From the original dataset, I used the Open, High, Low, and Volume as features while the Close is used as a prediction variable (Ground Truth). The original features are transformed into 0 and 1 with MinMax Scalar. It's done because deep learning models learn better and fast when the features are transformed and normalized.

I have used the BiLSTM model due to its flexibility to look in both directions. A traditional LSTM model looks in only one direction either forward(the future) or the backward (the past) but it can't look in both directions simultaneously whereas the BiLSTM model has the capability to look in both directions the forward and backward (the future and the past) simultaneously so it provides us with the more robust features and in our problem of stock values prediction, I believe this is most useful to learn from both the future and the past. For my model, I have used one layer of BiLSTM with 128 units and relu as activation since the closing values are never going towards negative. I also added a dropout layer with a 0.4 value to handle overfitting for robust learning and finally a single dense layer for final prediction. I used the mean squared error as a loss function and adam as the optimizer with default parameters.

Following is the complete structure of the BiLSTM model that I used.

```
[55] #Building the biLSTM Model
     bilstm = Sequential()
     bilstm.add(Bidirectional(LSTM(128, input_shape=(1, trainX.shape[1]), activation="relu")))
     bilstm.add(Dropout(0.4))
     bilstm.add(Dense(1))

     bilstm.compile(loss="mean_squared_error", optimizer="adam")
```

I trained the model for 150 epochs.

```
Epoch 1/150
1033/1033 [==============================] - 7s 5ms/step - loss: 16.3895
Epoch 2/150
1033/1033 [==============================] - 5s 4ms/step - loss: 81.3483
Epoch 3/150
1033/1033 [==============================] - 4s 4ms/step - loss: 37.8086
Epoch 4/150
1033/1033 [==============================] - 5s 4ms/step - loss: 17.4785
Epoch 5/150
1033/1033 [==============================] - 5s 5ms/step - loss: 11.9297
```

Results.
Finally, I got the mean squared error on test data = 6.01645510674005

And following is the visitation of actual closing values vs prediction by the BiLSTM model.
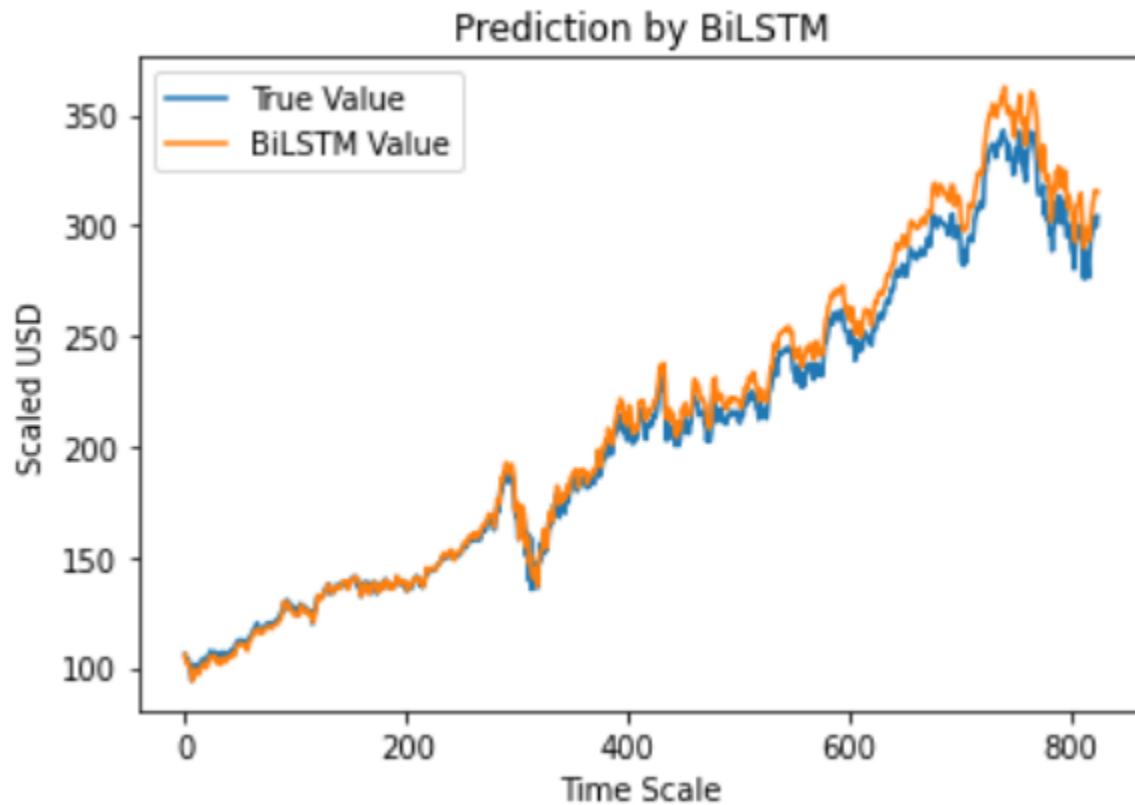
From the above chart, we can clearly see that our model predictions are very close to the actual ground truth. It's predicting the patterns very well even when the values are slightly different. If you look after 400, you can see that when actual are moving upward then BiLSTM also moved upward and the same for down movement. So, we can conclude that BiLSTM is more useful in stock prediction as compared to LSTM as we proved that accuracy is much better and visualization also prove that patterns are predicted accurately.