

LSTM Demo

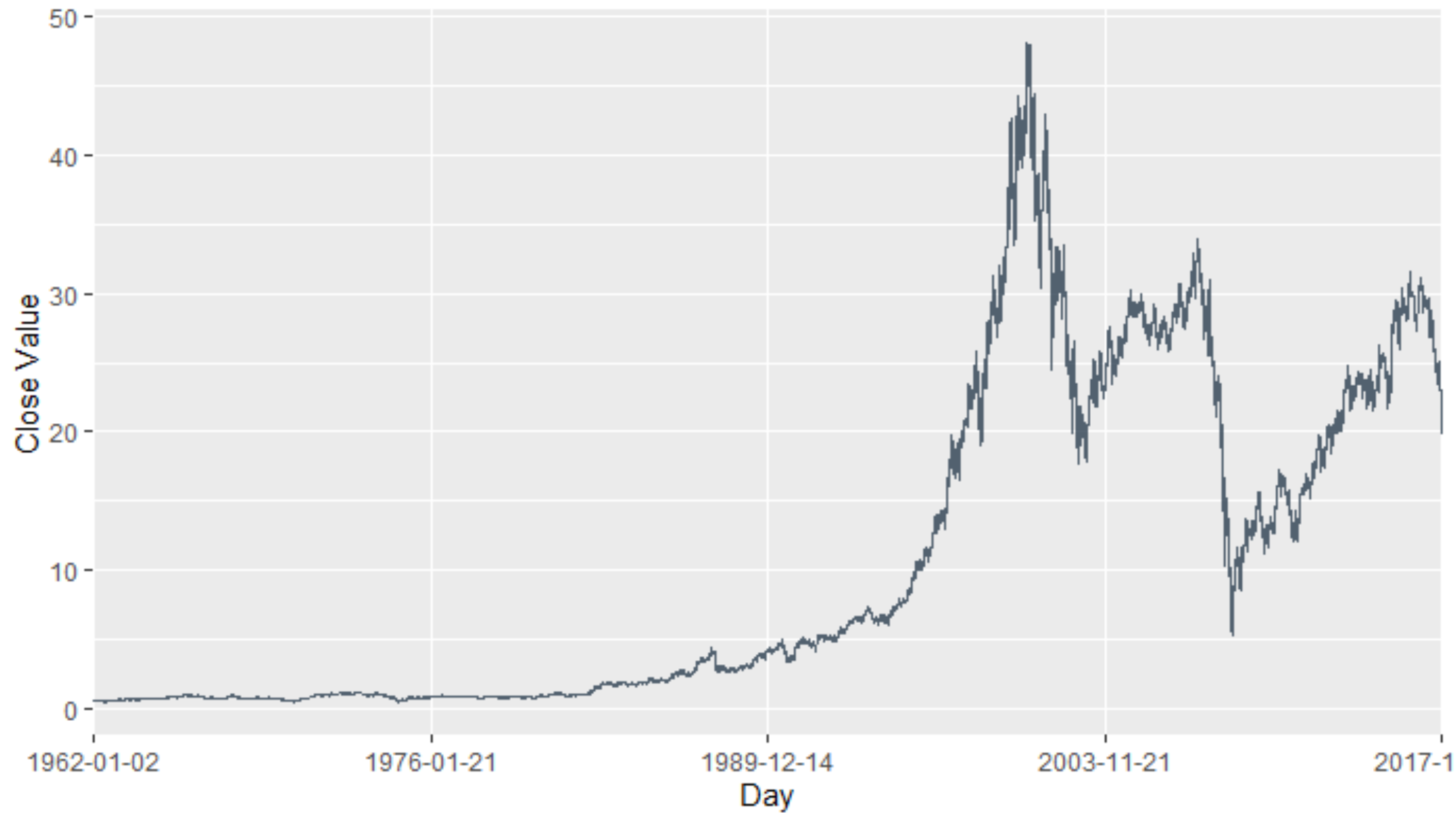
Deep Learning

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The Data

Day <fctr>	Open <dbl>	High <dbl>	Low <dbl>	Close <dbl>	Volume <int>
1962-01-02	0.6277	0.6362	0.6201	0.6201	2575579
1962-01-03	0.6201	0.6201	0.6122	0.6201	1764749
1962-01-04	0.6201	0.6201	0.6037	0.6122	2194010
1962-01-05	0.6122	0.6122	0.5798	0.5957	3255244
1962-01-08	0.5957	0.5957	0.5716	0.5957	3696430
1962-01-09	0.5957	0.6037	0.5878	0.5957	2778285
1962-01-10	0.5957	0.6037	0.5957	0.5957	2337096
1962-01-11	0.5957	0.5957	0.5878	0.5957	1943605
1962-01-12	0.5957	0.6037	0.5878	0.5878	2015151
1962-01-15	0.5957	0.5957	0.5957	0.5957	2527879
1962-01-16	0.5957	0.6037	0.5957	0.6037	1657434
1962-01-17	0.6037	0.6037	0.5878	0.5878	2551729
1962-01-18	0.5878	0.5957	0.5878	0.5957	1764749
1962-01-19	0.5957	0.6037	0.5957	0.6037	1585893
1962-01-22	0.6037	0.6122	0.6037	0.6037	1693206
1962-01-23	0.6037	0.6037	0.5878	0.5878	2718664
1962-01-24	0.5878	0.6037	0.5878	0.6037	1907836
1962-01-25	0.6037	0.6037	0.5957	0.5957	1895910
1962-01-26	0.5957	0.5957	0.5957	0.5957	1204322
1962-01-29	0.5957	0.5957	0.5957	0.5957	1216242

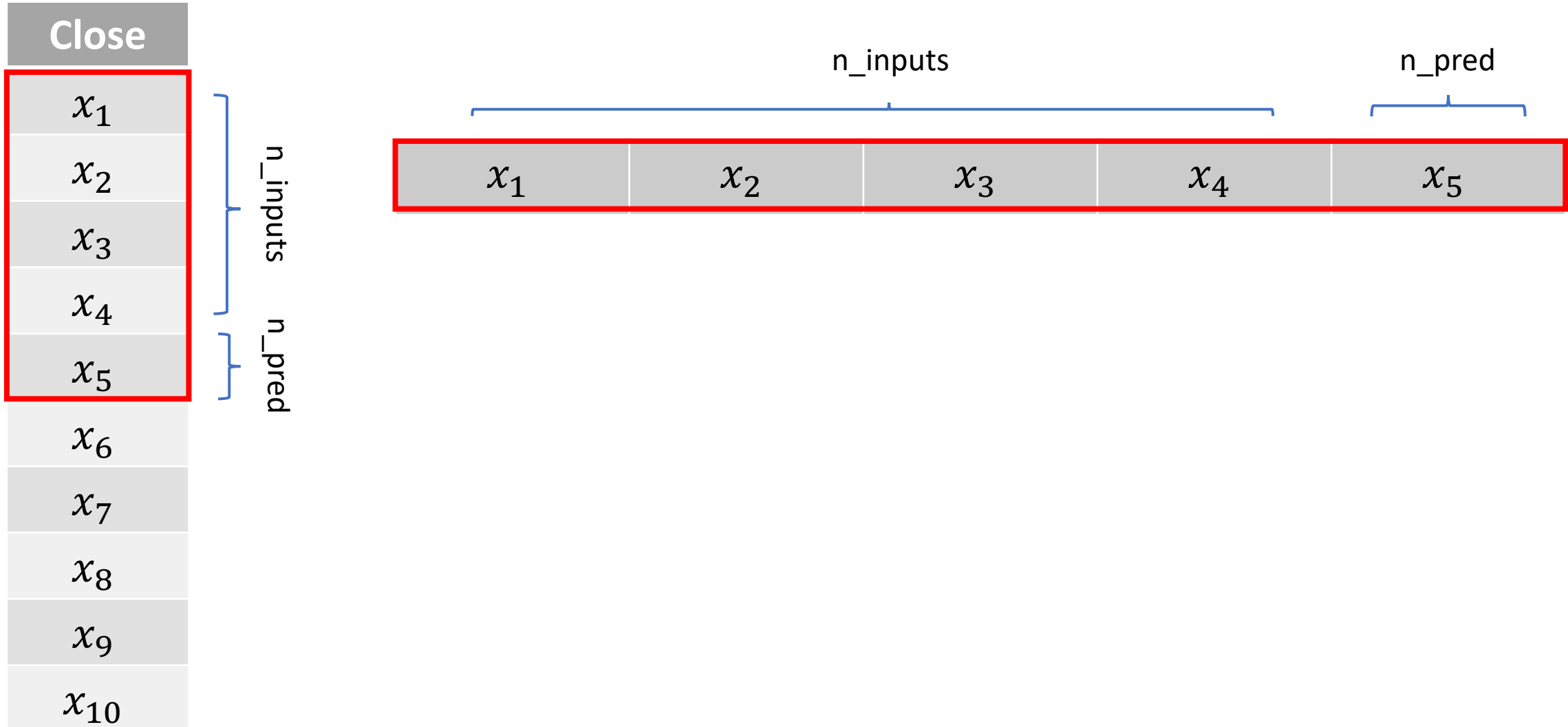
The Data



Reshaping

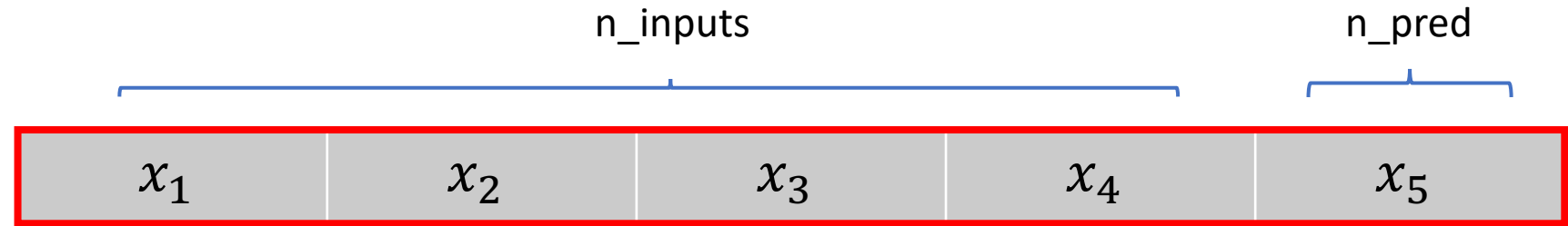
- Using the '*Close*' values of the previous 4 days, predict the value of the next day
- `n_inputs <- 4`
- `n_predictions <- 1`

Building the matrix



Building the matrix

Close
x_1
x_2
x_3
x_4
x_5
x_6
x_7
x_8
x_9
x_{10}



Building the matrix

Close	n_inputs				n_pred
x_1					
x_2	x_1	x_2	x_3	x_4	x_5
x_3	x_2	x_3	x_4	x_5	x_6
x_4	x_3	x_4	x_5	x_6	x_7
x_5	x_4	x_5	x_6	x_7	x_8
x_6	x_5	x_6	x_7	x_8	x_9
x_7	x_6	x_7	x_8	x_9	x_{10}
x_8					
x_9					
x_{10}					

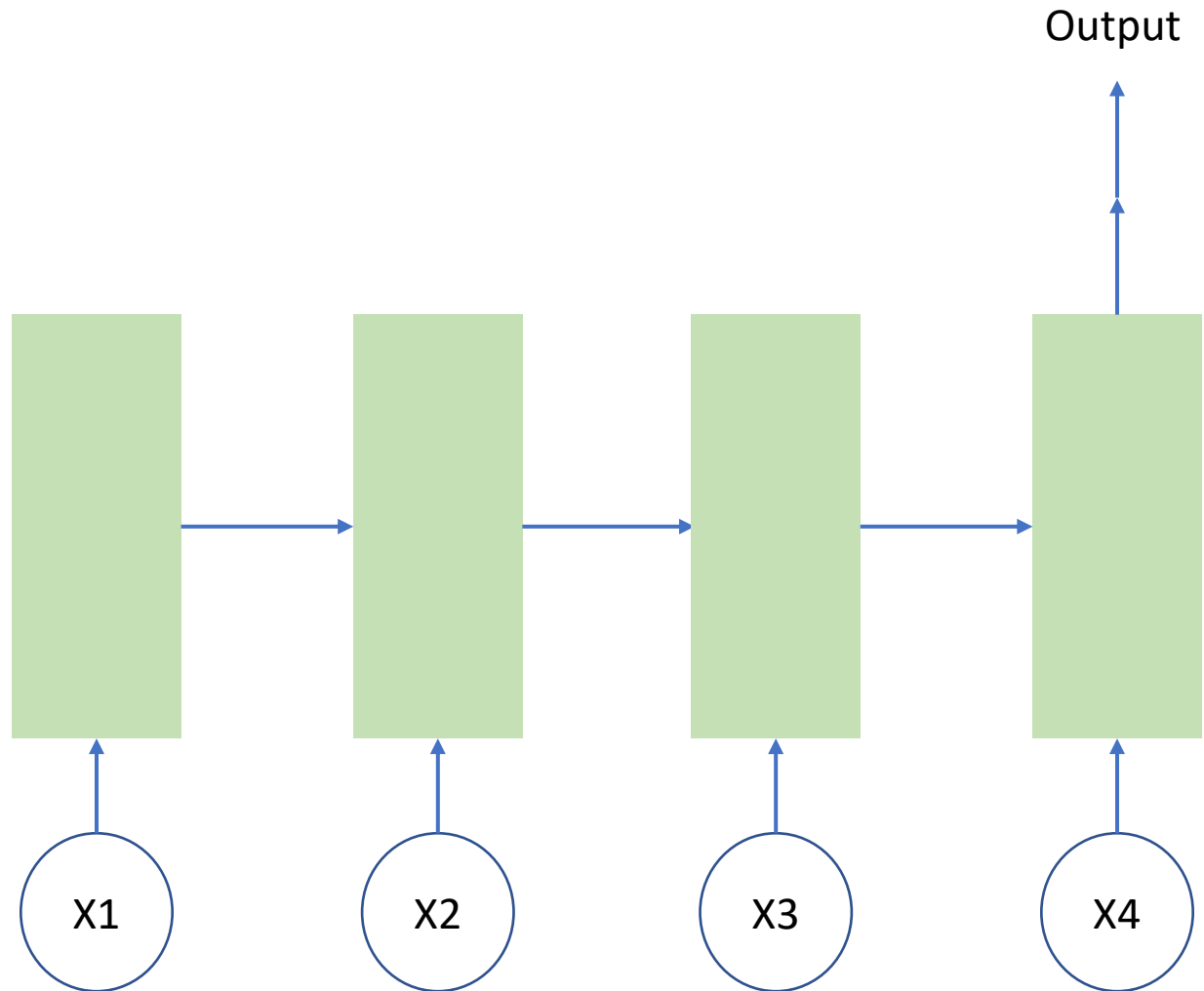
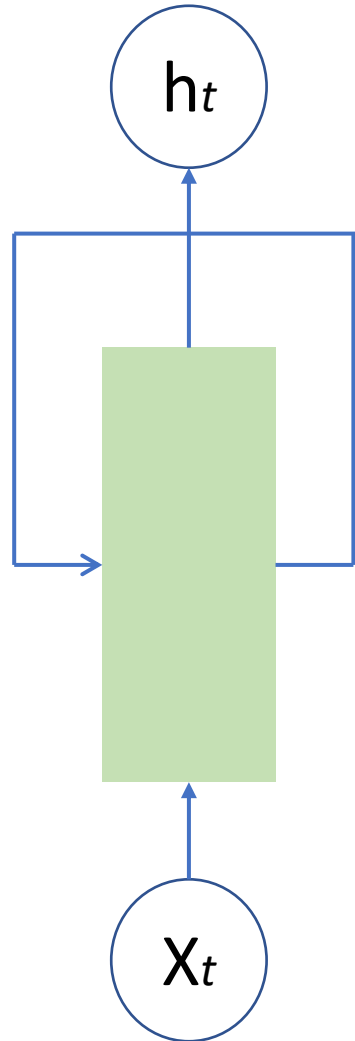
Create the X and Y sets

set_X

set_Y

x_1	x_2	x_3	x_4	x_5
x_2	x_3	x_4	x_5	x_6
x_3	x_4	x_5	x_6	x_7
x_4	x_5	x_6	x_7	x_8
x_5	x_6	x_7	x_8	x_9
x_6	x_7	x_8	x_9	x_{10}

LSTM model



LSTM model

```
library(keras)
```

```
model <- keras_model_sequential()
```

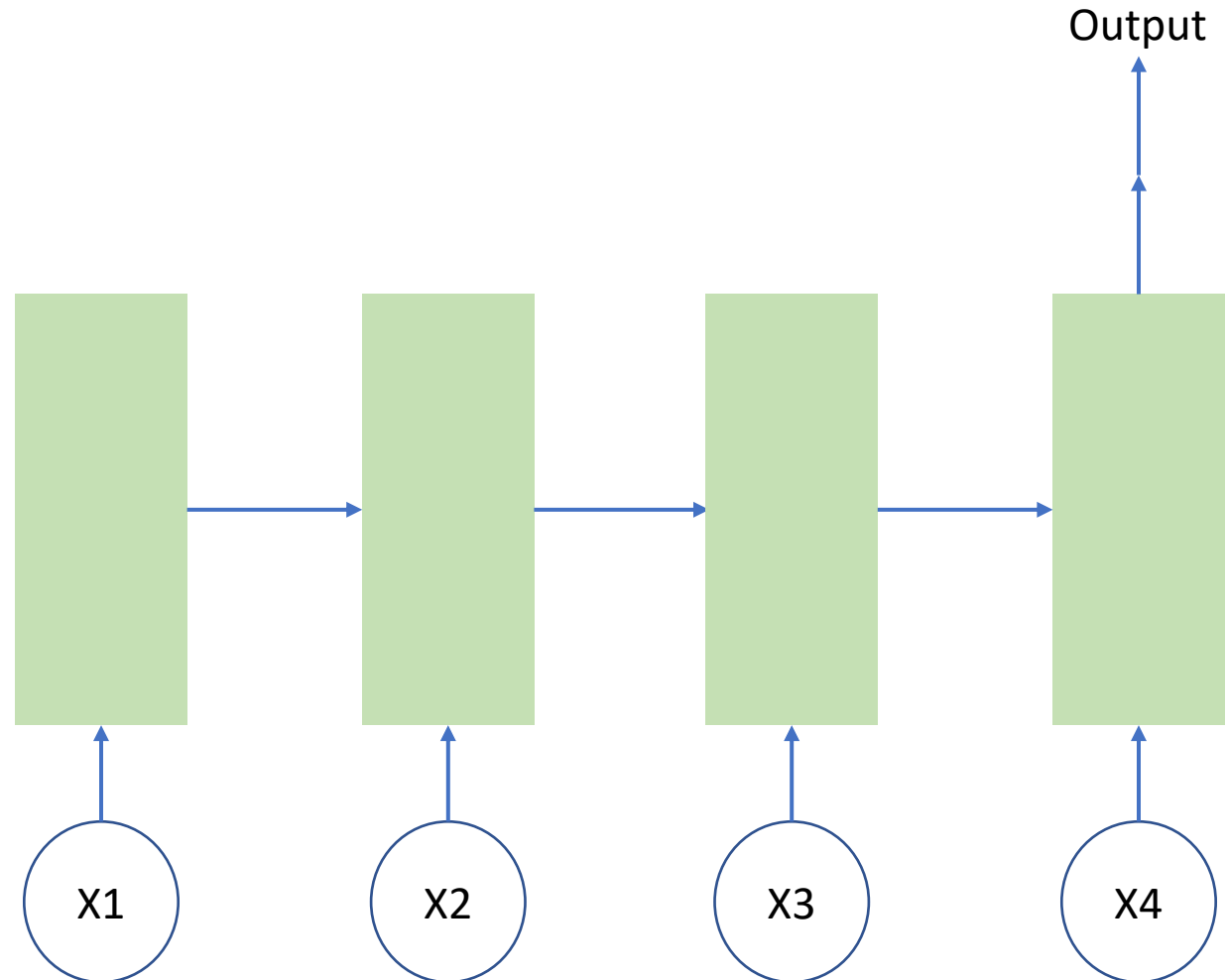
```
model %>%  
  layer_lstm()
```

```
model %>%  
  layer_dense()
```

```
model %>% # Configure the model  
  compile(loss , optimizer , metrics)
```

```
model %>% # train the model  
  fit(x, y, validation_data, epochs, batch_size)
```

```
model %>% # make predictions  
  predict(X_test, batch_size)
```



Predictions

