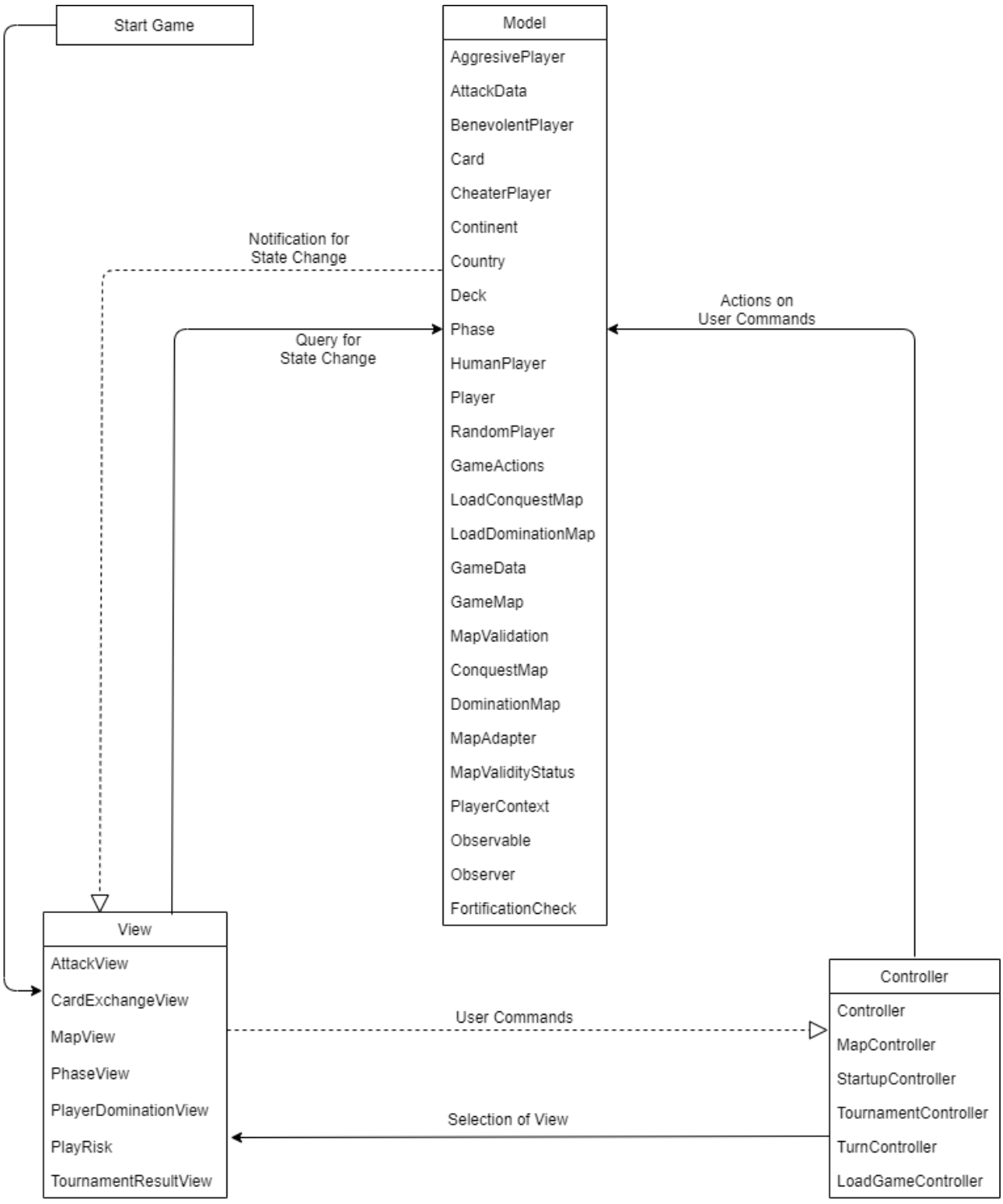
RISK GAME

Architecture Design

Advanced Program Practices (SOEN 6441)

FALL 2019

Architecture:



1. **Model**

These classes represent all the entities of the game.

AggressivePlayer	Class perform actions for Aggressive Player.
BenevolentPlayer	Class perform actions for Benevolent Player.
Card	Class contains data related to the card.
CheaterPlayer	Class perform actions for Cheater Player.
Country	Class contains data related to the country and represents Country objects.
Continent	Class contains data related continent
Phase	Class contains all the phases of the game.
Player	Abstract class for player. (Strategy Pattern)
HumanPlayer	Class perform actions for Human Player.
Deck	Class contains data related to the deck.
AttackData	Class stores data related to the attack phase.
RandomPlayer	Class perform actions for Random Player.
GameDataBuilder	Responsible for building GamaData object.
LoadConquestMap	Responsible for load map form of conquest.
LoadDominationMap	Responsible for load map form of domination.
GameAction	Controller for the various operations of the game.
GameData	This class handles the important data related to game.
GameMap	This class control over the map of the game.
LoadMap	Class performs the operation of loading a map for game play.
MapValidation	Class performs various validation for the map.
ConquestMap	Interface to read/write conquest map format.
DominationMap	Interface to read/write domination map format.
FortificationCheck	Represents possible status of fortification operation.
MapAdapter	Adapter class for maps of domination and conquest map formats.
MapValidityStatus	Represents validity status of a game map.
PlayerContext	Sets up the context for player class.

2. **View**

These classes handle the user interaction.

PlayRisk	This class responsible to communicate with the player.
PhaseView	This class shows the details of the phase of the game.
PlayerDominationView	This class displays player's domination over the map.
CardExchangeView	This class shows the cards owned by the player.
AttackView	This class represents details of the attack of player.
MapView	This class shows the map on which game being played.
TournamentResultView	This class shows the result of tournament.

3. **Controller**

These classes responsible for the interaction between model and view.

Controller	Holds the data related to the game.
MapController	Responsible for handling user commands related to editing/loading a map.
StartupController	Manages start-up related commands for the game.
TournamentController	Manages tournament related commands.
TurnController	Manages commands related to three phases of each turn of the game.
LoadGameController	Manages game loading related commands for the game.

Design Flow:

1. NULL:

- The game is yet to begin. First command has yet not been encountered.
- Phase ends when 'editmap' or 'loadmap' command is encountered.

2. EDITUP:

- An existing game map is being edited or a new game map is being created from the scratch.
- Phase ends when 'loadmap' command is encountered.

3. STARTUP:

- Game is in start-up phase, i.e. gameplayers will be added/removed, countries will be distributed, and initial armies will be assigned to the players.
- Phase ends when 'populatecountries' command is encountered, i.e countries are distrubuted and initial armies are assigned.

4. ARMYALLOCATION:

- Player assigns initial armies to the countries owned by him/her.
- Phase ends when all player's have assigned initial armies.

5. CARDEXCHANGE:

- Player will exchange cards.
- If player owns 5 or more cards, then player has to exchange cards.
- If player owns 4 or less cards, then player can choose whether he want to exchange cards or not.

6. REINFORCEMENT:

- Individual turn of player begins in round-robin fashion.
- Player assigns reinforced armies amongst owned countries.
- Phase ends when reinforcement armies are distributed amongst the owned countries.

7. ATTACK:

- Player can attack on its adjacent countries or choose not to attack on any country.
- Player can choose number of dice for attack operation.

8. ATTACKCARDEXCHANGE:

- Player has received more than six cards by defeating a player and forcing him/her out of the game.

9. FORTIFICATION:

- Player fortifies one of the owned countries if a legal move is allowed.
- Phase ends when player successfully fortifies or decides to not fortify.

10. TURNEND:

- Marks the end of the current player and signals to let the player get the turn.
- Phase ends when next player starts their move.

11. QUIT:

- Indicates desire to completely close the game.