



PROYECT 4

Credit Card Fraud Detection 2019 & 2020

Our scope was

**To find the accuracy in
scam detection within
the usage of credit
cards across USA (2019-
2020).**



Tools applied:



kaggle

Our dataset was taken from Kaggle for learning purposes.

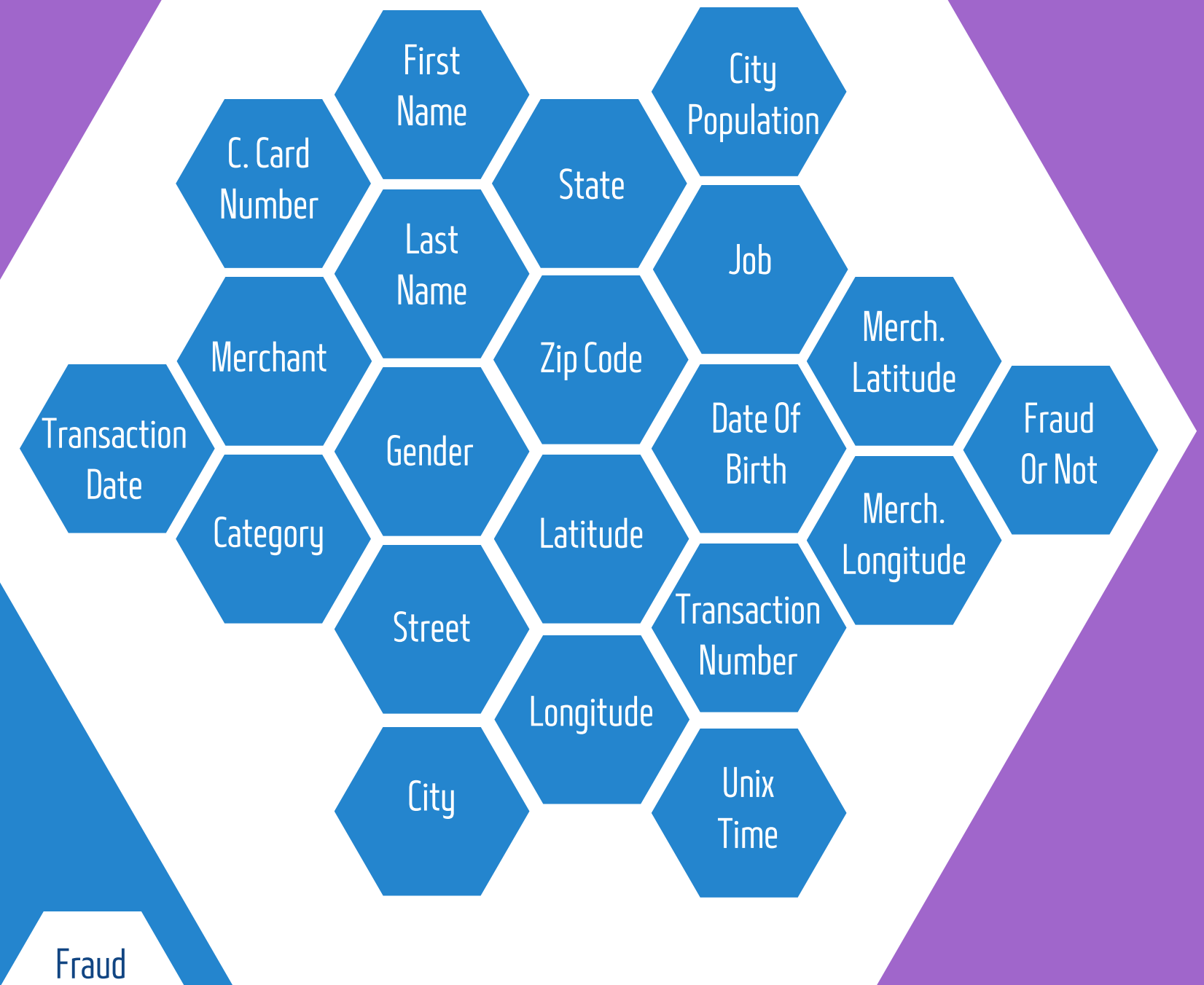
It is compound for 14 columns and 1,604,296 rows.



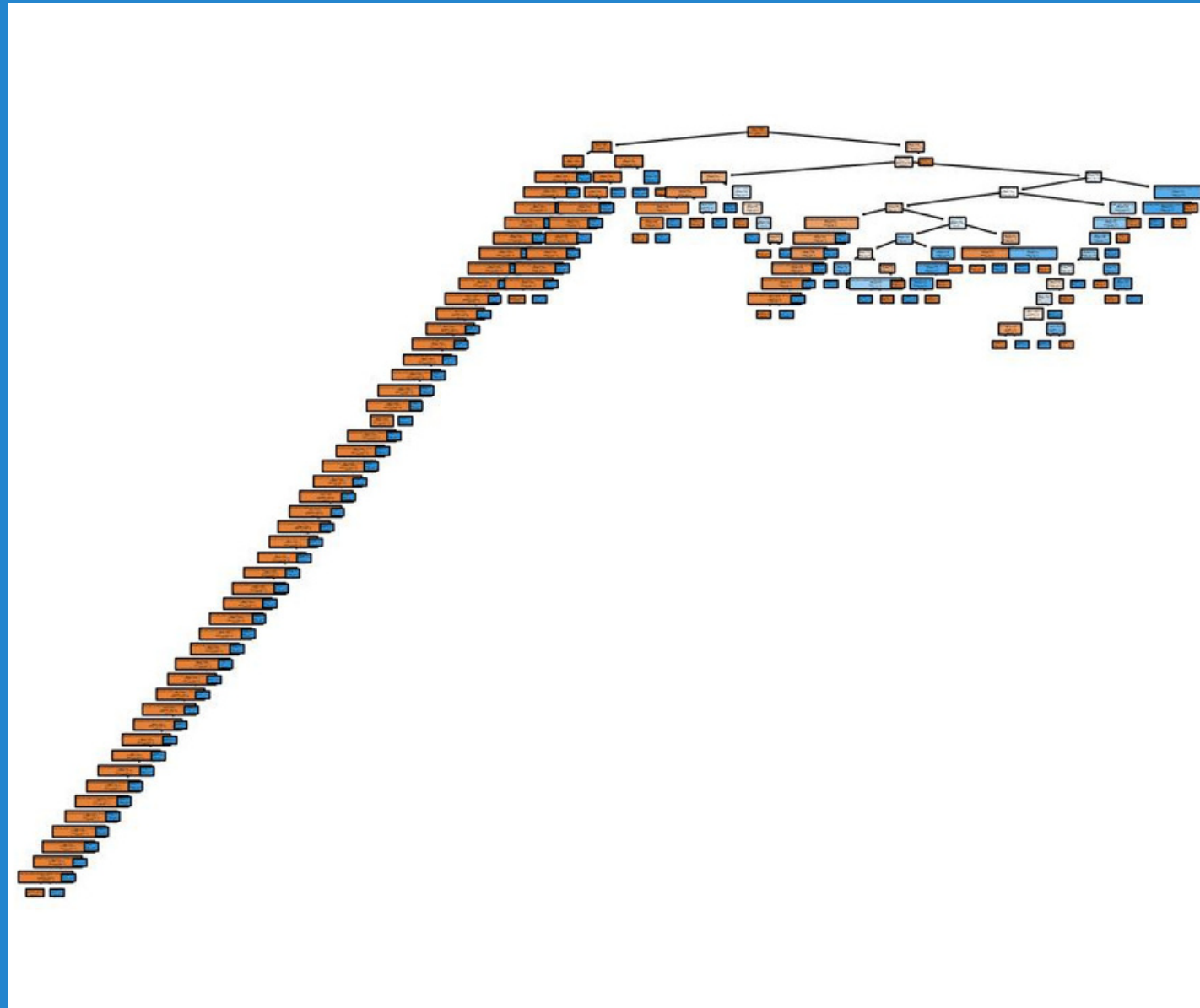
Our data set was
cleaned, normalized,
and standardized with
SQL, prior to modeling.



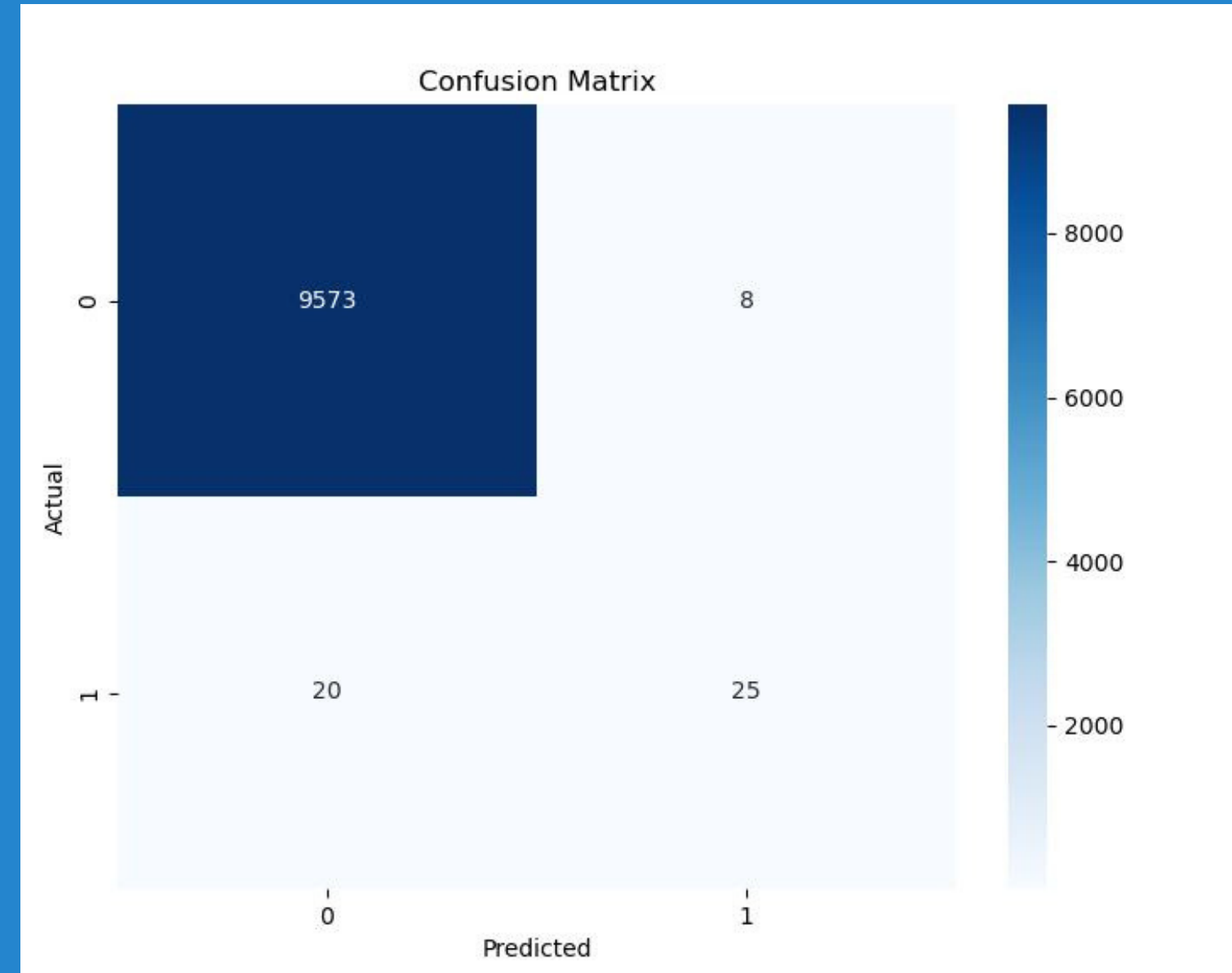
Data Selection



Decision Tree Model



Visualization

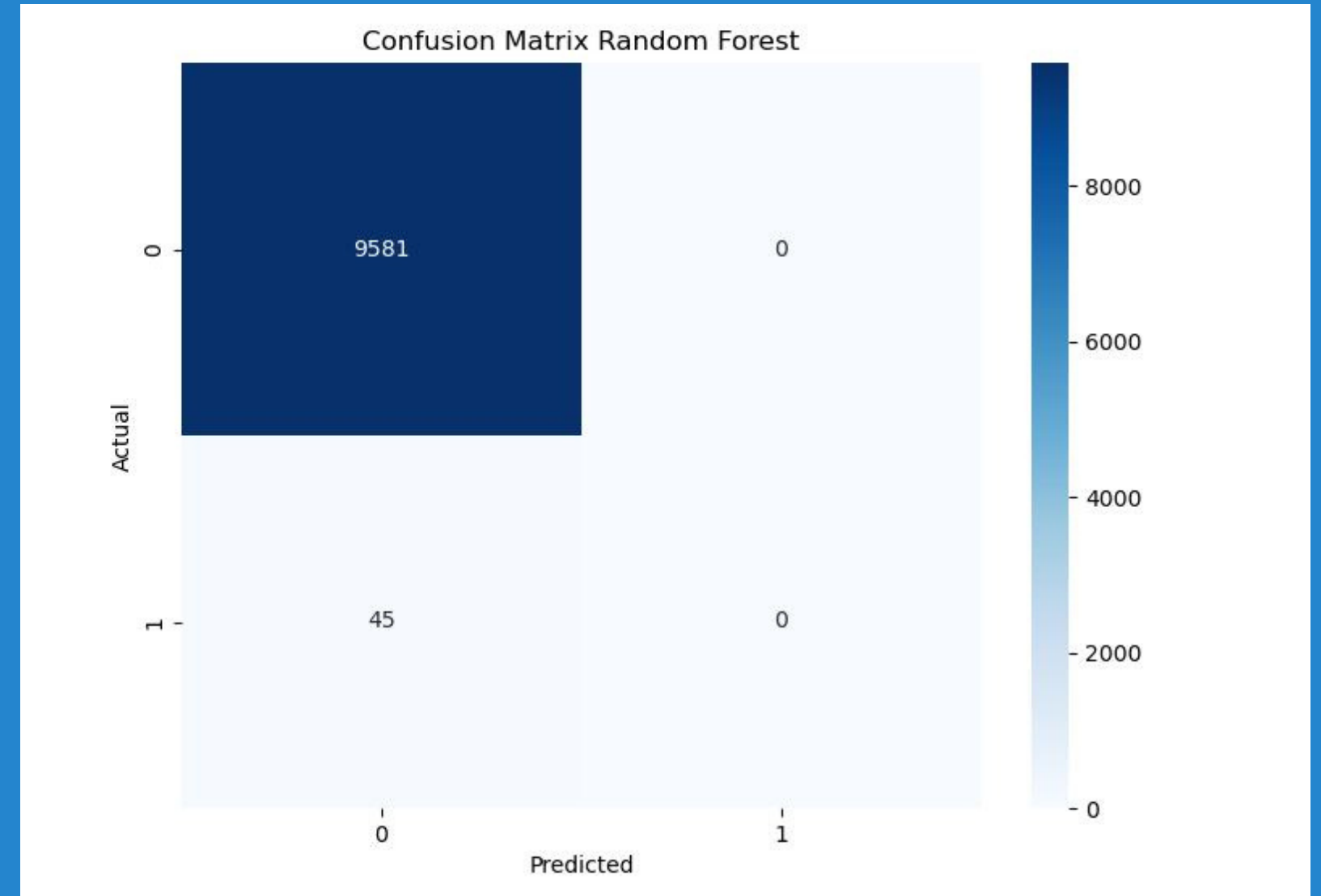


Matrix

Random Forest Model



Visualization



Matrix

Neural Network

```
# Define the model - deep neural net, i.e., the number of input features and hidden nodes for each layer.
input_features = len(X_train[0])
hidden_nodes_layer_1 = 80
hidden_nodes_layer_2 = 30

nn = tf.keras.models.Sequential()

# First hidden layer
nn.add(tf.keras.layers.Dense(units=hidden_nodes_layer_1, input_dim = input_features, activation = "relu"))

# Second hidden layer
nn.add(tf.keras.layers.Dense(units=hidden_nodes_layer_2, activation = "relu"))

# Output layer
nn.add(tf.keras.layers.Dense(units=1, activation="sigmoid"))

# Check the structure of the model
nn.summary()
```

Model: "sequential_6"

Layer (type)	Output Shape	Param #
dense_18 (Dense)	(None, 80)	1516320
dense_19 (Dense)	(None, 30)	2430
dense_20 (Dense)	(None, 1)	31
Total params: 1518781 (5.79 MB)		
Trainable params: 1518781 (5.79 MB)		
Non-trainable params: 0 (0.00 Byte)		

1]:

```
# Evaluate the model using the test data
model_loss, model_accuracy = nn.evaluate(X_test_scaled,y_test,verbose=2)
print(f"Loss: {model_loss}, Accuracy: {model_accuracy}")
```

63/63 - 0s - loss: 0.1516 - accuracy: 0.9940 - 55ms/epoch - 873us/step
Loss: 0.15157388150691986, Accuracy: 0.9940179586410522

LET US SHOW YOU ARE CODE.



Does the records of frauds increased over time?

Does probability of fraud change through the days of the week?

Which are the hours with a higher records of frauds?

Which category is more likely to have more incidents?



Which are the top 10 states in USA to have frauds?



DASHBOARD

THANK FOR YOUR ATTENTION.