

Final Project Proposal

Description:

For our final project we would like to create a terminal simulation of a classic game called “risk”. This is a multiplayer world-domination conquest game that can support the participation of 2 - 6 players. The number of troops that each player will receive at the start of the game is contingent on the number of players at the start of the game. Everyone receives 20 troops if there are 6 players, 25 troops if there are 5 players, 30 troops for 4 players, etc. There will be a total of 42 territories distributed over seven continents. The player cannot visualize troop numbers in enemy territory but can see which territory is occupied and by which enemy army.

At the start of the game, players will take turns placing troops on unoccupied territory. Once there are no more unoccupied territories, players are free to place any amount of troops in any territory that they had already occupied. After the world is partitioned between the players, the game will officially commence. Players will take turns playing the game and for each turn, they will first place three new troops in any of the territory that they occupy in any quantity. For every entire continent that you had already occupied you will gain additional troops depending on the continent. Each turn takes approximately 1 minute to complete in a real board game and perhaps 25% longer on the terminal simulation. The entire game takes 1 - 1.5 hours.

The player will then have the option of attacking any enemy army that borders their territory. You can commit up to three troops with the maximum being the amount of troops in your territory for each skirmish against three of the enemy troops in the bordering territory. If there are less than three troops in the enemy territory, then all of the enemy troops will be put up for the skirmish. A skirmish success occurs when the troops you dedicate destroy the enemy troops and a failure occurs when your troops are destroyed by the enemy troops. The odds of success are in favor of the territory that can dedicate the most troops (up to three) at varying odds. Once all the enemy troops are defeated (dead) you will occupy their territory with the invading troops (up to three).

Whether or not the player chooses to initiate an attack they will have the option afterwards to move troops wherever they want in the territories that they occupy. The only exception is that they cannot move troops from one territory to a territory that cannot be reached by land (or continent bridges). This is very difficult to implement and if we fail to do so, the game will allow the player to move their troops to any of their territories regardless of their relative location. After this step is completed, the player will end their turn. The game ends when one player has successfully conquered all of the territory on the map and likewise, a player is eliminated from the game once he loses all of his territory. We will include an option to end the game once a player conquered 75% of all territories since that would indicate an extraordinarily high chance of winning.

We also aspire to implement an AI we named JARVIS if we possess an adequate intellectual capacity to implement this task. The AI, if implemented will be fairly simple but complex enough to make the game fairly enjoyable. For a more enjoyable experience, we strongly recommend playing with real life people. We would also like to include a saving

feature. This game is definitely something that we are all passionate about and we are certain that we will be able to accomplish this task if we are given the opportunity to do so.

Features:

- **Initial Placement** - You place your armies anywhere on the world map.
- **Attack feature** - At the start of your turn you could select how many troops you would dedicate to each attack (min: 1, max: 3). You would occupy the enemy territory with your troops if you defeat all the enemy troops in the area. Success and failure are determined by probability. Odds of success are contingent upon the quantity of troops dedicated to the skirmish.
- **Placement** - At the end of each round you have the option of leading your troops to reinforce another territory ONLY if it is reachable by land (or by continent bridges). This is very complex so this could be subject to change.
- **Graph** - A world map will appear and would allow you to visualize troop locations in the terminal. The program will access a pre-drawn map in a plaintext file. Each army will appear as a different in a different color in the terminal (if possible, not sure).
- **Save/Load** (optional)- Saves the progress of your game in a plaintext file. You can pull it up at the start of the program to load game stats and you can overwrite with your current progress at any time. We might encode the plaintext file.
- **AI (JARVIS)** (optional)- An algorithm that would play against you.
- **Will implement more features if we find more time.**

Most Basic Implementation (MVP)

We will begin our project by first building a simple table representing five territories located on one continent meant to be played by two people. We will need to make sure that this table could be printed on the terminal so that the viewer would be able to visually access the gameplay scenario. Once this is accomplished, we add a placement feature that would allow the two players to alternate placing troops on their territories until they have reached the troop count. The attack feature would then be implemented to ensure that enemy troops (players) will have a means of interacting with each other. After this feature is completed, we will then provide players with a feature that would allow them to move soldiers around to the territories that they occupy. After all of this is completed, we will program a winning mechanism that automatically ends the game when one player has accumulated all the territories on the map.

After we reach this point, the fundamental components of our game would be completed and we would just have to expand on each component. We could then add more players to the game, add more territories to the map, allow players the option of selecting how much troops to commit to an attack, adding a save/load feature, and possibly introducing an AI player. Depending on the time that remains, we may choose to implement more and more features so this terminal game could resemble the board game as closely as possible.

Basic Class Concepts

- **Inheritance** - Each of the armies (number dependent on the number of players) is a subclass of a superclass.
- **Interface** - Continent interface will extend to all of the 5 continents.

- **Private/Public** - You are not allowed to view the troop quantity in enemy controlled territory. You can, however, view which territories are occupied by the enemy.
- **Ordering Algorithm** - Used to order data collections (maybe)
- **Random Number Generation** - Will generate random numbers used in combat scenarios (See Attack feature).
- **ArrayList** - Will be used to store information regarding which adjacent territories a territory can access. Will also be used to store information for each army regarding which territory they occupy.
- **Primitives** (int, double, float, etc)

More Advanced Concepts

- **Terminal Commands** - Our program will check the OS of the platform. It will then implement terminal commands accordingly (we are only interested in the clear terminal command). It would be preferable for Mr. Brown to test our program on either windows or linux. Ain't nobody got time for apple OS.
- **Opening/Writing Files** - Our program will open files, write in them, and save them (see Save/Load Feature).
- **We hope to explore and implement additional features that were not covered in class.**