In [1]:
```
import tensorflow as tf
from tensorflow.keras.datasets import imdb
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Embedding, LSTM, Dense
from tensorflow.keras.preprocessing.sequence import pad_sequences
```

In [2]:
```
# Set the parameters
max_features = 10000 # Number of words to consider as features
maxlen = 100 # Cut texts after this number of words (among top max_features mc
batch_size = 32
```

In [3]:
```
# Load the IMDB dataset
(x_train, y_train), (x_test, y_test) = imdb.load_data(num_words = max_features
```

In [6]:
```
 # Pad sequences to have a consistent length for the input to the RNN
x_train = pad_sequences(x_train, maxlen = maxlen)
x_test = pad_sequences(x_test, maxlen = maxlen)
```

In [7]:
```
# Build the RNN model with LSTM
model = Sequential()
model.add(Embedding(max_features, 128))
model.add(LSTM(64, dropout=0.2, recurrent_dropout=0.2))
model.add(Dense(1, activation='sigmoid'))
```

In [8]:
```
model.compile(loss='binary_crossentropy', optimizer='adam', metrics=['accuracy
```

In [9]:
```
# Train the model
model.fit(x_train, y_train, batch_size=batch_size, epochs=5, validation_data=(
```

```
Epoch 1/5
782/782 ━━━━━━━━━━━━━━━━━━━━ 62s 76ms/step - accuracy: 0.7259 - loss: 0.5300
- val_accuracy: 0.7886 - val_loss: 0.4495
Epoch 2/5
782/782 ━━━━━━━━━━━━━━━━━━━━ 63s 80ms/step - accuracy: 0.8588 - loss: 0.3362
- val_accuracy: 0.8331 - val_loss: 0.3799
Epoch 3/5
782/782 ━━━━━━━━━━━━━━━━━━━━ 60s 77ms/step - accuracy: 0.9022 - loss: 0.2486
- val_accuracy: 0.8376 - val_loss: 0.3710
Epoch 4/5
782/782 ━━━━━━━━━━━━━━━━━━━━ 63s 81ms/step - accuracy: 0.9252 - loss: 0.1985
- val_accuracy: 0.8368 - val_loss: 0.4004
Epoch 5/5
782/782 ━━━━━━━━━━━━━━━━━━━━ 64s 82ms/step - accuracy: 0.9462 - loss: 0.1472
- val_accuracy: 0.8394 - val_loss: 0.4616
```

Out[9]:
```
<keras.src.callbacks.history.History at 0x27fd73b2230>
```

In [10]:

```python
# Evaluate the model
score, acc = model.evaluate(x_test, y_test, batch_size=batch_size)
print(f'Test score: {score}')
print(f'Test accuracy: {acc}')
```

```
782/782 ━━━━━━━━━━━━━━━━━━━━ 11s 14ms/step - accuracy: 0.8399 - loss: 0.4658
Test score: 0.46163198351860046
Test accuracy: 0.8394399881362915
```

In [ ]: