

Accuray Report

LSTM Network

The model is trained based on LSTM with bidirection. The network is shown as follow:

In []:

```
model.summary()
```

Model: "sequential"

Layer (type)	Output Shape	Param #
embedding (Embedding)	(20, None, 256)	2059008
bidirectional (Bidirectional)	(20, None, 2048)	10493952
dense (Dense)	(20, None, 8043)	16480107
Total params: 29,033,067		
Trainable params: 29,033,067		
Non-trainable params: 0		

In [23]:

```
myPredictor = NextPredictor()
history=myPredictor.start_to_train()
```

```
Epoch 1/20
577/577 [=====] - 311s 538ms/step - loss: 4.8649 -
sparse_categorical_accuracy: 0.3097
Epoch 2/20
577/577 [=====] - 346s 600ms/step - loss: 2.6154 -
sparse_categorical_accuracy: 0.5827
Epoch 3/20
577/577 [=====] - 277s 481ms/step - loss: 1.6189 -
sparse_categorical_accuracy: 0.6940
Epoch 4/20
577/577 [=====] - 271s 470ms/step - loss: 0.9807 -
sparse_categorical_accuracy: 0.7997
Epoch 5/20
577/577 [=====] - 267s 464ms/step - loss: 0.6158 -
sparse_categorical_accuracy: 0.8653
Epoch 6/20
577/577 [=====] - 264s 457ms/step - loss: 0.3938 -
sparse_categorical_accuracy: 0.9115
Epoch 7/20
577/577 [=====] - 267s 464ms/step - loss: 0.2512 -
sparse_categorical_accuracy: 0.9472
Epoch 8/20
577/577 [=====] - 256s 444ms/step - loss: 0.1624 -
sparse_categorical_accuracy: 0.9689
Epoch 9/20
577/577 [=====] - 265s 458ms/step - loss: 0.1240 -
sparse_categorical_accuracy: 0.9779
Epoch 10/20
577/577 [=====] - 263s 456ms/step - loss: 0.1046 -
sparse_categorical_accuracy: 0.9830
Epoch 11/20
577/577 [=====] - 264s 458ms/step - loss: 0.0910 -
sparse_categorical_accuracy: 0.9857
Epoch 12/20
577/577 [=====] - 263s 456ms/step - loss: 0.0800 -
sparse_categorical_accuracy: 0.9866
Epoch 13/20
577/577 [=====] - 266s 460ms/step - loss: 0.0819 -
sparse_categorical_accuracy: 0.9866
```

```

sparse_categorical_accuracy: 0.9868
Epoch 14/20
577/577 [=====] - 265s 459ms/step - loss: 0.0698 -
sparse_categorical_accuracy: 0.9895
Epoch 15/20
577/577 [=====] - 264s 457ms/step - loss: 0.0613 -
sparse_categorical_accuracy: 0.9901
Epoch 16/20
577/577 [=====] - 248s 430ms/step - loss: 0.0617 -
sparse_categorical_accuracy: 0.9895
Epoch 17/20
577/577 [=====] - 230s 398ms/step - loss: 0.0542 -
sparse_categorical_accuracy: 0.9916
Epoch 18/20
577/577 [=====] - 266s 460ms/step - loss: 0.0560 -
sparse_categorical_accuracy: 0.9912
Epoch 19/20
577/577 [=====] - 264s 458ms/step - loss: 0.0569 -
sparse_categorical_accuracy: 0.9910
Epoch 20/20
577/577 [=====] - 265s 459ms/step - loss: 0.0532 -
sparse_categorical_accuracy: 0.9912
Training Done! The model has been saved on mymodel.h5
Evaluating model on test dataset.....
200/200 [=====] - 16s 81ms/step - loss: 1.7316 -
sparse_categorical_accuracy: 0.7966
Done

```

Result

In [37]:

```

import matplotlib.pyplot as plt

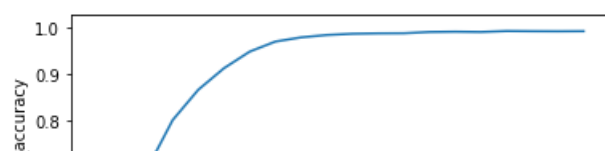
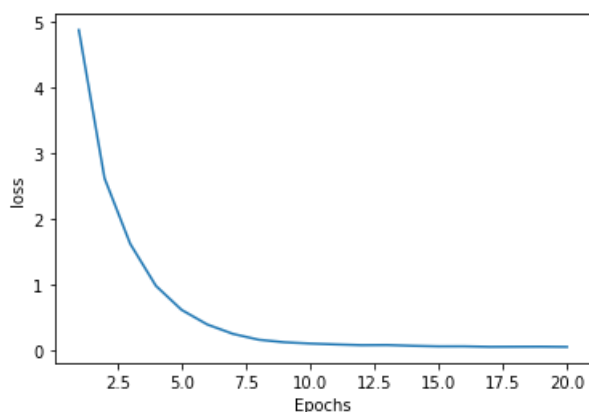
def plot_graphs(history):
    keys=list(history.history.keys())
    epoch=[i for i in range(1,21)]
    print(epoch)
    for k in keys:
        plt.plot(epoch,history.history[k])
        plt.xlabel("Epochs")
        plt.ylabel(k)
        plt.show()

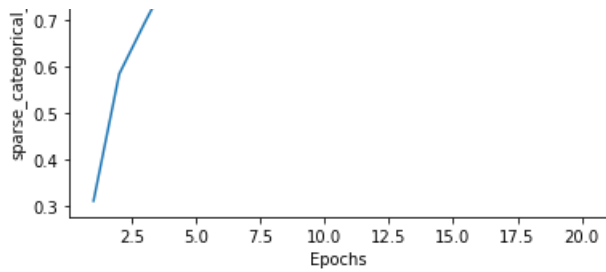
```

In [38]:

```
plot_graphs(history)
```

[1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20]





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In []: