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## **Deep Learning**

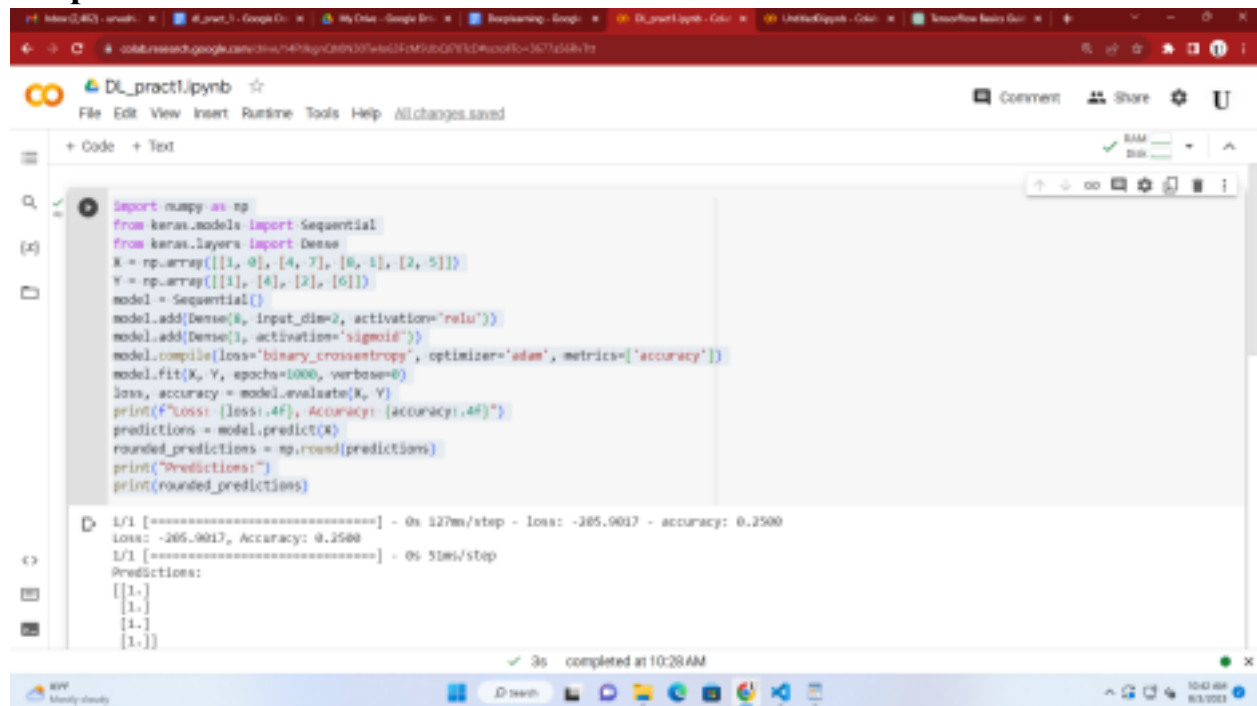
### **Experiment No. 02**

#### **Implementing XOR in Deep learning using python**

##### **Code:**

```
import numpy as np
from keras.models import Sequential
from keras.layers import Dense
X = np.array([[1, 0], [4, 7], [8, 1], [2, 5]])
Y = np.array([[1], [4], [2], [6]])
model = Sequential()
model.add(Dense(8, input_dim=2, activation='relu'))
model.add(Dense(1, activation='sigmoid'))
model.compile(loss='binary_crossentropy', optimizer='adam',
metrics=['accuracy']) model.fit(X, Y, epochs=1000, verbose=0)
loss, accuracy = model.evaluate(X, Y)
print(f'Loss: {loss:.4f}, Accuracy: {accuracy:.4f}')
predictions = model.predict(X)
rounded_predictions = np.round(predictions)
print("Predictions:")
print(rounded_predictions)
```

## Output:



```
import numpy as np
from keras.models import Sequential
from keras.layers import Dense
X = np.array([[1, 0], [4, 7], [6, 1], [2, 5]])
Y = np.array([[1], [4], [2], [6]])
model = Sequential()
model.add(Dense(8, input_dim=2, activation='relu'))
model.add(Dense(1, activation='sigmoid'))
model.compile(loss='binary_crossentropy', optimizer='adam', metrics=['accuracy'])
model.fit(X, Y, epochs=1000, verbose=0)
loss, accuracy = model.evaluate(X, Y)
print("Loss: {loss:.4f}, Accuracy: {accuracy:.4f}")
predictions = model.predict(X)
rounded_predictions = np.round(predictions)
print("Predictions:")
print(rounded_predictions)
```

1/1 [=====] - 0s 127ms/step - loss: -205.9017 - accuracy: 0.2500  
loss: -205.9017, Accuracy: 0.2500  
1/1 [=====] - 0s 518ms/step  
Predictions:  
[[1.]  
[1.]  
[1.]  
[1.]]

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