CSCI 234 - Software Engineering
Spring 2023
Sprint 1

You are to reverse engineer the give code base and understand it completely. The notes below should help in understand how the code works.

Deliverables:
- File headers that describe the purpose of the class contained in the file.
- Code base with Java Doc documentation added that clearly explains each method.
- UML diagram illustrating the design structure of the program.
- Be able to explain the operation of the code to the Project Owner during an individual meeting.

Basic game play:
1. Each wizard and warrior will start with the same number of life points.
2. When a player's life points reach 0 they die and are removed from the game.
3. A nation wins the game if the nation has the only remaining players.
4. Each iteration of the game will create an encounter for all players with another player.
5. Player strategies, and random chance, will govern what happens during an encounter.
6. Encounters may be with players from the same tribe, same nation, or different nation.
7. Encounters between players from the same nation are peaceful encounters. During a peaceful encounter, players may exchange life points to help each other if they so choose. The exchange of life points can depend on the player type (warrior, wizard) and whether the players are from the same tribe. Players that are the same type or from the same tribe may want to exchange more life points than if they are not the same type or from the same tribe. This is completely left up to the player's strategy.
8. Encounters between players from different nations are hostile. Depending on players strategies, and random chance, both players may lose life points or one player will lose points and the other player gain points.
9. A player can never have more than a set defined maximum of life points.

Encounter:
1. During an encounter, there is a player1 and a player2.
2. if player1 and player2 are from the same nation
    a. Each player's strategy will specify how many life points to invest in the encounter. This can be based on the type and tribe of the other player.
    b. A pseudo-random number generator will generate a number in range 0.0 - 1.0 (1.0 not included) for each player. This number will be multiplied by the number of life points invested by the player. This number of life points will be transferred to the other player. The same process will happen for the other player.
    c. Both player's will get 1 additional life point.
3. else (player1 and player2 are from different nations)

a. A pseudo-random number generator will generate a number in range 0.0 - 1.0 (1.0 not included) to determine which player is the attacker.
b. Each player's strategy will specify how many life points to invest in the encounter.
c. The attacker may choose to run away. The attacker will lose one life point and the defender will gain one life point.
d. If the attacker does not run away, then
    i. a random number multiplied by the defenders invested life points will determine how many life points the defender will lose. Fractions of points will be rounded down (floor).
    ii. a random number multiplied by the attackers invested life points will determine how many life points the attacker will lose. Fractions of points will be rounded down.
4. After one complete round of encounters, a census of both nations will be taken. During the census, any player with less than 1 life point will be declared dead. All live players will be added to the list of active players for the next round of encounters.