**Architecture Design**

**GAME PLAN**

* Game starts in console window
* It has two options
* Upload Map 🡪Game
* Create Map 🡪Map Editor
* If selected upload map then game starts
* User is given an option to select from a list of available map files.
* Map file is loaded from user’s choice and validated for correctness.
* Once the file is verified and is correct user will enter number of players and their names
* Assignment of the player number in random order.
* Assignment of territories in random order.
* Start up phase begins when territories and armies are assigned in random fashion.
* Reinforcement phase starts. Each player is given a set of armies based on risk rules and is asked to place the armies in the territory the player owns.
* In fortification phase, each player is asked to move armies between the territories he owns. Fortification is done only between the immediate adjacent countries the player owns.
* If selected create map
* Player has option to create a map from scratch.
* Once player creates the map as per his choice, player will be given an option to edit the created map.
* In the edit option player is given a choice to add or delete either continent or territory based on his choice.
* Once edit is done the map is verified for correctness.
* If the file is correct user will enter number of players and their names.
* Assignment of the player number in random order.
* Assignment of territories in random order.
* Start up phase begins when territories and armies are assigned in random fashion.
* Reinforcement phase starts. Each player is given a set of armies based on risk rules and is asked to place the armies in the territory the player owns.
* In fortification phase, each player is asked to move armies between the territories he owns. Fortification is done only between the immediate adjacent countries the player owns.

MVC Architecture

Controller

Model

View

* Controller

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| M**ap** **Builder**  **Controller** |
| loadMapData( ) |
| getTerritoryList( ) |
| getContinentList( ) |
| getAdjucencyMap( ) |
| getMapUploadStatus( ) |
| setMapUploadStatus( ) |
| getIdByTerritoryName( ) |
| parseMapFile( ) |
| addContinents( ) |
| addTerritories( ) |
| addTerritoriesToContinents() |
| buildAdjancencyMap( ) |

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| **Game**  **Controller** |
| main( ) |
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| **Player**  **Controller** |
| addPlayers( ) |
| getRiskPlayerList( ) |
| getPlayerNameList( ) |
| setRiskPlayerList( ) |
| setPlayersNameList() |
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| **Reinforcement**  **Controller** |
| getReinforcedMap( ) |
| calculateArmy( ) |
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* Models

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| **Player** |
| String playerId |
| String playerName |
| ArrayList occupiedTerritories |
| ArrayList occupiedContinents |
| int armiesOwned |
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| **Territory** |
| String territoryId |
| String territoryName |
| int armiesPresent |
| String continent |
| int continentId |
| RiskPlayer territoryOwner |
| ArrayList adjacents |

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| **Continent** |
| String continentId |
| String continentName |
| int controllValue |
| ArrayList includedTerritories |
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**Map Validation Function**

Function Name: validateMap(File file)

Return Type: Boolean

🡪validateSyntax(file) – Validate the tags and structure of file

🡪processFile(file) – Scan each line from the file

🡪validateDuplicacy(fileContent) – Check for territory, continent and adjacency duplicity

🡪processContinents(fileContent) – Creates ArrayList of Continents

🡪processTerritories(fileContent) – Creates ArrayList of Territories

🡪processAdjancancy(fileContent) – Creates ArrayList of Adjacent territories

🡪addAdjacentTerritories(Territories) – Adds Adjacent territories to each

🡪territoriesToContinents – Add Each territories to the corresponding continents

🡪validateConectedMap(territoriesArray) – Validate the connection between territories

Use DFS to check the connection between territories

**State Diagram**

