First Peer Review

Model Design

AM05 - Carrara, Curnis, Demiri, Evi

The following is a review of the design of the model by group AM14. The document assumes a throughout understanding of the game rules and the body of work under review. It starts by discussing positive and negative aspects of the design and it ends evaluating possible improvements to our own work.

1 Positive Aspects

The design clearly proves that the team understands the principles behind the overall design pattern as the game is playable from start to finish exclusively through calls to the Game class, which in turn calls inner classes and their methods to perform the actual work.

The majority of the game elements are modelled correctly and we particularly appreciate the decoupling of conditions from cards. The team clustered conditions into three types, merging resource conditions in gold cards to those in objective cards. We are inspired by the cleanness of this solution and further discussion of this topic is held in the last section.

2 Negative Aspects

Although playable, the model is poorly designed in many of its key areas. As distasteful design leads to complex code, we advise to stop implementing the model before addressing the following problems.

The play area extends from the starter card as it is implicitly implemented as a directed graph where corners point to the card they are covered by. To be properly traversed when evaluating conditions, the graph must be undirected as dead ends will form otherwise.

That said, we strongly recommend switching to a matrix anyway. Evaluating card conditions, which are briefly discussed in the handover document but completely missing in the design, will otherwise require extremely complex algorithms, especially for the "L" shaped one.

Object and resource conditions, which are identical and thus mergeable, can also be streamlined. Instead of exploring the graph recursively, a map that keeps track of the number of resources and objects on the play area is advisable. This further pushes the need to encapsulate the play area in an separate class.

Furthermore, we advise to treat the model as a data structure that holds the whole state of the game and nothing more. Moving the lobby from the model to the controller, where all the connectivity will reside anyway, will also simplify more complex features such as persistency.

3 Designs Comparison

As previously written in the first section, we are inspired by the clustering of conditions and the merging of resource conditions in gold cards to those in objective cards. The condition interface is particularly fitting to our design and after discussing the pros and cons thoroughly the team concluded that the elegance of the solution is worth the refactoring effort. A commit will follow to implement the change.