SYSC 3110 Project

Team Group

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Changes from Milestone 2:

Changes in GameController class:
- The states have been changed from multiple integers to a single enum
- All command strings are now constants to remove phantom strings

Changes in GameFrame class:
- System.outs have been removed, as there is no need with working GUI
- History handling has been added
    - A popup can now be shown that lists all past moves by each player throughout the game
    - Very helpful for seeing moves made by AI player after AI turn

Changes in GameModel class:
- Has been modified to accommodate the AI player
    - Methods that take Country objects as input have been added in addition to the methods that take Strings
    - nextPlayer has been modified so that AIPlayer turns happen automatically
    - All input prompts have been moved into Player class so AI player can do them in the background
- Handling of the end of the game has been improved

Changes to Player Class:
- Method getInnerCountries has been added to help with AI decision making
- Player now handles all input prompts instead of GameModel

New Additions for Milestone 3:

Reinforcements and Troop Movement:
- Methods for reinforcement and troop movement have been added
- These methods were implemented and working in Milestone 2, but were only required for milestone 3

Reinforcement:
- Calculates and displays number of reinforcements a player has at the beginning of their turn based on the number of countries held
- Players click on countries to add troops, and chooses number of troops to add
- If more troops are available to add the new number will be displayed and player can choose another country
- Once player has placed all their troops the attack phase starts automatically

Troop Movement:
- At the end of the attack phase the player has a choice to move troops from any country they hold to another country they hold if there is a path of player held countries between them
- Checking if a path exists happens in the Player class, as the player they are moving from checks all their neighbors, and if then neighbors of neighbors that are all accessible (held by the player) until a path is found.
- If a path is found the troops can be moved
- If no accessible path has been found the player receives a warning and new countries can be selected

Reset Option:
- The frame, model, and map can now all be reset with one click, allowing for a new game to start

AI Player:
- The AI player extends the Player class
- Adds public method playTurn
- AI Player overrides all popup messages, so they don't appear during AI turn

AI Reinforcement:
- The AI Player selects a random country from their held perimeter countries
- If the country is not surrounded by enemy countries (has at least one neighbor also held by AI player) one reinforcement is added and a new random perimeter country is selected
- If the randomly selected country is surrounded by enemy countries, then it is removed from the available countries to be chosen from unless it is the only country left that can be chosen
- This cycle of selecting random countries repeats until there are no more reinforcements to be placed

AI Attack:
- The AI Player selects a random country from their held perimeter countries
- If the country has more than one troop then the number of troops in its neighbor enemy countries is checked
- If the AI Country has more troops then a neighbor, it attacks (attacks the first neighbor it has more troops than)
- If the selected country has less troops then all neighboring enemy countries the attack phase ends
- All attacks are blitz attacks

AI Move:
- The AI Player creates a list of held countries that have no neighbors that are perimeter countries (all neighbors are inner countries)
- The first deep inner country is selected
- It then loops through all perimeter countries until it finds a country that has a path to the selected deep inner country
- Once a perimeter country with a path has been found all but one troop from the deep inner country is moved to the perimeter country