# Overview

The purpose of this analysis is to examine the historical data of Alphabet Soup’s funding history. We want to determine how to identify the best applicants in the future to better the organization’s success stories. Our goal is to reach a model with 75% accuracy.

# Results

* Data Preprocessing
  + Our target for the model is whether the outcome of the funding was successful, ie were the funds used to create a successful project. This outcome is coded as a ‘1’ for success and a ‘0’ for failure. In the dataframe below this is represented in the ‘IS\_SUCCESSFUL’ column
  + Our variables for the model were as follows:
    - APPLICATION\_TYPE—Alphabet Soup application type
    - AFFILIATION—Affiliated sector of industry
    - CLASSIFICATION—Government organization classification
    - USE\_CASE—Use case for funding
    - ORGANIZATION—Organization type
    - STATUS—Active status
    - INCOME\_AMT—Income classification
    - SPECIAL\_CONSIDERATIONS—Special considerations for application
    - ASK\_AMT—Funding amount requested
  + We removed the EIN and Name columns from the original dataset as those were not necessary for this analysis
  + Graphical user interface, text, application

    Description automatically generated
* Compiling, Training, and Evaluating the Model
  + We used a tuner function to determine the optimal number of layers, neurons, and activation functions
  + We were not able to generate a model with an accuracy score greater than 73%
  + We at first used only one model with relu activation functions, 16 neurons, and 3 layers. We then applied the tuner function to optimize our results
  + Our tuner function determined that a ‘tanh’ activation function with 2 hidden layers, the first with 11 neurons and the second with 16, was the optimal model to use

# Summary

Overall, our model was unable to reach the 75% score accuracy threshold. Our model maxed out at a 73% accuracy score. To better the results in the future, perhaps we should run a correlation matrix on our dataset to reduce the overall noise in the dataset.