Task – Time Series Forecasting using Keras

1. In the attached sales.xlsx spreadsheet there are quarterly sales of some company

|  |  |  |
| --- | --- | --- |
| year | quarter | sales |
| 2015 | 1 | 244.45 |
| 2015 | 2 | 1318.61 |
| 2015 | 3 | 69.01 |
| 2015 | 4 | 109.59 |
| 2016 | 1 | 519.84 |
| 2016 | 2 | 10648.28 |
| 2016 | 3 | 390.82 |
| 2016 | 4 | 10970.1 |
| 2017 | 1 | 111721.3 |
| 2017 | 2 | 185751.6 |
| 2017 | 3 | 187791.4 |
| 2017 | 4 | 458570.9 |
| 2018 | 1 | 134335.9 |
| 2018 | 2 | 214062.5 |
| 2018 | 3 | 180409.2 |
| 2018 | 4 | 431796.6 |
| 2019 | 1 | 170508.1 |
| 2019 | 2 | 385837.9 |
| 2019 | 3 | 340634.5 |
| 2019 | 4 | 885613.9 |
| 2020 | 1 | 167752.7 |
| 2020 | 2 | 282725.7 |
| 2020 | 3 | 226828.3 |
| 2020 | 4 | 647780 |

1. Write a deep learning program in Python using Keras library (with Tensorflow background), predicting sales for the next quarter, next + 1, and next + 2 quarters.

Use LSTM algorithm.

1. Evaluate the model using metrics of your choice. Show on the graphs how these metrics change with number of epochs.
2. Train the model using data up to 2019, and test, if it correctly predicts sales in Q1, Q2, and Q3 in 2020.
3. Comment out the code.