

CODE:

```
import numpy as np
import tensorflow as tf
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense

# Sample input data (features)
X = np.array([[0, 0],
              [0, 1],
              [1, 0],
              [1, 1]])

# Sample output data (labels)
y = np.array([0, 1, 1, 0])

# Build a simple feedforward neural network
model = Sequential()
model.add(Dense(4, input_dim=2, activation='relu')) # Hidden layer with 4 neurons and
ReLU activation
model.add(Dense(1, activation='sigmoid'))           # Output layer with 1 neuron and
Sigmoid activation

# Compile the model
```

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

```
# Train the model
```

```
model.fit(X, y, epochs=500, verbose=0)
```

```
# Test the model
```

```
sample_input = np.array([[0, 0]])
```

```
predicted_output = model.predict(sample_input)
```

```
print(f"Sample Input: {sample_input}")
```

```
print(f"Predicted Output: {predicted_output}")
```

Input:

```
[[0 0]]
```

Output:

```
[[0.03575368]]
```