

### Explanation of the Model Formulation and Output:

A .csv file named "MLF\_GP1\_CreditScore.csv" is loaded to perform machine learning techniques on it. The data is split into two components, features, and target. The target is converted to numerical values by using one-hot encoding and label encoding, the data gets standardized. The data is split into training and testing sets.

Four different regression models are applied, like Ridge regression, Lasso regression, Ridge logistic regression, and Lasso logistic regression. The accuracy of each model is then computed.

Finally, a neural network model is defined, compiled, trained, and evaluated using Keras. The neural network has two dense layers, the first with 70 neurons and a ReLU activation function, and the second with 20 neurons and a SoftMax activation function. The model trains for 5 epochs with a batch size of 100, by using sparse categorical cross-entropy as the loss function, the Adam optimizer, and accuracy as the metric. The accuracy of the neural network model is also computed.

The accuracy scores for the different models are presented below:

Ridge Regression Accuracy: 0.02865188836269844

Lasso Regression Accuracy: 0.010900389182886494

Ridge Logistic Regression Accuracy: 0.7617647058823529

Lasso Logistic Regression Accuracy: 0.7617647058823529

Neural Network Accuracy: 0.12352941185235977

The accuracy of the neural network model may differ each time the code is run since it is trained on a randomly split subset of the data.

The accuracy scores show how well the models perform at predicting the target variable based on the features. A higher accuracy score means good performance. The Ridge and Lasso regression models have very low accuracy scores, showing poor performance. The Ridge and Lasso logistic regression models have much higher accuracy scores, meaning their performance would be better. The neural network model's accuracy score varies but is typically low, to show that it is not performing as well as the logistic regression models.