



DEPARTMENT OF COMPUTER SCIENCE AND SOFTWARE

ENGINEERING

SOEN 6441, Fall 2019

RISK Game (Build-3)

Architecture Design

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Submitted By: **Team E**

Git URL:[https://github.com/Surya64/APP\\_SOEN-6441\\_TeamE](https://github.com/Surya64/APP_SOEN-6441_TeamE)

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## 1. Introduction:

We have developed the project on RISK game by following the Model View Controller (MVC) software design architecture style

## 2. Architecture Design

### Model View Controller Architecture (MVC):

#### Architecture Diagram of RISK Game development: MVC architectural style

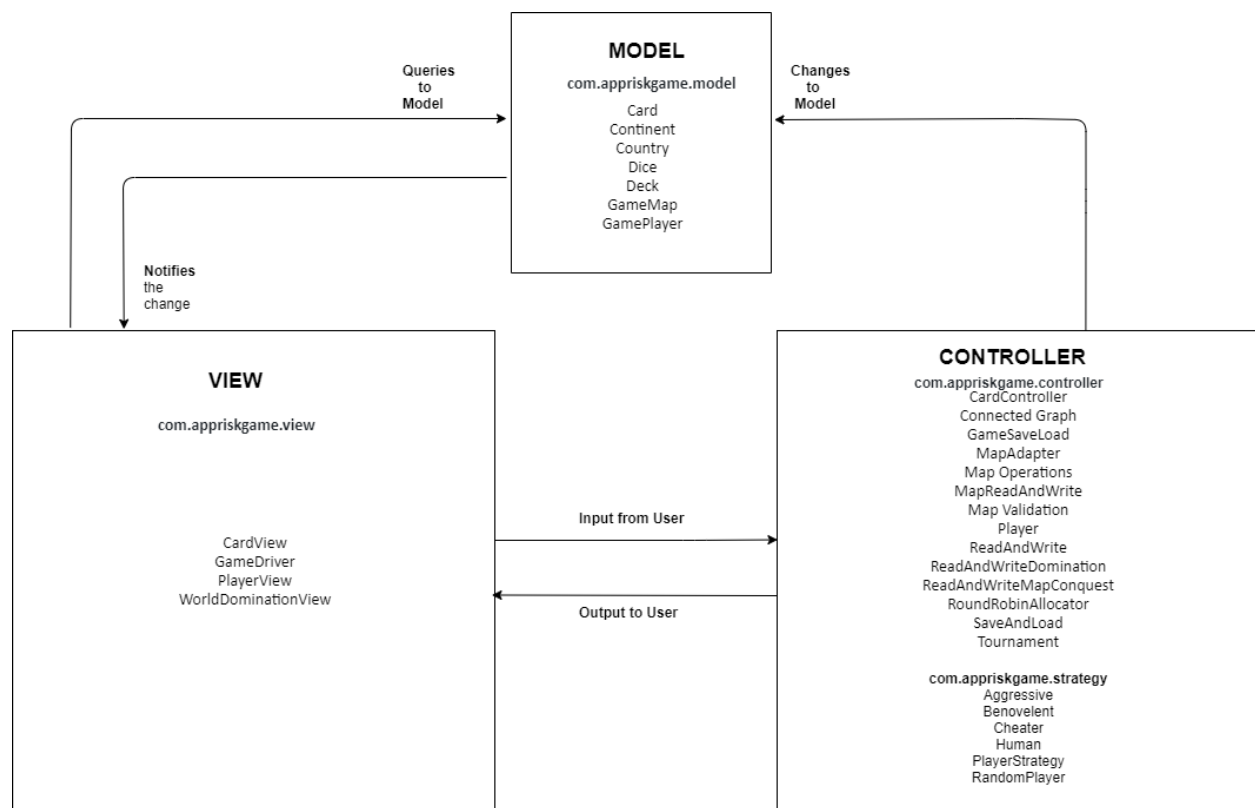


Fig : MVC Architecture Diagram of RISK development Project

Following the MVC design pattern for implementing user interfaces on computers. It divides a given application into three interconnected parts. This is done to separate the internal representation of information from the ways the information is presented to and accepted from the user. The MVC design pattern decouples these major components allowing for efficient code reuse and parallel development.

Each Layer is described as below:

1. **Model** : Contains the classes which holds the logic of the Risk game
2. **View**: Contains the class which decided where the controls and display go.
3. **Controller** : Contains the classes which bridges between Model and View

### 3. Modules in each Layer.

Modules in View: We have four view classes with following functionality.

1. **CardView Class**: This Class aims to show the card view. It will display the type of cards available with the player and it also contains exchange button which is used to exchange the cards with armies.
2. **GameDriver**: Class used to provide an interface for the players to interact with the game. It launches the game and in console the user can create or load map to begin the game.
3. **PlayerView**: This Class gives the player view. It will display all the information related to the current player. It shows the countries belonging to the player along with its adjacencies. It also gives player domination view. PlayerView has buttons such as place army, reinforcement, attack, all out, fortify and end turn.
4. **WorldDominationView**: This Class is used for implementation of World Domination View. It gets notified whenever there is an update to the game player

Modules in Controller: We have the below classes.

1. **ConnectedGraph**: This class is used to check the connectivity if the countries form connected graph.
2. **MapOperations**: This class contains the methods for Add/Update/Delete Continent, Country, create new map, load and edit map operations.
3. **MapValidation**: This class is used to check the validation of map which is newly created or existing map is loaded.

4. **Player:** Player Controller is for the beginning of the game play. It contains methods which will take the details from the players and starts the eventual phase. It has methods such as allocationOfArmyToPlayers, reinforcementPhase, attackPhase and fortification methods etc.
5. **RoundRobinAllocator:** This class provides functionality for round robin traversal among the players of the game.
6. **CardController:** This class contains all the methods for card allocation and exchange of cards.
7. **GameSaveLoad:** This class is used to save and load the game Map
8. **MapAdapter:** This class is used for map read and write using adapter pattern
9. **MapReadAndWrite:** This class is for Map read and write interface
10. **ReadAndWrite:** This class is for Map read and write interface
11. **ReadAndWriteDomination:** This class is used for read and write of domination file
12. **ReadAndWriteMapConquest:** This Class contains method for read and write of conquest game map using adapter pattern
13. **SaveAndLoad:** This class is Interface for save and load game map object
14. **Tournament:** This Class is used for implementation of Tournament Mode
15. **Aggressive:** This class reinforces the strongest country, attacks until the army count of the attacking country is one, fortifies the strongest country for the aggressive player.
16. **Benevolent:** This method reinforces its weakest countries, does not attack, fortifies by moving armies to weaker countries
17. **Cheater:** This class is for cheater who used to reinforce the methods that doubles the army count on all its countries, attack method automatically conquers all the neighbors of all its countries, doubles the number of armies on its countries that have neighbors that belong to other players.
18. **Human:** This class is based on the normal human player for reinforcement, attack and fortification phase.
19. **PlayerStrategy:** This interface defines the player strategy to be used by all the types of players.
20. **RandomPlayer:** This class is for Random player who reinforces random country, attacks random country a random number of times and fortifies a random country.

Modules in Model: We have the below classes.

1. **Continent:** It contains all the information of the continent and a list of all the countries that belong to a continent
2. **Country:** This class is used to model the country. Each player will be assigned with few countries and player aims at occupying all the countries.
3. **GameMap:** Class used to model the map. It contains all the details of the map and its content.
4. **GamePlayer:** It contains all information related to a player and the number of armies assigned to the player
5. **Card:** This class is a model for the card that is owned by the players in the game
6. **Dice:** Dice class is a model which gives dice information of player in the game
7. **Deck:** Deck class is model which contains all the details of cards.