**Alphabet Soup Report**

**Overview**

The purpose was to develop and evaluate a deep learning model to predict the success of organizations in the Alphabet Soup dataset. The goal was to create a neural network model that can accurately classify groups as successful or unsuccessful based on various features.

**Results**

**Target Variable**

The target variable for the model is IS\_SUCCESSFUL.

**Features Variables**

Features used are all other columns (APPLICATION\_TYPE, INCOME\_AMT, etc…)

**Removed Variables**

The ‘EIN’ and ‘NAME’ columns were removed as they were not used for prediction and instead identifiers and categorical variables.

**Compiling, Training, and Evaluating the Model**

**Model Architecture:**

**Number of Layers:**

The model consists of three layers:

**First Hidden Layer:** 128 neurons with ReLU activation

**Second Hidden Layer:** 64 neurons with ReLU activation.

**Output Layer:** 1 neuron with sigmoid activation.

**Activation Functions:**

ReLU (Rectified Linear Unit) was used in the hidden layers to introduce non-linearity.

Sigmoid activation function was used in the output layer to produce a probability score.

**Target Model Performance:**

The model achieved an accuracy of 0.7227.

**Steps Taken to Improve Performance:**

The number of epochs was increased to 100.

Data was scaled using StandardScaler to normalize features.

Adjusting the numbers of layers was the main change considered for improving performance.

**Evaluation**

Accuracy was 0.7227 and loss was 0.5827 for the model.



The model was successful trained for binary classification with a decent level of accuracy seen.