Recursion: When the function calls itself, it is retracing the mathematical formula in order to decide the appropriate move forward. The recursive function we used to train the model is as follows.

The Golden rule is an irrational number solution to the quadratic equation.

q= (1+ square root 5 )/2. This is the key to our algorithms in building the most accurate fibonacci model.

Activation of relu : **f(x) = max(0,x)**  takes the weighted output of all positive integers and transforms the node into the output layer.

Loss function: Mean error squared: the difference between our predicted value and our factual value

**Our Code and model detailed:**

The way Fibonacci’s sequence lives is through recursion. The best recursion for the FS is the golden rule (best algorithm to get the job done) to train and test the model. We start to set up our model work with matrices by putting them in and making sure they have an even number of rows and columns so that no data is missing as we train the model. We train the models with different weights and numbers of hidden layers. Once the network goes through the activation function and we receive our output, we then compare the data and determine what part of our code needs adjusting. We determined that the node needed adjusting. We also changed the hyper parameters so that we can see if that node is closest to passing the test we need: of producing an accurate Fibonacci sequence. We take all positive numbers and transform the node through the activation of relu, into a positive layer until we have reached our limit. The limit is how much we have to teach the network in order to make our prediction accurate. Finally, we take the loss function, which is the biggest key to our network, which is going to show us who the real slim shady is. It is going to give us the difference between our predicted value and our actual value.

Recurrent neural network is valuable for its ability to make an accurate prediction in the problem we are trying to solve. We then take what the network has learned. Wechange hyperparameters to make the network work learn more and be more accurate and efficient thus making the network recurrent.