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EECS 397 Software Construction
Assignment 7: Codebase Swap

Codebase 1: Group 10 (Python)
Codebase 2: Group 12 (Java)

We compare the two codebases in terms of the following categories, the analysis through which will help us decide which one we should use for the further development of this project.

Level of Abstraction
Both codebases need improvement. The class structures are similar since the outlines were given in instructions. Codebase 1 could be improved by minor changes. For example, we could combine Hand and SPlayer, since most methods for SPlayer simply invoke a method in Hand. In Codebase 2, Data structures are mostly well hidden, except in rare places such as Tile.java. However, it is harder to work with Codebase 1 since a lot of the fields are not explicitly declared.

Implementation
Codebase 1 has good code quality, but it has some convoluted features that make it hard to expand the code, such as not declaring fields, using dynamic variable types, and using lambda expressions to fit a lot of logic in one line.

Codebase 2 has some code quality issues, such as lack of documentation, some ill-defined method contracts (some methods returns null without explaining the significance) and unnecessary "continue" statements. On the other hand, the implementation is logically correct and these issues can be fixed.

Documentation and Test Cases
Codebase 1 has more detailed but messier documentation- there are explanation and contracts for almost every function but the test cases are not clear about what which part of the code each test is testing.
Codebase 2 has less documentation, only comments and no Javadoc. Most test cases have specific target functions that they are testing. However, some exception cases are not covered.

Languages
One prominent difference between the two languages is that Java has strong typing while Python does not. Python's dynamic typing and dynamic binding of variables make it harder to debug. On the other hand, Java compile can help us catch mistakes in the code using the type system. Java also enforces declaration of runtime exceptions which bolsters the method contracts. We also take advantage of Java's interface system. We also utilize Java's test library for code coverage, which is easier to set up than Python.

Decision
We decided to go with Codebase 2 because despite the lack of test cases and documentation, the characteristics of Java language make future development easier.