```
import numpy as np
import tensorflow as tf
from tensorflow.keras.preprocessing.text import Tokenizer
from tensorflow.keras.preprocessing.sequence import pad_sequences
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Embedding, LSTM, Dense



# Sample data for sentiment analysis
texts = [
    "I love deep learning!",
    "This model is amazing.",
    "I'm feeling great.",
    "This is terrible.",
    "I hate this.",
    "I'm not sure how I feel about this.",
]
labels = np.array([1, 1, 1, 0, 0, 0])  # 1 for positive, 0 for negative



# Tokenization and padding
tokenizer = Tokenizer()
tokenizer.fit_on_texts(texts)
sequences = tokenizer.texts_to_sequences(texts)
maxlen = max(len(x) for x in sequences)
padded_sequences = pad_sequences(sequences, maxlen=maxlen)



# Model architecture
model = Sequential()
model.add(Embedding(input_dim=len(tokenizer.word_index)+1, output_dim=64, input_length=maxlen))
model.add(LSTM(64))
model.add(Dense(1, activation='sigmoid'))


model.compile(optimizer='adam', loss='binary_crossentropy', metrics=['accuracy'])


# Training the model
model.fit(padded_sequences, labels, epochs=10, batch_size=2)
```

```
    Epoch 1/10
    3/3 [==============================] - 3s 9ms/step - loss: 0.5898 - accuracy: 1.0000
    Epoch 2/10
    3/3 [==============================] - 0s 12ms/step - loss: 0.5662 - accuracy: 1.0000
    Epoch 3/10
    3/3 [==============================] - 0s 8ms/step - loss: 0.5415 - accuracy: 1.0000
    Epoch 4/10
    3/3 [==============================] - 0s 9ms/step - loss: 0.5169 - accuracy: 1.0000
    Epoch 5/10
    3/3 [==============================] - 0s 9ms/step - loss: 0.4908 - accuracy: 1.0000
    Epoch 6/10
    3/3 [==============================] - 0s 8ms/step - loss: 0.4608 - accuracy: 1.0000
    Epoch 7/10
    3/3 [==============================] - 0s 10ms/step - loss: 0.4308 - accuracy: 1.0000
    Epoch 8/10
    3/3 [==============================] - 0s 9ms/step - loss: 0.4017 - accuracy: 1.0000
    Epoch 9/10
    3/3 [==============================] - 0s 9ms/step - loss: 0.3689 - accuracy: 1.0000
    Epoch 10/10
    3/3 [==============================] - 0s 9ms/step - loss: 0.3404 - accuracy: 1.0000
    <keras.src.callbacks.History at 0x78b77ef26fe0>
```

```
# Testing the model
test_texts = [
    "This is fantastic!",
    "I'm feeling awful.",
    "It's okay.",
]
```

```
test_sequences = tokenizer.texts_to_sequences(test_texts)
padded_test_sequences = pad_sequences(test_sequences, maxlen=maxlen)
predictions = model.predict(padded_test_sequences)
```

```
    1/1 [==============================] - 1s 568ms/step
```

```
for text, prediction in zip(test_texts, predictions):
    sentiment = "positive" if prediction > 0.5 else "negative"
    print(f"Text: {text}, Sentiment: {sentiment}, Confidence: {prediction[0]}")
```

```
    Text: This is fantastic!, Sentiment: negative, Confidence: 0.49122053384780884
    Text: I'm feeling awful., Sentiment: positive, Confidence: 0.5547880530357361
    Text: It's okay., Sentiment: positive, Confidence: 0.534218430519104
```