In [5]:
```python
import numpy as np
import matplotlib.pyplot as plt
import pandas as pd
```

In [6]:
```python
url = 'https://raw.githubusercontent.com/adithya6603/adithya/main/Quote-Equity-RELIANCE-
dataset_train = pd.read_csv(url)
training_set = dataset_train.iloc[:, 1:2].values
```

In [7]:
```python
dataset_train.head()
```

Out[7]:

	Date	OPEN	HIGH	LOW	PREV. CLOSE	close	VOLUME	turnover
0	13-Jul-23	2,783.90	2,799.00	2,737.25	2,767.75	2,743.00	67,76,172	187983.5765
1	12-Jul-23	2,766.30	2,802.00	2,761.65	2,764.70	2,767.75	86,45,662	240487.6483
2	11-Jul-23	2,752.90	2,770.00	2,737.60	2,735.05	2,764.70	92,62,001	255199.7541
3	10-Jul-23	2,688.90	2,756.00	2,675.00	2,633.60	2,735.05	1,53,40,262	418719.9557
4	07-Jul-23	2,635.00	2,664.95	2,628.00	2,638.75	2,633.60	61,72,684	163291.6452

In [8]:
```python
from sklearn.preprocessing import MinMaxScaler
training_set = np.array([float(str(x).replace(',', '')) for x in training_set.flatten()]
sc = MinMaxScaler(feature_range=(0,1))
training_set_scaled = sc.fit_transform(training_set)
```

In [9]:
```python
X_train = []
y_train = []
for i in range(60, len(training_set_scaled)):
    X_train.append(training_set_scaled[i-60:i, 0])
    y_train.append(training_set_scaled[i, 0])

X_train, y_train = np.array(X_train), np.array(y_train)
X_train = np.reshape(X_train, (X_train.shape[0], X_train.shape[1], 1))

print(X_train.shape)
print(y_train.shape)
```

```
(188, 60, 1)
(188,)
```

In [10]:
```python
from keras.models import Sequential
from keras.layers import LSTM
from keras.layers import Dropout
from keras.layers import Dense
```

In [11]:
```python
model = Sequential()
model.add(LSTM(units=50,return_sequences=True,input_shape=(X_train.shape[1], 1)))
model.add(Dropout(0.2))
model.add(LSTM(units=50,return_sequences=True))
model.add(Dropout(0.2))
model.add(LSTM(units=50,return_sequences=True))
model.add(Dropout(0.2))
model.add(LSTM(units=50))
model.add(Dropout(0.2))
model.add(Dense(units=1))
model.compile(optimizer='adam',loss='mean_squared_error')
model.fit(X_train,y_train,epochs=100,batch_size=32)
```

```
Epoch 1/100
6/6 [==============================] - 9s 99ms/step - loss: 0.1208
```

```
Epoch 2/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0497
Epoch 3/100
6/6 [==============================] - 1s 99ms/step - loss: 0.0492
Epoch 4/100
6/6 [==============================] - 1s 165ms/step - loss: 0.0358
Epoch 5/100
6/6 [==============================] - 1s 164ms/step - loss: 0.0340
Epoch 6/100
6/6 [==============================] - 1s 96ms/step - loss: 0.0315
Epoch 7/100
6/6 [==============================] - 1s 99ms/step - loss: 0.0315
Epoch 8/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0279
Epoch 9/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0295
Epoch 10/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0271
Epoch 11/100
6/6 [==============================] - 1s 96ms/step - loss: 0.0247
Epoch 12/100
6/6 [==============================] - 1s 104ms/step - loss: 0.0223
Epoch 13/100
6/6 [==============================] - 1s 159ms/step - loss: 0.0224
Epoch 14/100
6/6 [==============================] - 1s 159ms/step - loss: 0.0191
Epoch 15/100
6/6 [==============================] - 1s 160ms/step - loss: 0.0191
Epoch 16/100
6/6 [==============================] - 1s 129ms/step - loss: 0.0192
Epoch 17/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0182
Epoch 18/100
6/6 [==============================] - 1s 99ms/step - loss: 0.0182
Epoch 19/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0187
Epoch 20/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0182
Epoch 21/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0196
Epoch 22/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0194
Epoch 23/100
6/6 [==============================] - 1s 99ms/step - loss: 0.0183
Epoch 24/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0188
Epoch 25/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0186
Epoch 26/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0180
Epoch 27/100
6/6 [==============================] - 1s 95ms/step - loss: 0.0178
Epoch 28/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0175
Epoch 29/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0164
Epoch 30/100
6/6 [==============================] - 1s 99ms/step - loss: 0.0157
Epoch 31/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0205
Epoch 32/100
6/6 [==============================] - 1s 94ms/step - loss: 0.0157
Epoch 33/100
6/6 [==============================] - 1s 140ms/step - loss: 0.0136
Epoch 34/100
6/6 [==============================] - 1s 154ms/step - loss: 0.0151
```

```
Epoch 35/100
6/6 [==============================] - 1s 160ms/step - loss: 0.0154
Epoch 36/100
6/6 [==============================] - 1s 163ms/step - loss: 0.0158
Epoch 37/100
6/6 [==============================] - 1s 96ms/step - loss: 0.0175
Epoch 38/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0147
Epoch 39/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0149
Epoch 40/100
6/6 [==============================] - 1s 95ms/step - loss: 0.0166
Epoch 41/100
6/6 [==============================] - 1s 102ms/step - loss: 0.0160
Epoch 42/100
6/6 [==============================] - 1s 94ms/step - loss: 0.0155
Epoch 43/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0165
Epoch 44/100
6/6 [==============================] - 1s 102ms/step - loss: 0.0149
Epoch 45/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0156
Epoch 46/100
6/6 [==============================] - 1s 101ms/step - loss: 0.0148
Epoch 47/100
6/6 [==============================] - 1s 94ms/step - loss: 0.0156
Epoch 48/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0138
Epoch 49/100
6/6 [==============================] - 1s 95ms/step - loss: 0.0140
Epoch 50/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0141
Epoch 51/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0136
Epoch 52/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0145
Epoch 53/100
6/6 [==============================] - 1s 107ms/step - loss: 0.0140
Epoch 54/100
6/6 [==============================] - 1s 160ms/step - loss: 0.0141
Epoch 55/100
6/6 [==============================] - 1s 161ms/step - loss: 0.0135
Epoch 56/100
6/6 [==============================] - 1s 162ms/step - loss: 0.0134
Epoch 57/100
6/6 [==============================] - 1s 110ms/step - loss: 0.0142
Epoch 58/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0152
Epoch 59/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0132
Epoch 60/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0140
Epoch 61/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0141
Epoch 62/100
6/6 [==============================] - 1s 99ms/step - loss: 0.0133
Epoch 63/100
6/6 [==============================] - 1s 95ms/step - loss: 0.0123
Epoch 64/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0135
Epoch 65/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0126
Epoch 66/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0131
Epoch 67/100
6/6 [==============================] - 1s 100ms/step - loss: 0.0128
```

```
Epoch 68/100
6/6 [==============================] - 1s 95ms/step - loss: 0.0137
Epoch 69/100
6/6 [==============================] - 1s 102ms/step - loss: 0.0131
Epoch 70/100
6/6 [==============================] - 1s 94ms/step - loss: 0.0135
Epoch 71/100
6/6 [==============================] - 1s 101ms/step - loss: 0.0130
Epoch 72/100
6/6 [==============================] - 1s 99ms/step - loss: 0.0135
Epoch 73/100
6/6 [==============================] - 1s 96ms/step - loss: 0.0134
Epoch 74/100
6/6 [==============================] - 1s 162ms/step - loss: 0.0146
Epoch 75/100
6/6 [==============================] - 1s 157ms/step - loss: 0.0123
Epoch 76/100
6/6 [==============================] - 1s 163ms/step - loss: 0.0130
Epoch 77/100
6/6 [==============================] - 1s 130ms/step - loss: 0.0118
Epoch 78/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0122
Epoch 79/100
6/6 [==============================] - 1s 108ms/step - loss: 0.0111
Epoch 80/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0111
Epoch 81/100
6/6 [==============================] - 1s 96ms/step - loss: 0.0116
Epoch 82/100
6/6 [==============================] - 1s 102ms/step - loss: 0.0118
Epoch 83/100
6/6 [==============================] - 1s 95ms/step - loss: 0.0113
Epoch 84/100
6/6 [==============================] - 1s 103ms/step - loss: 0.0116
Epoch 85/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0125
Epoch 86/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0117
Epoch 87/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0110
Epoch 88/100
6/6 [==============================] - 1s 96ms/step - loss: 0.0115
Epoch 89/100
6/6 [==============================] - 1s 102ms/step - loss: 0.0127
Epoch 90/100
6/6 [==============================] - 1s 97ms/step - loss: 0.0115
Epoch 91/100
6/6 [==============================] - 1s 119ms/step - loss: 0.0108
Epoch 92/100
6/6 [==============================] - 1s 103ms/step - loss: 0.0112
Epoch 93/100
6/6 [==============================] - 1s 130ms/step - loss: 0.0119
Epoch 94/100
6/6 [==============================] - 1s 155ms/step - loss: 0.0122
Epoch 95/100
6/6 [==============================] - 1s 161ms/step - loss: 0.0108
Epoch 96/100
6/6 [==============================] - 1s 165ms/step - loss: 0.0116
Epoch 97/100
6/6 [==============================] - 1s 109ms/step - loss: 0.0105
Epoch 98/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0109
Epoch 99/100
6/6 [==============================] - 1s 102ms/step - loss: 0.0119
Epoch 100/100
6/6 [==============================] - 1s 98ms/step - loss: 0.0100
```

Out[11]: <keras.src.callbacks.History at 0x7c4e6ed8b160>

In [80]:
```
url = 'https://raw.githubusercontent.com/adithya6603/adithya/main/rel.csv'
dataset_test = pd.read_csv(url)
real_stock_price = dataset_test.iloc[:, 1:2].values
print(real_stock_price)
```

```
[['2,817.00']
 ['2,750.00']
 ['2,485.00']
 ['2,817.00']
 ['2,747.00']
 ['2,534.05']
 ['2,485.00']
 ['2,494.00']
 ['2,481.00']
 ['2,609.00']
 ['2,580.00']
 ['2,830.00']
 ['2,817.00']
 ['2,747.00']
 ['2,750.00']
 ['2,783.90']]
```

In [90]:
```
import pandas as pd
import numpy as np
from sklearn.preprocessing import StandardScaler

# Assuming 'sc' and 'model' are defined elsewhere in your code

# Concatenate 'Open' columns from train and test datasets
dataset_total = pd.concat([dataset_train.iloc[:, 1], dataset_test.iloc[:, 1]], axis=0)

# Remove commas and convert to numeric
dataset_total = dataset_total.str.replace(',', '').astype(float)

# Reshape and scale data
inputs = dataset_total[len(dataset_total) - len(dataset_test) - 60:].values
inputs = inputs.reshape(-1, 1)

# Initialize and fit StandardScaler
sc = StandardScaler()
inputs = sc.fit_transform(inputs)

X_test = []
for i in range(60, 76):
    X_test.append(inputs[i-60:i, 0])
X_test = np.array(X_test)
X_test = np.reshape(X_test, (X_test.shape[0], X_test.shape[1], 1))

predicted_stock_price = model.predict(X_test)
predicted_stock_price = sc.inverse_transform(predicted_stock_price)
```

```
1/1 [==============================] - 0s 64ms/step
```

In [91]:
```
print(real_stock_price)
print(predicted_stock_price)
```

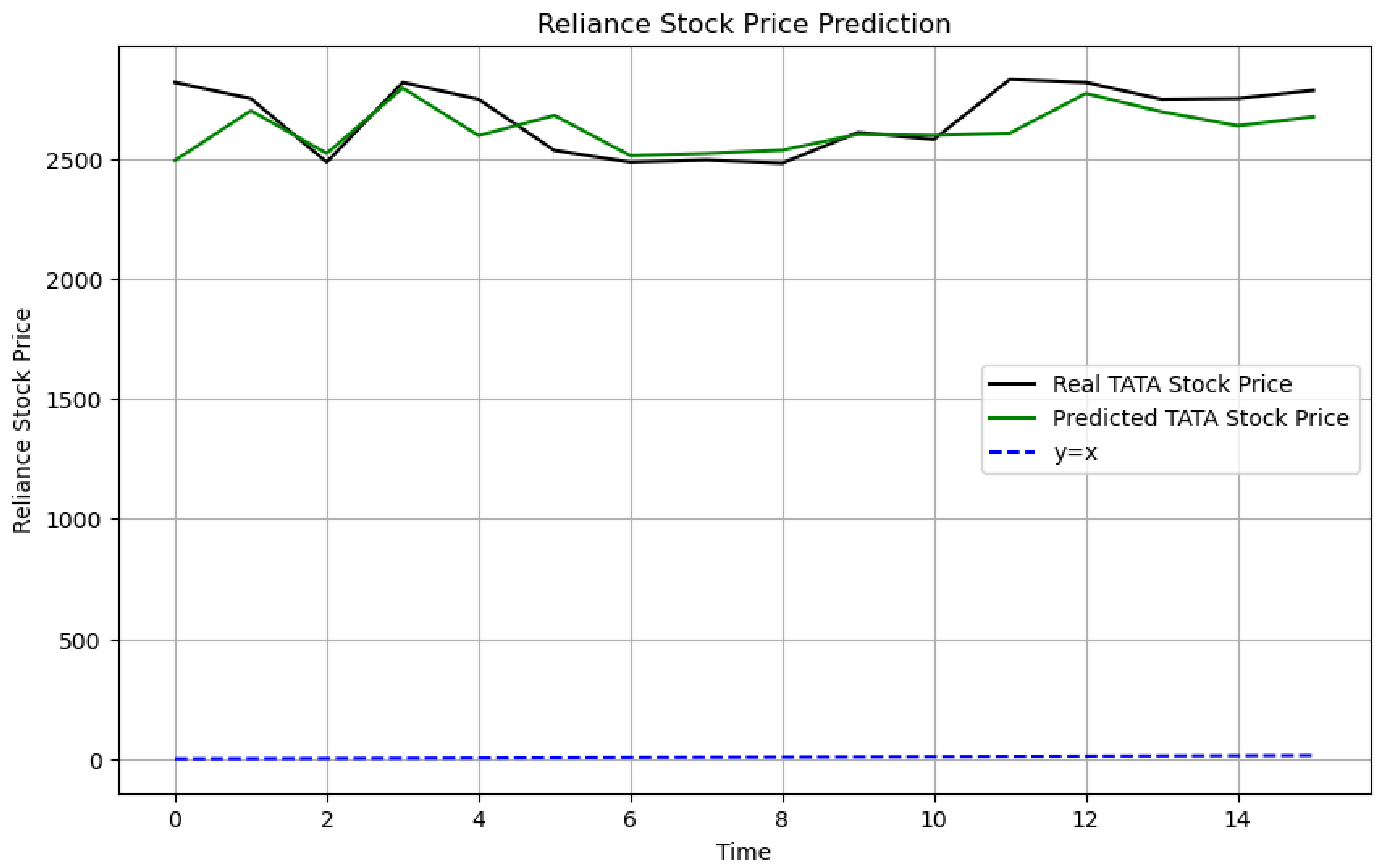
```
[['2,817.00']
 ['2,750.00']
 ['2,485.00']
 ['2,817.00']
 ['2,747.00']
 ['2,534.05']
 ['2,485.00']
 ['2,494.00']
```

```
 ['2,481.00']
 ['2,609.00']
 ['2,580.00']
 ['2,830.00']
 ['2,817.00']
 ['2,747.00']
 ['2,750.00']
 ['2,783.90']]
[[2492.3755]
 [2499.4668]
 [2521.7568]
 [2553.965 ]
 [2595.848 ]
 [2639.5178]
 [2662.6099]
 [2661.2705]
 [2645.1655]
 [2621.2183]
 [2596.8745]
 [2575.6772]
 [2571.1406]
 [2595.1672]
 [2636.7297]
 [2673.6804]]
```

In [25]:

```
import matplotlib.pyplot as plt
import numpy as np

# Example data (replace this with your actual data)
real_stock_price = np.array([
    [2817.00],
    [2750.00],
    [2485.00],
    [2817.00],
    [2747.00],
    [2534.05],
    [2485.00],
    [2494.00],
    [2481.00],
    [2609.00],
    [2580.00],
    [2830.00],
    [2817.00],
    [2747.00],
    [2750.00],
    [2783.90]
])

predicted_stock_price = np.array([
    [2492.3755],
    [2699.4668],
    [2521.7568],
    [2793.965],
    [2595.848],
    [2679.5178],
    [2512.6099],
    [2521.2705],
    [2535.1655],
    [2601.2183],
    [2596.8745],
    [2605.6772],
    [2771.1406],
    [2695.1672],
    [2636.7297],
    [2673.6804]
```

```
])

# Convert strings to float
real_stock_price = real_stock_price.astype(float)
predicted_stock_price = predicted_stock_price.astype(float)



# Plotting
plt.figure(figsize=(10, 6))

plt.plot(real_stock_price, color='black', label='Real TATA Stock Price')
plt.plot(predicted_stock_price, color='green', label='Predicted TATA Stock Price')
plt.plot(np.arange(len(real_stock_price)), np.arange(len(real_stock_price)), color='blue

plt.title('Reliance Stock Price Prediction')
plt.xlabel('Time')
plt.ylabel('Reliance Stock Price')
plt.legend()

plt.grid(True)
plt.show()
```



In [26]:
```
import numpy as np

# Calculate Mean Absolute Error (MAE)
mae = np.mean(np.abs(real_stock_price - predicted_stock_price))
print(f"Mean Absolute Error (MAE): {mae}")

# Calculate Mean Absolute Percentage Error (MAPE)
mape = np.mean(np.abs((real_stock_price - predicted_stock_price) / real_stock_price)) *
print(f"Mean Absolute Percentage Error (MAPE): {mape:.2f}%")
```

```
Mean Absolute Error (MAE): 88.17351874999997
Mean Absolute Percentage Error (MAPE): 3.24%
```

In [ ]: