```python
In [2]:  import numpy as np
         from sklearn.datasets import load_breast_cancer
         from sklearn.model_selection import train_test_split
         from sklearn.preprocessing import StandardScaler
         from tensorflow.keras.models import Sequential
         from tensorflow.keras.layers import Dense
```

```python
In [3]:  data = load_breast_cancer()
         X = data.data
         y = data.target

         X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```python
In [4]:  # Standardize the feature data (mean=0, std=1)
         scaler = StandardScaler()
         X_train = scaler.fit_transform(X_train)
         X_test = scaler.transform(X_test)
```

```python
In [5]:  model = Sequential()
         model.add(Dense(16, input_dim=X_train.shape[1], activation='relu'))
         model.add(Dense(1, activation='sigmoid'))
```

```python
In [6]:  model.compile(optimizer='adam', loss='binary_crossentropy', metrics=['accuracy'])

         history = model.fit(X_train, y_train, epochs=50, batch_size=32, validation_split=0.2, verbose=2)

         loss, accuracy = model.evaluate(X_test, y_test, verbose=2)
```

```
Epoch 1/50
12/12 - 2s - loss: 0.5635 - accuracy: 0.7692 - val_loss: 0.4758 - val_accuracy: 0.8352 - 2s/epoch - 148ms/step
Epoch 2/50
12/12 - 0s - loss: 0.4564 - accuracy: 0.8407 - val_loss: 0.3931 - val_accuracy: 0.8681 - 79ms/epoch - 7ms/step
Epoch 3/50
12/12 - 0s - loss: 0.3742 - accuracy: 0.8984 - val_loss: 0.3314 - val_accuracy: 0.8901 - 80ms/epoch - 7ms/step
Epoch 4/50
12/12 - 0s - loss: 0.3124 - accuracy: 0.9066 - val_loss: 0.2873 - val_accuracy: 0.9121 - 92ms/epoch - 8ms/step
Epoch 5/50
12/12 - 0s - loss: 0.2672 - accuracy: 0.9258 - val_loss: 0.2556 - val_accuracy: 0.9121 - 87ms/epoch - 7ms/step
Epoch 6/50
12/12 - 0s - loss: 0.2335 - accuracy: 0.9313 - val_loss: 0.2312 - val_accuracy: 0.9231 - 89ms/epoch - 7ms/step
Epoch 7/50
12/12 - 0s - loss: 0.2079 - accuracy: 0.9368 - val_loss: 0.2121 - val_accuracy: 0.9231 - 104ms/epoch - 9ms/step
Epoch 8/50
12/12 - 0s - loss: 0.1879 - accuracy: 0.9396 - val_loss: 0.1961 - val_accuracy: 0.9231 - 87ms/epoch - 7ms/step
Epoch 9/50
12/12 - 0s - loss: 0.1715 - accuracy: 0.9451 - val_loss: 0.1838 - val_accuracy: 0.9231 - 63ms/epoch - 5ms/step
Epoch 10/50
12/12 - 0s - loss: 0.1584 - accuracy: 0.9533 - val_loss: 0.1734 - val_accuracy: 0.9231 - 66ms/epoch - 6ms/step
Epoch 11/50
12/12 - 0s - loss: 0.1472 - accuracy: 0.9533 - val_loss: 0.1646 - val_accuracy: 0.9231 - 64ms/epoch - 5ms/step
Epoch 12/50
12/12 - 0s - loss: 0.1375 - accuracy: 0.9615 - val_loss: 0.1570 - val_accuracy: 0.9231 - 83ms/epoch - 7ms/step
Epoch 13/50
12/12 - 0s - loss: 0.1293 - accuracy: 0.9615 - val_loss: 0.1509 - val_accuracy: 0.9231 - 65ms/epoch - 5ms/step
Epoch 14/50
12/12 - 0s - loss: 0.1224 - accuracy: 0.9698 - val_loss: 0.1455 - val_accuracy: 0.9341 - 72ms/epoch - 6ms/step
Epoch 15/50
12/12 - 0s - loss: 0.1156 - accuracy: 0.9725 - val_loss: 0.1407 - val_accuracy: 0.9341 - 76ms/epoch - 6ms/step
Epoch 16/50
12/12 - 0s - loss: 0.1098 - accuracy: 0.9780 - val_loss: 0.1366 - val_accuracy: 0.9341 - 65ms/epoch - 5ms/step
Epoch 17/50
12/12 - 0s - loss: 0.1045 - accuracy: 0.9780 - val_loss: 0.1330 - val_accuracy: 0.9451 - 63ms/epoch - 5ms/step
Epoch 18/50
12/12 - 0s - loss: 0.0998 - accuracy: 0.9780 - val_loss: 0.1294 - val_accuracy: 0.9451 - 65ms/epoch - 5ms/step
Epoch 19/50
12/12 - 0s - loss: 0.0953 - accuracy: 0.9780 - val_loss: 0.1265 - val_accuracy: 0.9451 - 65ms/epoch - 5ms/step
Epoch 20/50
12/12 - 0s - loss: 0.0912 - accuracy: 0.9780 - val_loss: 0.1239 - val_accuracy: 0.9451 - 79ms/epoch - 7ms/step
Epoch 21/50
12/12 - 0s - loss: 0.0875 - accuracy: 0.9780 - val_loss: 0.1216 - val_accuracy: 0.9560 - 73ms/epoch - 6ms/step
Epoch 22/50
12/12 - 0s - loss: 0.0843 - accuracy: 0.9780 - val_loss: 0.1196 - val_accuracy: 0.9560 - 77ms/epoch - 6ms/step
Epoch 23/50
12/12 - 0s - loss: 0.0811 - accuracy: 0.9835 - val_loss: 0.1181 - val_accuracy: 0.9560 - 68ms/epoch - 6ms/step
Epoch 24/50
12/12 - 0s - loss: 0.0784 - accuracy: 0.9835 - val_loss: 0.1162 - val_accuracy: 0.9560 - 73ms/epoch - 6ms/step
Epoch 25/50
12/12 - 0s - loss: 0.0758 - accuracy: 0.9863 - val_loss: 0.1142 - val_accuracy: 0.9560 - 73ms/epoch - 6ms/step
Epoch 26/50
12/12 - 0s - loss: 0.0734 - accuracy: 0.9863 - val_loss: 0.1126 - val_accuracy: 0.9560 - 75ms/epoch - 6ms/step
Epoch 27/50
12/12 - 0s - loss: 0.0711 - accuracy: 0.9863 - val_loss: 0.1114 - val_accuracy: 0.9560 - 76ms/epoch - 6ms/step
Epoch 28/50
12/12 - 0s - loss: 0.0691 - accuracy: 0.9835 - val_loss: 0.1102 - val_accuracy: 0.9560 - 87ms/epoch - 7ms/step
Epoch 29/50
12/12 - 0s - loss: 0.0673 - accuracy: 0.9835 - val_loss: 0.1088 - val_accuracy: 0.9560 - 95ms/epoch - 8ms/step
Epoch 30/50
12/12 - 0s - loss: 0.0656 - accuracy: 0.9863 - val_loss: 0.1079 - val_accuracy: 0.9560 - 74ms/epoch - 6ms/step
Epoch 31/50
12/12 - 0s - loss: 0.0637 - accuracy: 0.9863 - val_loss: 0.1072 - val_accuracy: 0.9560 - 79ms/epoch - 7ms/step
Epoch 32/50
12/12 - 0s - loss: 0.0622 - accuracy: 0.9863 - val_loss: 0.1063 - val_accuracy: 0.9560 - 76ms/epoch - 6ms/step
Epoch 33/50
12/12 - 0s - loss: 0.0607 - accuracy: 0.9863 - val_loss: 0.1054 - val_accuracy: 0.9560 - 70ms/epoch - 6ms/step
Epoch 34/50
12/12 - 0s - loss: 0.0594 - accuracy: 0.9863 - val_loss: 0.1045 - val_accuracy: 0.9560 - 67ms/epoch - 6ms/step
Epoch 35/50
12/12 - 0s - loss: 0.0580 - accuracy: 0.9863 - val_loss: 0.1041 - val_accuracy: 0.9560 - 67ms/epoch - 6ms/step
Epoch 36/50
12/12 - 0s - loss: 0.0568 - accuracy: 0.9863 - val_loss: 0.1036 - val_accuracy: 0.9560 - 64ms/epoch - 5ms/step
Epoch 37/50
12/12 - 0s - loss: 0.0556 - accuracy: 0.9863 - val_loss: 0.1030 - val_accuracy: 0.9560 - 78ms/epoch - 7ms/step
Epoch 38/50
12/12 - 0s - loss: 0.0545 - accuracy: 0.9863 - val_loss: 0.1026 - val_accuracy: 0.9560 - 64ms/epoch - 5ms/step
Epoch 39/50
12/12 - 0s - loss: 0.0534 - accuracy: 0.9863 - val_loss: 0.1020 - val_accuracy: 0.9560 - 80ms/epoch - 7ms/step
Epoch 40/50
12/12 - 0s - loss: 0.0523 - accuracy: 0.9863 - val_loss: 0.1020 - val_accuracy: 0.9560 - 70ms/epoch - 6ms/step
Epoch 41/50
12/12 - 0s - loss: 0.0513 - accuracy: 0.9863 - val_loss: 0.1015 - val_accuracy: 0.9560 - 75ms/epoch - 6ms/step
Epoch 42/50
12/12 - 0s - loss: 0.0503 - accuracy: 0.9863 - val_loss: 0.1012 - val_accuracy: 0.9560 - 63ms/epoch - 5ms/step
Epoch 43/50
12/12 - 0s - loss: 0.0496 - accuracy: 0.9863 - val_loss: 0.1010 - val_accuracy: 0.9560 - 57ms/epoch - 5ms/step
Epoch 44/50
12/12 - 0s - loss: 0.0487 - accuracy: 0.9863 - val_loss: 0.1009 - val_accuracy: 0.9560 - 71ms/epoch - 6ms/step
Epoch 45/50
12/12 - 0s - loss: 0.0477 - accuracy: 0.9863 - val_loss: 0.1007 - val_accuracy: 0.9560 - 80ms/epoch - 7ms/step
Epoch 46/50
12/12 - 0s - loss: 0.0468 - accuracy: 0.9863 - val_loss: 0.1004 - val_accuracy: 0.9560 - 74ms/epoch - 6ms/step
Epoch 47/50
12/12 - 0s - loss: 0.0461 - accuracy: 0.9863 - val_loss: 0.1000 - val_accuracy: 0.9560 - 64ms/epoch - 5ms/step
Epoch 48/50
12/12 - 0s - loss: 0.0453 - accuracy: 0.9863 - val_loss: 0.1004 - val_accuracy: 0.9560 - 67ms/epoch - 6ms/step
Epoch 49/50
12/12 - 0s - loss: 0.0445 - accuracy: 0.9863 - val_loss: 0.1006 - val_accuracy: 0.9451 - 74ms/epoch - 6ms/step
Epoch 50/50
12/12 - 0s - loss: 0.0438 - accuracy: 0.9863 - val_loss: 0.1002 - val_accuracy: 0.9560 - 56ms/epoch - 5ms/step
4/4 - 0s - loss: 0.0782 - accuracy: 0.9561 - 49ms/epoch - 12ms/step
```

```python
In [7]:  print(f'Test Accuracy: {accuracy:.4f}')
```

```
Test Accuracy: 0.9561
```