Module 21 challenge

### Overview:

### We kept a recorded history of our applicants that failed and were successful. Based on this electronic history of applicants we complied information into computer digestible sets and then used a Neural Network Model to find key factors for success and failure of applicants. The point of this model is to find key factors that contribute to the success and failure rate of applicants. Upon knowing these key factors we can make better decisions to fund applicants

### Results:

### The target variable for this study was a variable called “IS\_SUCCESSFUL” which took on the values 1 for success and 0 for failure. This target information is what we are predicting.

### The feature variables are the contributing factors for the success for failure of the model were: APPLICATION\_TYPE,AFFILIATION,CLASSIFICATION,USE\_CASE,ORGANIZATION,STATUS,INCOME\_AMT,SPECIAL\_CONSIDERATIONS, and ASK\_AMT.

### The two variables EIN and NAME were removed from the computer model because they do not directly contribute to the model system. While the provide good information for a person examining the data set, they simply add more work to the algorithm and person working on the model.

### Compiling, Training, and Evaluating the Model:

### We used 46 neurons to map the input variables from the training set, three layers deep so the module was not too small or large, with the activation function being sigmoid for binary regression. Because we are predicting a result of success or failure, a binary regression fits this model perfectly.

### I was not able to achieve the target model performance. Due to a time constraint I could not get the model to work perfectly.

### I would have used web tools that fit the binary regression to increase model performance.

### Summary

### The results of the model were good we found how various factors contribute to the success or failure of an applicant. In a future iteration I would use less input variables and then add another regression to find collinearity between input variables. From there we can inform the board of Alphabet soup to pay close attention to specific factors when electing candidates.