Features (Everyone):

1. Feature: Troop production
    a. User inputs # of troops they want to train
    b. Will later be dependent on the number of resources currently stored
    c. The number that they want to train will be sent to the backend, where a time will be calculated for training
    d. That time will be displayed on the troop training screen and the base
2. Feature: Resource production
    a. Users can build resource production plants in predetermined locations in the base
    b. Each resource has its own gathering time
    c. Resource-gathering plants can be upgraded to collect resources quicker
    d. The user selects which resource they want to collect, and that is sent to the backend, where a gathering time is calculated
    e. Resources can accumulate to a certain point
3. Feature: Base
    a. For now, The base will consist of troop training facilities as well as resource gathering facilities, and a main building that all other building levels depend on
    b. Each of these facilities will launch their activity
4. Feature: Overworld
    a. A grid of resources, enemy bases, and other player bases
    b. Players can move their bases to an adjacent grid position, assuming that there is no resource, enemy base, or other user base occupying that spot
    c. May be implemented with fog of war, depending on whether we deem this function possible
5. Feature: Leaderboard system
    a. Players with higher power levels are higher on the leaderboard
6. Feature: Player-v-Player combat
    a. Two players initiate a fight via front-end UI. Fight calculations and results are calculated on the backend and then sent to the frontend to be displayed back to the players
7. Feature: Sign-In
    a. Users' data will be stored under a username with a corresponding password.
    b. Users will register an account, and that account information will be sent to the backend to be stored
    c. When someone attempts to log in, the username and password will be sent to the backend, which will retrieve the corresponding data if the account exists and the password is correct. Otherwise, an error message will appear saying the login was unsuccessful.
    d. Logins and Signup should only take a few seconds to occur.

Actors (Josh Dwight):

1. Players: Have the privilege to:
    a. Create an account
    b. Login to their account and access their account information (things like power level, clan activity, etc.)
    c. Roam the overworld and place/move their base
    d. Create a clan
2. Observers: Have the privilege to:
    a. View the overworld map and the position of resources and enemies
    b. No account is needed for this
    c. There will be an option at sign-up for denying to create an account and just observing the overworld
    d. Nothing else can be done or seen by an observer
3. Admins: Have the privilege to:
    a. Remove an account
    b. Remove a clan
    c. Adjust the location of resources and enemies on the overworld
    d. They cannot adjust the location of user bases, and resources/enemies cannot move on top of a user's base

Non-functional Requirements (Josh Dwight):

1. The user should not have to wait more than 0.5 seconds for any buttons in the UI to respond
2. Results from the turns in the battle should take no longer than 3 seconds to be calculated and returned to the user. During this time, an animation or other distraction can be played
3. This application must support a minimum of 5 active users
4. The application must stop users from moving their bases to the same location at the same time

Tables and Fields (Michael Geltz):

- **Player:** Tracks all of a players information
    - playerID - Primary key
    - username - Name chosen by the user to represent themselves in game
    - password - A user chosen password to protect their account
    - buildingManager - Manages and stores a player's building levels
    - troopManager - Manages and stores what troops and how many a player has
    - Player resource manager - Manages and updates the amount of each resource a player has
- **Troops:** Keeps track of and updates a player's troops
    - playerId - Primary Key, references playerID field in Player
    - troopsCounts(JSON/Map) - A hashmap storing the quantity of each type of troop a player has
        - **Key:** TroopType (e.g., Archer, Warrior, Mage, Cavalry)
        - **Value:** Integer representing quantity of that troop type a player has
    - totalTroopPower
- **Buildings:** Keeps track of and updates a player's buildings
    - playerId - Primary key, references playerID field in Player
    - buildingsStore(JSON/Map) - Hashmap keeping track of the different buildings a player has
        - **Key:** Building type (Main Building, Troop buildings, resource generating buildings, Research Building)
        - **Value:** Integer representing that buildings level
    - power - how much power the building gives the player
    - level - What level the building is
    - stoneUpgradeCost - How much stone the building upgrade costs
    - woodUpgradeCost - How much wood the building upgrade costs
    - constructionTime - how long an upgrade takes to build
    - **—- The following fields are specific to the Troop Training Buildings —**
    - woodTrainingCost - How much wood per troop
    - stoneTrainingCost - How much stone per troop
    - totalTrainingTime - How long training troop(s) will take
    - **— The following fields are specific to the Resource Generating Buildings —**
    - totalGenerated - Represents total amount of resources generated by the building since last interacted on by the player
- **Resources:** Keeps track of and updates a player's resources
    - playerId - primary key, references playerID field in Player
    - resourceManager(JSON/Map) - Hashmap keeping track of how much of each resource a player has
        - **Key:** ResourceType (Stone, Wood, Food, Platinum
        - **Value:** Integer storing amount of resource

Screen Flow Diagram (Michael Geltz):

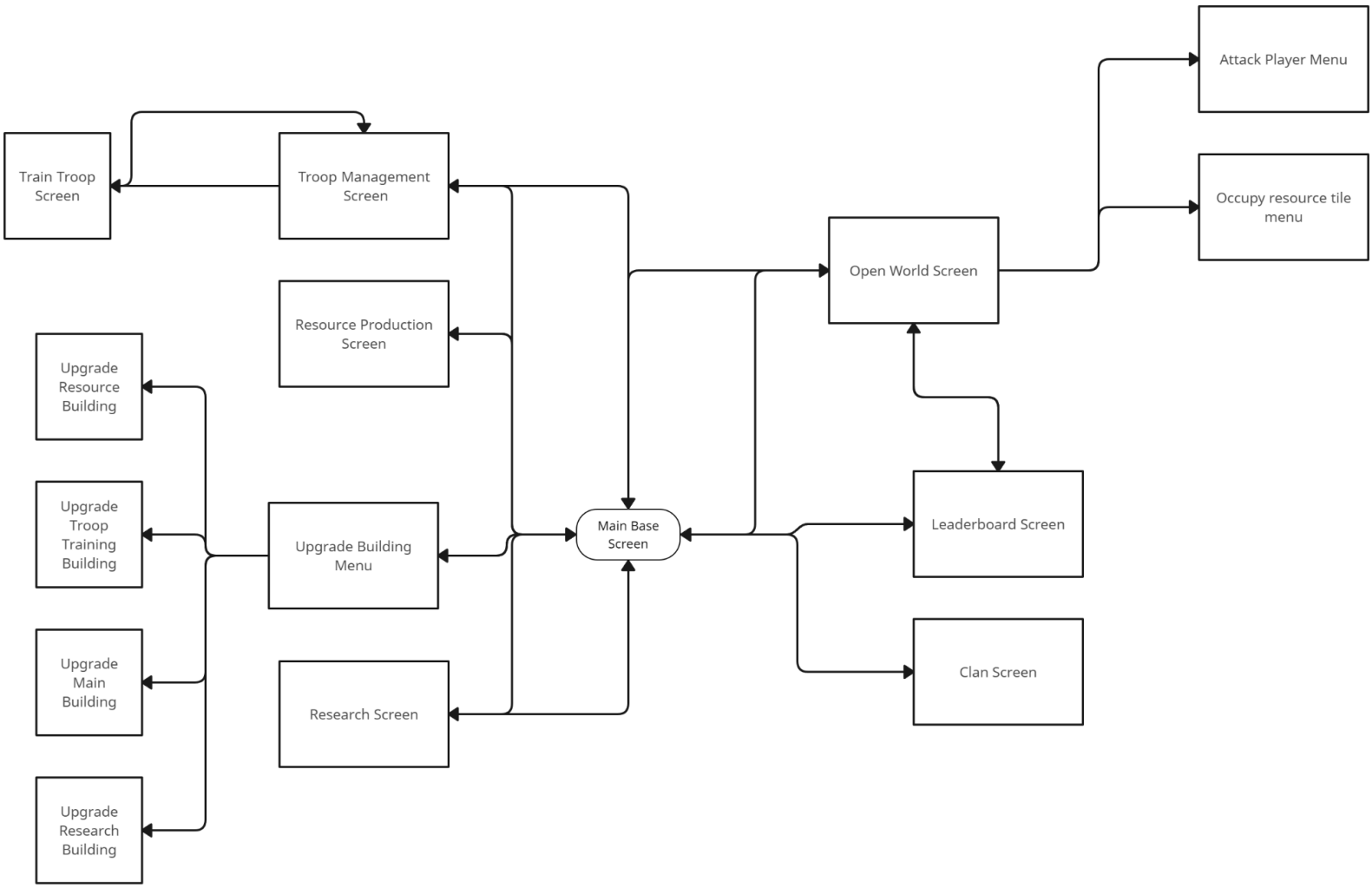
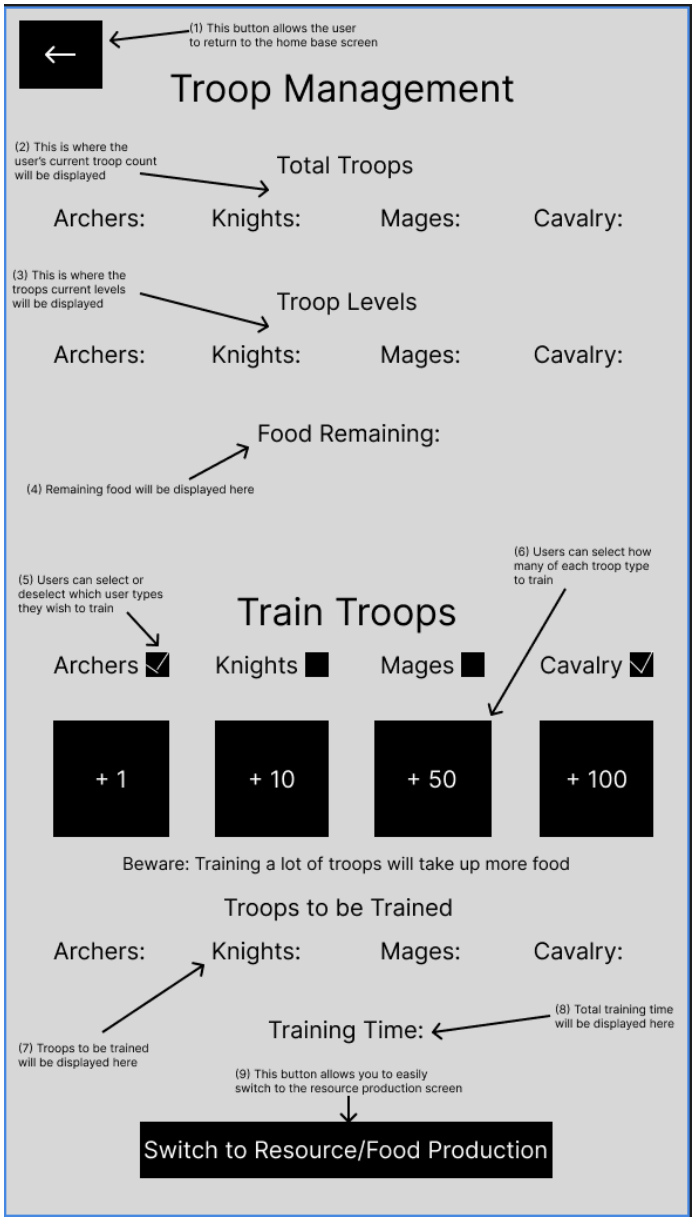


Figure 1 - Troop Management (Josh Dwight):



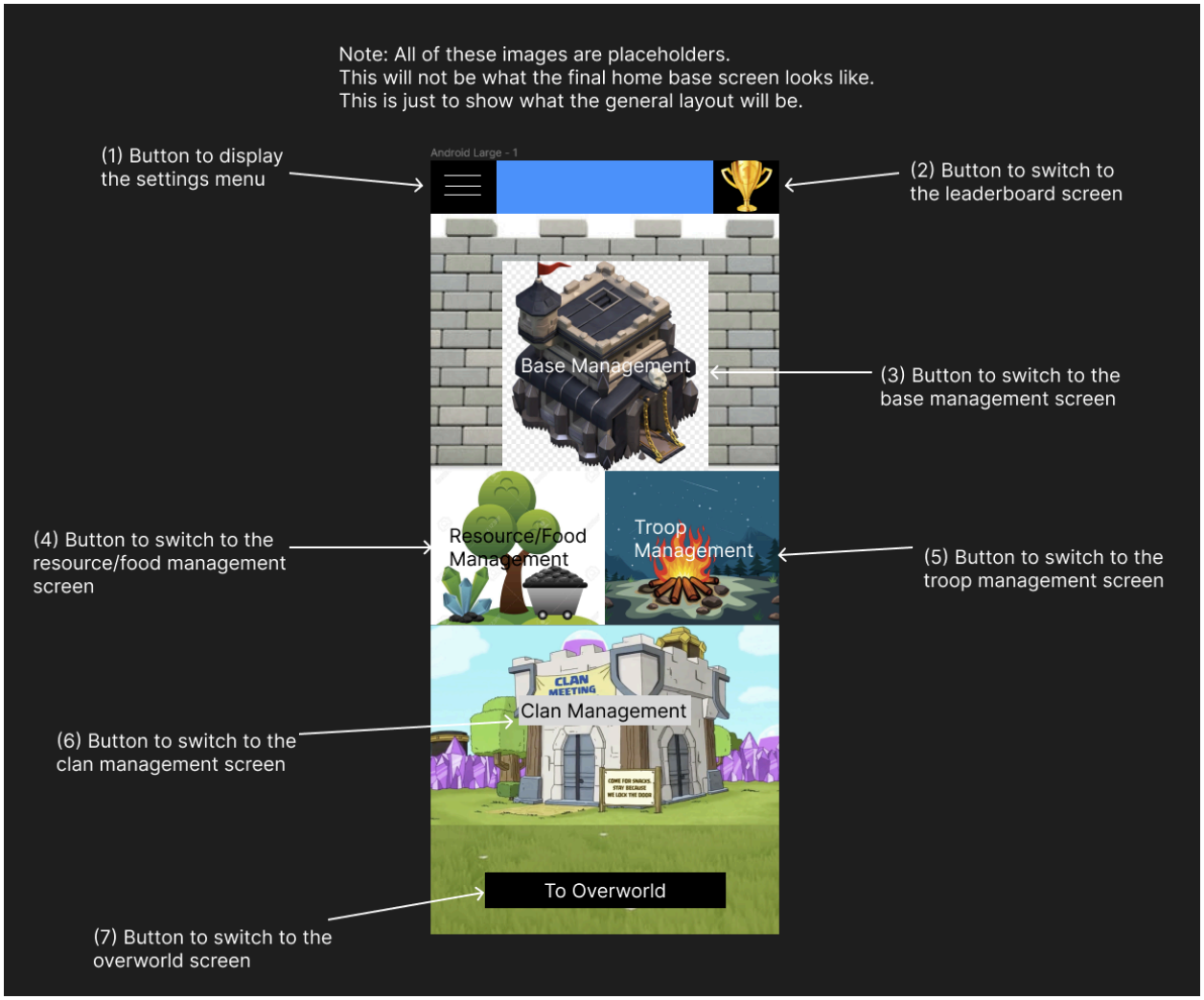
This screen is for displaying troop information and training new troops.

Displaying troop information allows the user to (2) view how many troops they currently have trained, (3) view the troops level, (4) and view the amount of food they have left.

Training troops can be done by selecting the troop types you wish to train (5) and the number of troops (6). After selecting these, it will display how many troops will be trained (7) and the total time for training them (8).

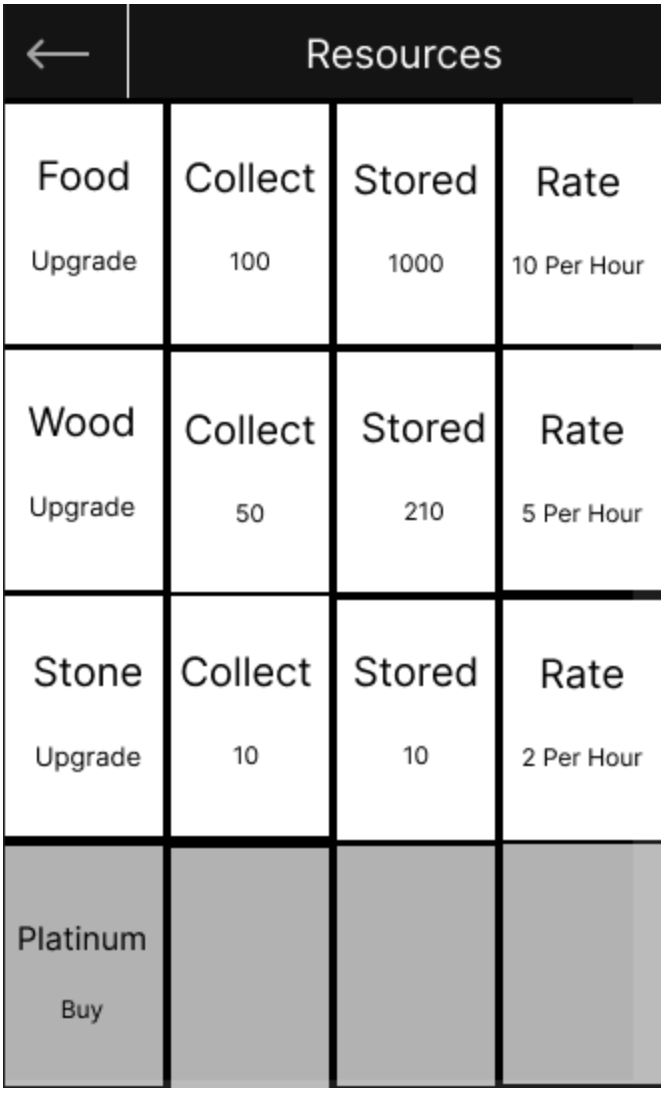
Once the user is done with this screen, they can either press the back arrow (1) to get back to the base menu or the “Switch to Resource/Food Production” button (9) to switch to resource production quickly.

Figure 2 - Home Base (Josh Dwight):



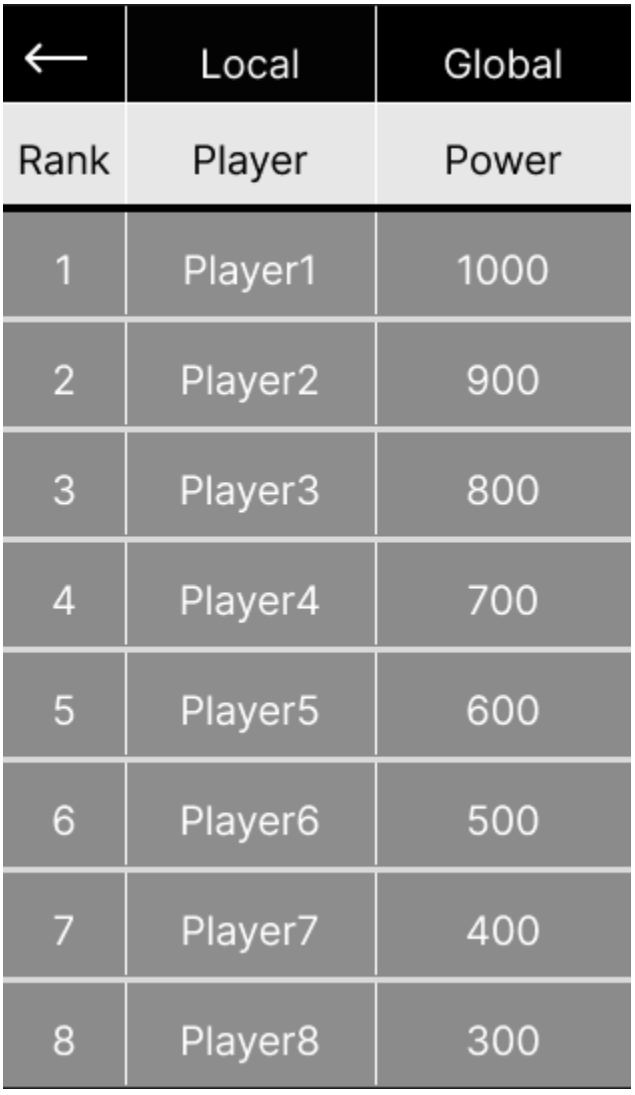
This screen is the main allowing users to access most parts of the game. The button in the top left (1) is for accessing the menu where volume, color, and other settings can be changed (You can also log in and out on this screen). The top right (2) button is for accessing the leaderboard. The base management button (3) is for accessing the base management screen. The resource/food management button (4) is for accessing the resource/food management screen. The troop management button (5) is for accessing the troop management screen. The clan management button (6) is for accessing the clan management screen. Finally, the “to overworld” button (7) is for accessing the overworld screen.

Figure 3 - Resource Management (Nick Lynch):



This screen shows information about the user's resources. The first column shows the resource and an option to upgrade or buy the resource. Buying will affect the rate resources are collected and storage space. Clicking these buttons will prompt the user to buy or upgrade, showing the price with a confirm or deny button. The second column is to collect, which shows the current resources that have been produced. Clicking on these buttons will move the existing resources to stored resources. The third column shows the stored resources and the fourth shows the rate at which each resource is produced.

Figure 4 - Leaderboards (Nick Lynch):



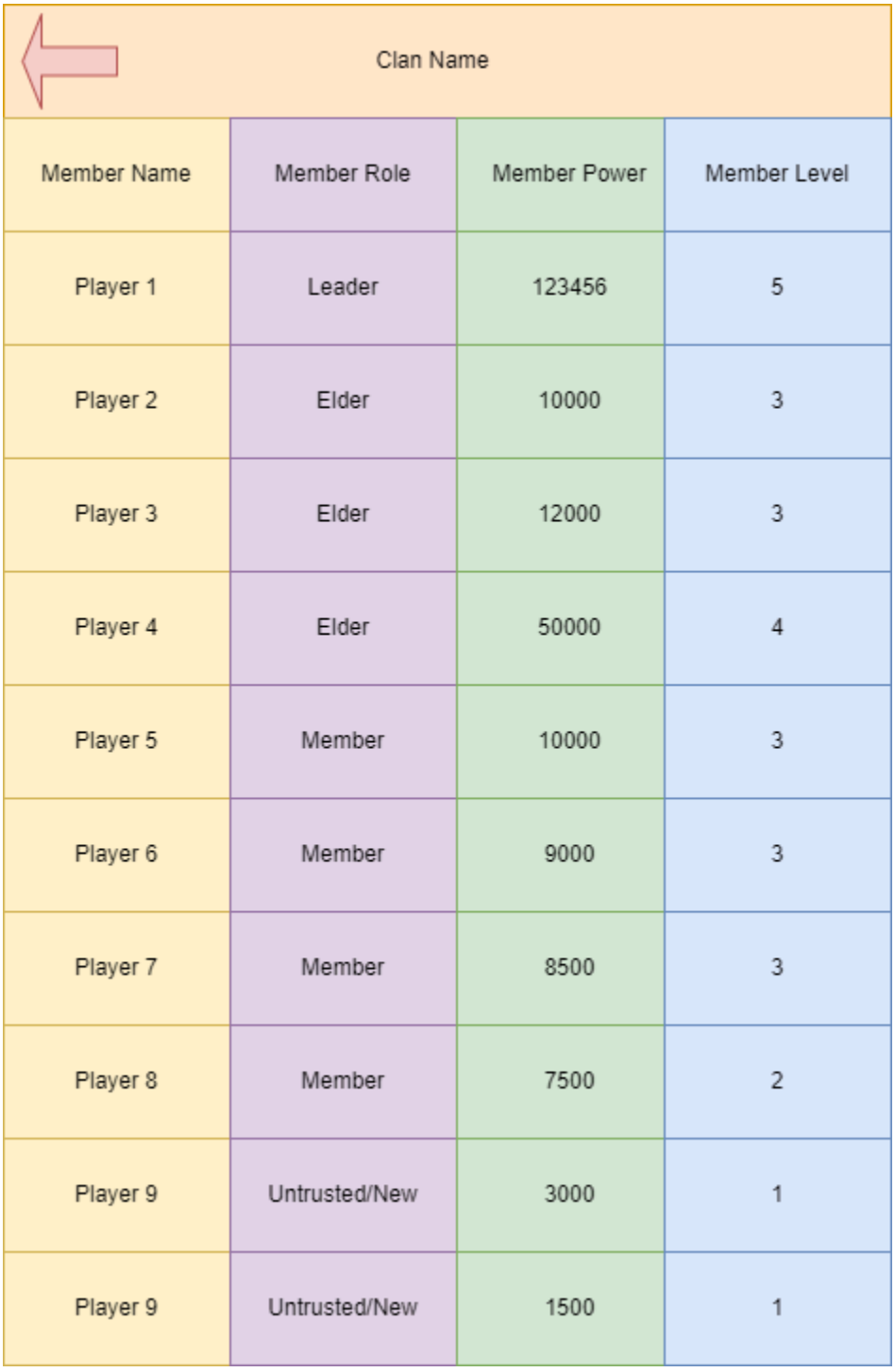
←	Local	Global
Rank	Player	Power
1	Player1	1000
2	Player2	900
3	Player3	800
4	Player4	700
5	Player5	600
6	Player6	500
7	Player7	400
8	Player8	300

This screen shows the top player of the game sorted by power level. The users can scroll down to view the top 200 players. The user can switch between local leaderboards, which display the top players in the player's country, or global to display the to players globally. The player can hit the button on the top left to return to the home base view. The player can press on each player to see more information on that player.

Figure 5 - Attack Screen (Michael Geltz):

Attack screen allows for a player to choose how many of each unit type they would like to send in an attack, number on left is the currently selected amount while the right is their total of that troop. Screen allows for a player to choose all their troops and displays a march time to get to their destination. Red arrow sends player back to open world screen.

Figure 6 - Clan Screen (Michael Geltz):



Clan screen, allows players to view who is in their clan, their role in the clan, their power level, and their main building level. Players with the role of elder/leader can kick players out via this menu by tapping on a player. A leader can promote players to member or elder via this menu and also edit their clan name, for a price. Red arrow sends view back to main base screen.