

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

```
training_data = np.array([[0,0],[0,1],[1,0],[1,1]], "float32")
target_data = np.array([[0],[1],[1],[0]], "float32")
```

```
model = Sequential()
model.add(Dense(16, input_dim=2, activation='relu'))
model.add(Dense(1, activation='sigmoid'))
model.compile(loss='mean_squared_error',
              optimizer='adam',
              metrics=['binary_accuracy'])
```

```
model.fit(training_data, target_data, epochs=600)
scores = model.evaluate(training_data, target_data)
```

```
Epoch 385/600
1/1 [=====] - 0s 7ms/step - loss: 0.1304 - binary_accuracy: 0.5000
Epoch 386/600
1/1 [=====] - 0s 6ms/step - loss: 0.1299 - binary_accuracy: 0.5000
Epoch 387/600
```

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```
Epoch 389/600
1/1 [=====] - 0s 7ms/step - loss: 0.1287 - binary_accuracy: 0.5000
Epoch 390/600
1/1 [=====] - 0s 7ms/step - loss: 0.1283 - binary_accuracy: 0.5000
Epoch 391/600
1/1 [=====] - 0s 7ms/step - loss: 0.1279 - binary_accuracy: 0.5000
Epoch 392/600
1/1 [=====] - 0s 7ms/step - loss: 0.1275 - binary_accuracy: 0.5000
Epoch 393/600
1/1 [=====] - 0s 7ms/step - loss: 0.1271 - binary_accuracy: 0.5000
Epoch 394/600
1/1 [=====] - 0s 7ms/step - loss: 0.1267 - binary_accuracy: 0.5000
Epoch 395/600
1/1 [=====] - 0s 7ms/step - loss: 0.1263 - binary_accuracy: 0.5000
Epoch 396/600
1/1 [=====] - 0s 7ms/step - loss: 0.1259 - binary_accuracy: 0.5000
Epoch 397/600
1/1 [=====] - 0s 6ms/step - loss: 0.1255 - binary_accuracy: 0.5000
Epoch 398/600
1/1 [=====] - 0s 7ms/step - loss: 0.1251 - binary_accuracy: 0.5000
Epoch 399/600
1/1 [=====] - 0s 7ms/step - loss: 0.1247 - binary_accuracy: 0.5000
Epoch 400/600
```

```

1/1 [=====] - 0s 8ms/step - loss: 0.1243 - binary_accuracy: 0.9999
Epoch 401/600
1/1 [=====] - 0s 6ms/step - loss: 0.1239 - binary_accuracy: 0.9999
Epoch 402/600
1/1 [=====] - 0s 10ms/step - loss: 0.1235 - binary_accuracy: 0.9999
Epoch 403/600
1/1 [=====] - 0s 10ms/step - loss: 0.1231 - binary_accuracy: 0.9999
Epoch 404/600
1/1 [=====] - 0s 9ms/step - loss: 0.1227 - binary_accuracy: 0.9999
Epoch 405/600
1/1 [=====] - 0s 8ms/step - loss: 0.1223 - binary_accuracy: 0.9999
Epoch 406/600
1/1 [=====] - 0s 10ms/step - loss: 0.1219 - binary_accuracy: 0.9999
Epoch 407/600
1/1 [=====] - 0s 9ms/step - loss: 0.1215 - binary_accuracy: 0.9999
Epoch 408/600
1/1 [=====] - 0s 7ms/step - loss: 0.1211 - binary_accuracy: 0.9999
Epoch 409/600
1/1 [=====] - 0s 7ms/step - loss: 0.1207 - binary_accuracy: 0.9999
Epoch 410/600
1/1 [=====] - 0s 7ms/step - loss: 0.1204 - binary_accuracy: 0.9999
Epoch 411/600
1/1 [=====] - 0s 11ms/step - loss: 0.1200 - binary_accuracy: 0.9999
Epoch 412/600
1/1 [=====] - 0s 7ms/step - loss: 0.1196 - binary_accuracy: 0.9999
Epoch 413/600
1/1 [=====] - 0s 6ms/step - loss: 0.1192 - binary_accuracy: 0.9999

```

```

print("\n%s: %.2f%%" % (model.metrics_names[1], scores[1]*100))
print (model.predict(training_data).round())

```

binary_accuracy: 100.00%

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```

[1.]
[0.]

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```

import matplotlib.pyplot as plt
plt.show()

```

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