The purpose of the model was to predict if the success of an applicant for the Alphabet Soup Organization.

Data Preprocessing

1. What variable(s) are considered the target(s) for your model?

* The is successful the loan column is the target of the model.

1. What variable(s) are considered to be the features for your model?
   * Application Type
   * Affiliation
   * Classification
   * Use Case
   * Organization
   * Status
   * Income amt
   * Special Consideration
   * Ask Amt (except the last attempt which removed this column)
2. What variable(s) are neither targets nor features, and should be removed from the input data?
   * EIN and Name were removed from the model

Compiling, Training, and Evaluating the Model

Were you able to achieve the target model performance?

* + No, I was able to get the accuracy of the training data up, but was unsuccessful in getting the test to the desired level of accuracy.

What steps did you take to try and increase model performance?

&

How many neurons, layers, and activation functions did you select for your neural network model, and why?

Model #1

The first Dense layer had 53 inputs, then two hidden layers with 60 and 40 neurons using Relu for the activating functions. The last output layer had one neuron with sigmoid for activation function. The model was trained with 75 epochs.

Loss: 0.5585877895355225, Accuracy: 0.7307288646697998

Model #2

I added a layer to see if the additional layer would increase the accuracy of the model, but it did not seem to increase the accuracy of the model.

The first Dense layer had 53 inputs, then three hidden layers with 60, 40 and 20 neurons using Relu for activating functions. The last output layer had one neuron with sigmoid for activation function. The model was trained with 75 epochs.

Loss: 0.5599716305732727, Accuracy: 0.7286297082901001

Model #3

This model I dropped the third layer since it did not result in increased accuracy and I noticed that most of the data has an ask amount of 5k and a lot of variance in the other amounts, so I thought that I could possibly make the model more accurate by dropping the “Ask Amt” column.

The first Dense layer had 53 inputs, then two hidden layers with 60 and 40 neurons using Relu for the activating functions. The last output layer had one neuron with sigmoid for activation function. The model was trained with 75 epochs.

Loss: 0.5599716305732727, Accuracy: 0.7286297082901001

Despite the changes attempted the model remained at 72% accuracy. I thought for sure I would be able to increase the accuracy. I think if I were continue to optimize the model I would keep the ask column, but work to eliminate the outliers in Ask Amt column. By reducing the extreme outliers the model should be ale to predict with a greater level of accuracy.