SUMMARY:

1. **Two hidden layers were used. Examine how applying one or three hidden layers impacts test accuracy and validation.**
   When utilizing a single hidden layer, training accuracy keeps increasing while validation accuracy starts to decrease after the fourth epoch. The graph of the training loss plainly demonstrates a declining trend, but the validation loss first showed a drop but then climbed after the fifth epoch, suggesting overfitting. Accuracy rose for two epochs when utilizing three hidden layers, after which it started to vary. Accuracy decreased as more layers were added.

2**. Consider utilizing layers with 32, 64, and so on hidden units, or layers with fewer or more hidden units.**
   While validation loss is examined more from the third epoch onward, training loss is studied less throughout the training phase. Following the third epoch, validation accuracy began to increase before declining. Accuracy decreased as the number of nodes in the network increased.

3. **Attempt to substitute the MSE loss function for Binary_crossentropy**.
   Accuracy is more stable when MSE is utilized as opposed to binary_crossentropy. Up until two epochs, training and validation loss had a similar trend before showing a considerable difference. Validation accuracy decreased when MSE was utilized as the loss function, starting with the fourth epoch.

4. **Instead of relu, consider utilizing the tanh activation, which was well-liked in the early days of neural networks.**
   Validation accuracy increased until the second epoch before declining, while training accuracy climbed. Validation accuracy changed more in ReLu than in Tanh, and validation loss increased more in ReLu than in Tanh.

5. **Make use of any technique we reviewed in class to improve the model's validation performance, such as dropout and regularization**.
   While validation accuracy improved until eight epochs and then almost reduced by half, training accuracy increased consistently. Accuracy increased throughout several epochs when the dropout technique was used and the graph revealed no obvious shift in validation accuracy.