**Complexity Metrics**

**Metrics Definitions**

The collected metrics were essentially the complexity of the code, as well as how hard it is to perceive.

In order to represent these metrics we use the Cyclomatic complexity, which is a measurement of the number of linearly-independent paths through a program module.

Project Metrics:

* Average cyclomatic complexity
* Total cyclomatic complexity

Module Metrics:

* Average cyclomatic complexity
* Total cyclomatic complexity

Package Metrics:

* Average cyclomatic complexity
* Total cyclomatic complexity

Class Metrics:

* Average operation Complexity
* Maximum operation Complexity (maximum Cyclomatic complexity of any non abstract method in the class)
* Weighted method complexity (total cyclomatic complexity of the methods in the class)

Method Metrics:

* Cognitive complexity (similar to Cyclomatic complexity but more focused on understandability)
* Cyclomatic complexity
* Design Complexity (how interlinked the method is with calls to other methods)
* Essential Cyclomatic complexity (graph-theoretic measure of just how ill-structured a method's control flow is)

**Potencial trouble spots**

The parts of the code that seem to have the most troublesome spots are parts like:

* InGameControler, which receives its complexity from the large amount of switches, if’s and cycles to deal with all the possibilities the player might make
* Unit and Player classes suffer from a large complexity due to a fact that dese classes try to do many things in the same class, resulting in gigantic classes of more than 4000 lines of code
* Classes that deal with AI.
* The class Map also has the method with the second highest complexity (searchMap), this is due to the fact the method deals with algorithmic search.

**Relation with code smells**

A high complexity usually indicates the code Smells for large methods and large Classes, which become hard to read due to their size. A high complexity also might indicate divergent Classes, like what happens with the class Map.

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