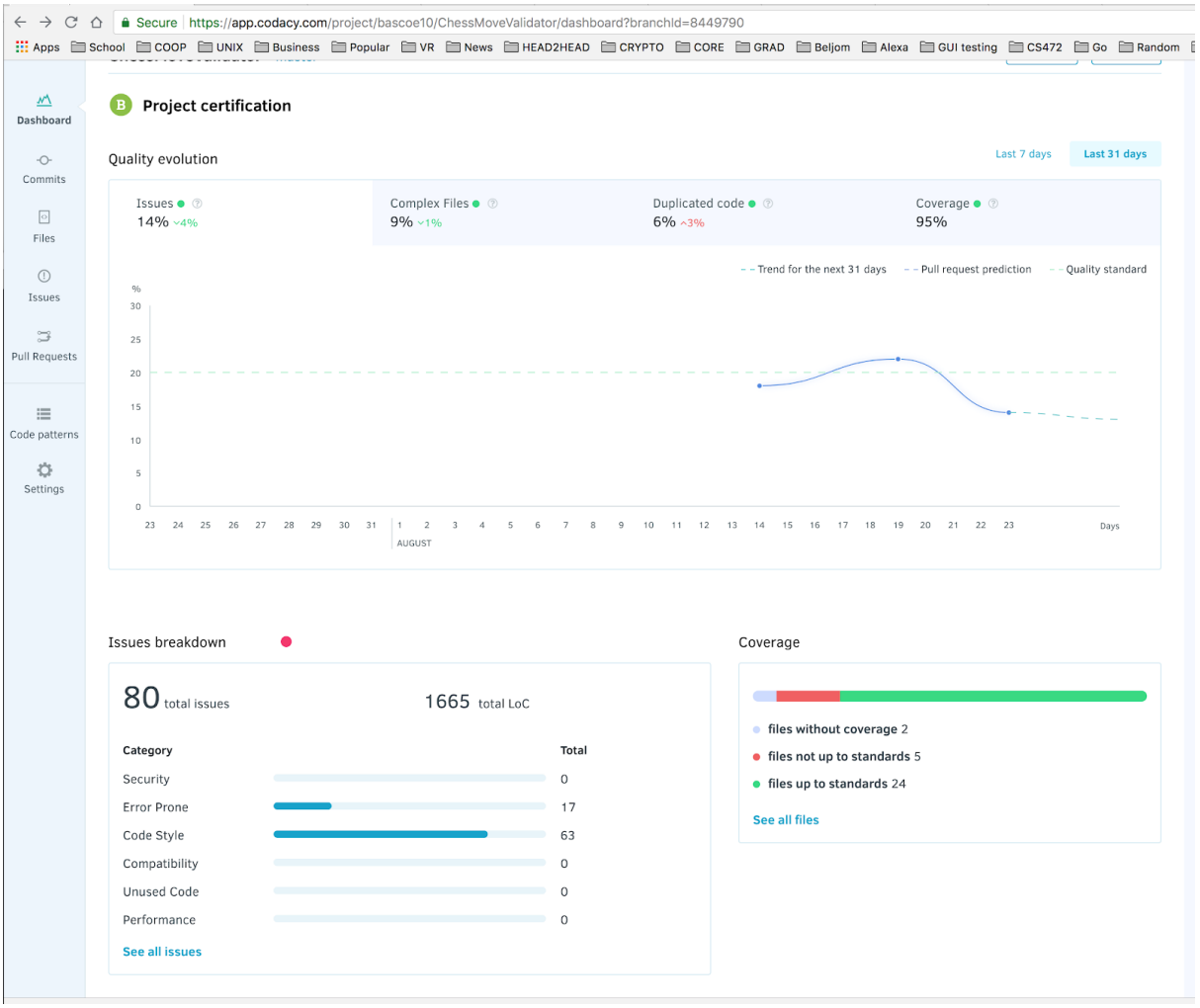
Codacy Dashboard



Warning errors



Styling error



After adding test and refactoring some of the reported errors.

Final Codacy Report - after refactoring