- **Module_Challenge_21: Deep_Learning_Challenge**
- Step 4: Write a Report on the Neural Network Model

1. **Overview:**
   The Non-profit organization Alphabet Soup wanted a tool to help them select applicants for funding. They need a binary classifier to predict whether applicants will be successful if funded by Alphabet Soup.

2. **Data Preprocessing:**
   - What variable(s) are the target(s) for your model?
   - What variable(s) are the features for your model?
   - What variable(s) should be removed from the input data because they are neither targets nor features?

   Unnecessary metrics such as EIN and Name were removed from the dataset and all remaining metrics were considered in the model. Both classification and Application type were features for the model.

3. **Compiling, Training and Evaluating the Model:**
   - First Attempt: Neural Network was used on each model, to achieve the model performance, I kept NAME in the model and applied Name as a feature and binned the values and kept classification as a feature in the model. In addition to the changes previously mentioned, I also added 3rd hidden layer and set epochs at 100 and achieved accuracy of 72.87% which is not expected as per requirement.

   - Second Attempt: As mentioned above, for the second attempt I used EIN in the model and applied EIN as a feature and binned the values and kept classification as a feature in the model. In addition to changes, kept 3 hidden layers but changed epochs to 200 instead of 100 which helped to achieve accuracy of 77.75% as per expectation.

4. **Summary:** Several layers be considered, so that it can continue to predict and classify information based on the model. Keeping the right column was crucial in achieving accuracy and going beyond the target. This shows the importance of the shape of your datasets before preprocess it.