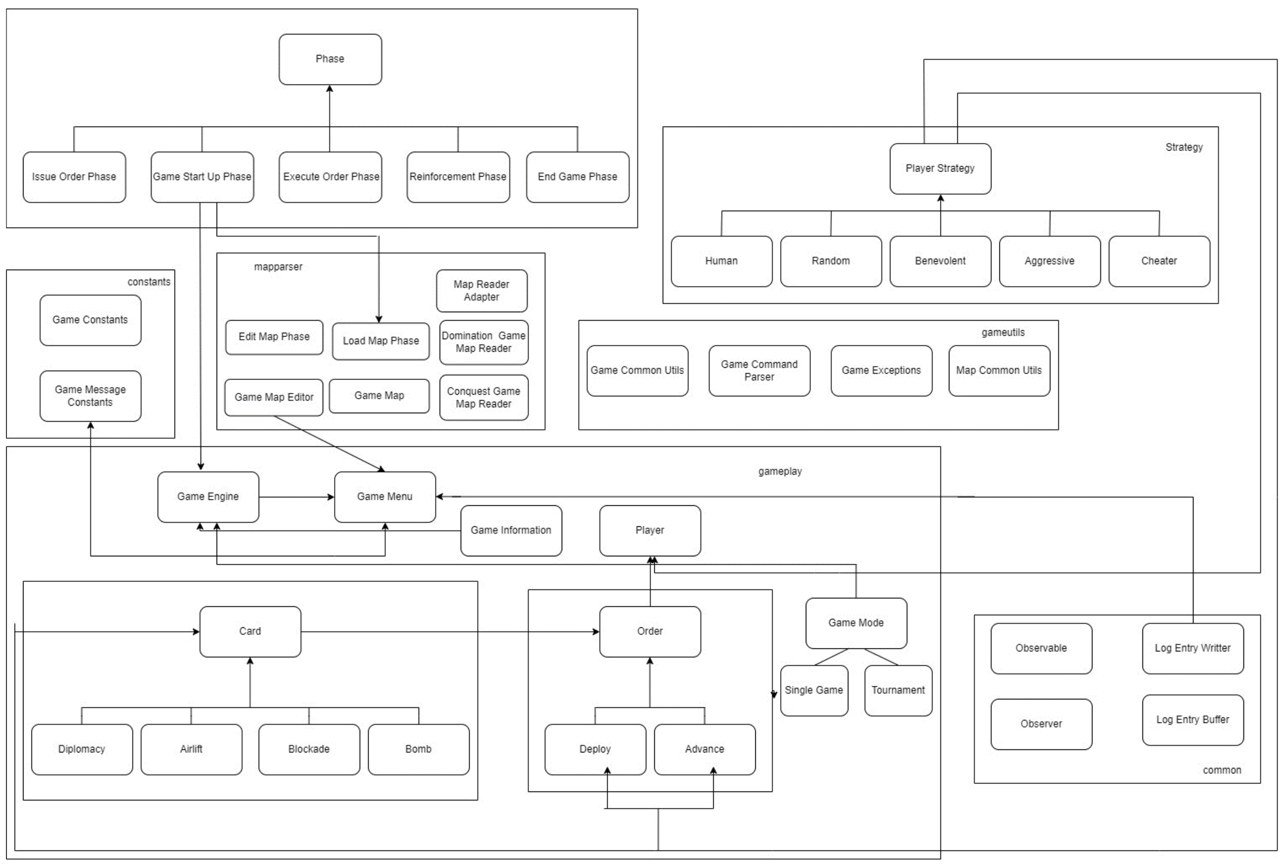
ARCHITECTURE DIAGRAM



Number of packages: 6

- common
- constants
- gamemenu
- gameplay
- gameutils
- mapparser

Command Pattern:

Order interface is responsible for executing the orders of the player. The Command pattern is applied with Order as the common interface, and DeployOrder and AdvanceOrder as concrete classes. The Invoker is responsible for queuing and executing these orders.

- DeployOrder: Class represents an order to deploy a certain number of armies to a specific country. This class extends Order.
- AdvanceOrder: Class deals with advancing of the armies for an attack on the desired country. This class extends Order.

The enum class Card distributes random cards to the players when the conditions are met – bomb, blockade, airlift, diplomacy. It is an enumeration.

- Bomb: The class deals with bombing of the countries using the bomb card, resulting in the army count halving. This class extends from Order.
- Blockade: The class is responsible for the blockade action, involves the army count to be multiplied by 3. This class extends from Order.
- Airlift: The class deals with airlifting of the armies to any other countries of the opponent chosen. This class extends from Order.
- Diplomacy: The class deals with the negotiation phase between the chosen players. This class extends from Order.

Observer Pattern:

The observer pattern is implemented using the LogEntryBuffer and LogEntryWritter classes as Observable and Observers respectively.

- Observable and Observer: Both being abstract classes with observable containing the notifyObservers(), addObservers() method and the observer containing the update() method.
- LogEntryBuffer – Extends Observable and implements the functionality of putting together the log messages acting as a buffer, before writing it into a file.

- LogEntryWritter – Extends Observer and implements the functionality of writing the logs into a file.

  LogEntryBuffer acts as the observable, and LogEntryWriter acts as the observer. LogEntryWriter registers with LogEntryBuffer to receive updates, and when a new log entry is added to the buffer, it is automatically notified and processes the log entry.

State Pattern:

It is an interface having templates for executing different phases of the warzone game.

Phase: An Abstract class that has nextPhase() and executePhase() abstract methods that are extended by all Phase related classes listed below.

Map Edit Phase:

- LoadMapPhase: The class handles loading of the map, in terms of the phase. The Gamemap class is executed once the LoadMapPhase is executed.
- EditMapPhase: The class handles editing of the map, in terms of the phase. The GamemapEditor class is executed once the EditMapPhase is executed.

Gameplay Phase:

- ReinforcementPhase: This class is responsible for assigning reinforcement armies to players based on the number of countries they have conquered. It extends Phase.
- IssueOrderPhase: This class creates a deploy order object on the player's list of orders, then reduce the number of armies in the player's pool of armies. It extends Phase.
- ExecuteOrderPhase: The class deals with the execution of the orders issued by the players during the game.
- GameStartupPhase: Class Game StartUp Phase contains current phase, next phase, and current game information for an instance. It extends Phase.

- EndGamePhase: This is the final phase of the game before the game terminates. It extends Phase.

Strategy Pattern:

Strategy pattern is implemented using the PlayerStrategy interface containing the createOrders method. Each player exhibits different behaviours.

- HumanPlayerStrategy: This is the standard gameplay involving users typing in commands to proceed with the game.
- RandomPlayerStrategy: This computerized strategy involves randomizing the orders – deployment, attack and moving armies between countries. It attacks a random neighbouring opponent and deploys troops to its country selected at random.
- BenevelontPlayerStrategy: This is a computerized gameplay where the focus is on deploying the weakest of its countries with armies.
- AggresivePlayerStrategy: This is a computerized gameplay that builds up armies in one country to attack its opponent with the highest vigour.
- CheaterPlayerStrategy: This is a computerized gameplay that conquers its neighbours while simultaneously doubling its army count on the countries that have a enemy neighbour present in its vicinity. This occurs during the issue order phase.

The five player strategies together constitute the concrete implementations of PlayerStrategy.

Adapter Pattern:

Adapter pattern is implemented using the following:

- MapReaderAdapter: This is responsible for parsing the conquest map into the accepted domination map format for the game. This is the adapter.
- DominationGameMapReader: This is the accepted map format for the game that loads continents, countries and borders. This is the target class.

- ConquestGameMapReader: The new map format is to be parsed into the accepted domination map format, for which this class acts as a Adaptee class.
- GameMap: GameMap is the client class which accepts the domination map format. With the adapter pattern, GameMap can read from both domination and conquest map formats.

Tournament Mode:

Tournament is a game option, typing in ‘gameplay’, ‘tournament -M listofmapfiles -P listofplayerstrategies -G numberofgames -D maxnumberofturns’ enables the tournament mode.

Tournament mode is a complete computerized game mode that has the flexibility to choose between 5 different maps, with maximum of 4 players and 10-50 turns per game. A report of the tournament results is generated.

- handleTournamentMode(): Handles the tournament mode.
- printTournamentResults(): Generates the results of the tournament in a tabular form.

gameutils:

- GameCommandParser: This class is responsible for parsing user input commands into primary commands and their details.
- GameCommonUtils: This class provides utility methods for operations.
- GameException: The class handles exceptions.
- MapCommonUtils: This class reads a map file and extracts a specific section of the file based on starting and ending keywords.

mapparser:

- GameMap: The class loads the game map file that is chosen for play.
- GameMapEditor: The class is used to initialize map editing phase - which consists of editing, or creating a new map.

gameplay:

- GameInformation: This class is used to set and retrieve the current phase, current map and other information of the game at that instant.
- GameEngine: This class is responsible for executing the entire game process.

gamemenu:

- GameMenu: The GameMenu class is the entry point of the game. This is where the main() resides. From here the player has the option to choose between map editing or game play options.