Team EGGS
Secret Features Design Plan

For our secret feature, we chose the image reversal feature. This feature requires the background and player controls to be flipped either horizontally or vertically at various points in the game.

To incorporate this into the game, we would have to add this feature into the game subsystem by adding additional functionality into the GameState class. This class would be used to keep track of horizontal or vertical reversal through the use of two booleans that trigger the reversal of both the image and the controls. The GameState class has access to both the background and the player and is responsible for the various waves of the game, meaning GameState has the ability to render the background flipped and swap the player controls by itself.

Another aspect we would have to change is the JSON corresponding to the waves we want the reverse to take place during. These JSONs would need to detail what type of reverse (horizontal or vertical), the start time and the duration we want it to take place. This change would cause us to need to change the buildWaveFromFile function in the waveConstructor class in order to handle this new information appropriately.

Additionally, for when the reverse type is vertical, we would need to add logic to the enemy to enable them to shoot up instead of down. We believe this functionality can be added in the form of a shootUp function that renders the bullets going up and spawning on the bottom of the screen. This would be called if the verticalFlip boolean in GameState is true.

Similarly, we would need to add logic to the player to enable them to shoot down instead of up and have their bullets spawn near the top of the screen.

For both the vertical and horizontal features, the enemies and player would need to have a function that relocates them across the screen.

Implementing the feature this way would mean we wouldnt have to implement any new classes but we would have to add some additional logic to the existing classes.

A pattern that would be useful for this feature is the Builder pattern. While we do have the Builder pattern inn place for the level interpreter, it would be helpful to also have the pattern in place for the game handler, as we could utilize the director to instruct the Build to implement all the necessary changes when the reverse needs to take place and wouldnt need to change all the classes individually.