Deep Learning: Coding Assignment 2
Task: Named Entity Recognition
REPORT
-by Akash Kundu(22CS60R38)

Model Hyperparameters & working:-
This code implements a Bidirectional LSTM model for Named Entity Recognition (NER) task. It loads data in CoNLL format and preprocesses the data by converting words and labels into indices, padding sequences, and one-hot encoding the labels.

The model architecture includes an embedding layer, a Bidirectional LSTM layer with 64 hidden units, and a dense layer with a softmax activation function. The model is compiled with the categorical cross-entropy loss function and the Adam optimizer.

The model is trained for one epoch with a batch size of 32 and evaluated on the test set. Finally, the code includes a function predict_ner() that takes a sentence as input, preprocesses it using the same method as before, and predicts the labels for each word in the sentence.

The performance of the model is evaluated on the test set, and the results are printed to the console. Specifically, the test loss and accuracy are printed.

Performance:-
Note:-I reduced the test file size(in case of English) to successfully run it in my system.
- For the English Model:-

```
Test loss: 0.15472573041915894
Test accuracy: 0.9604896903038025
```

```
Fine-grained accuracy: 0.9264705882352942
Coarse-grained accuracy: 0.9558823529411765
```

- For the Hindi Model:-

```
Test loss: 0.23447223007678986
Test accuracy: 0.9467990398406982
```

```
Fine-grained accuracy: 0.9555555555555556
Coarse-grained accuracy: 0.9555555555555556
```

- For the Bengali Model:-

```
Test loss: 0.1304251104593277
Test accuracy: 0.9720914959907532
```