Bahria University,

Karachi Campus



LAB EXPERIMENT NO.

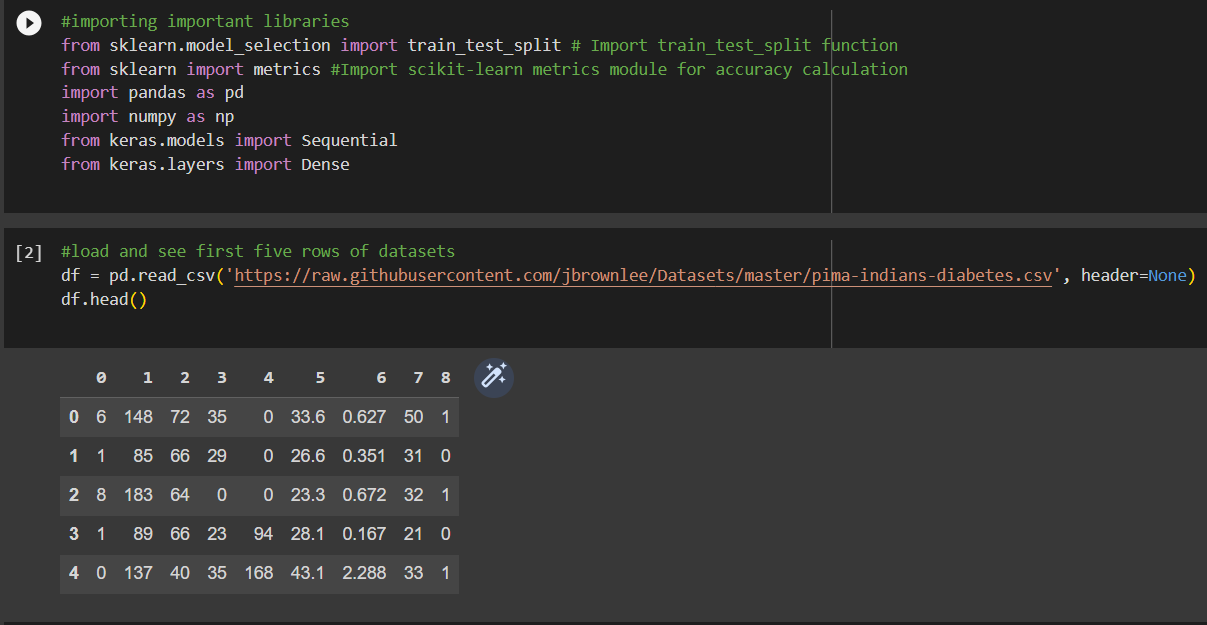
12

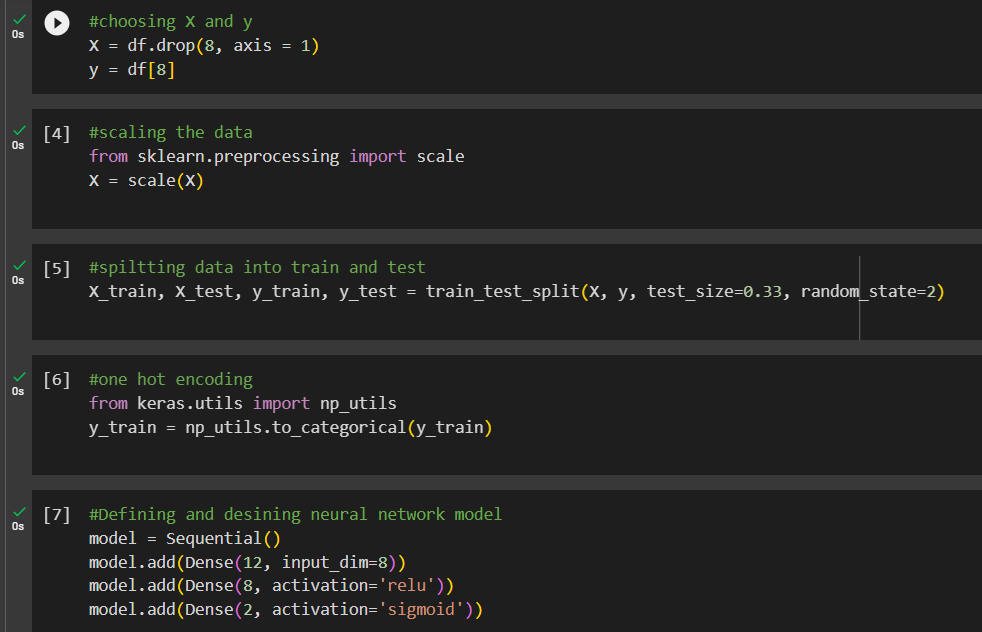
LIST OF TASKS

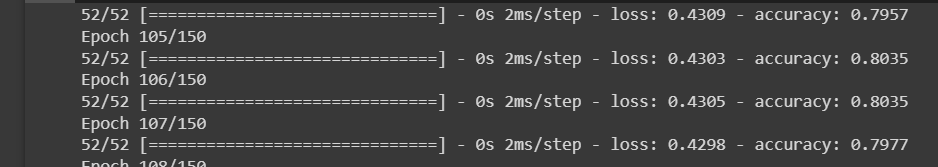
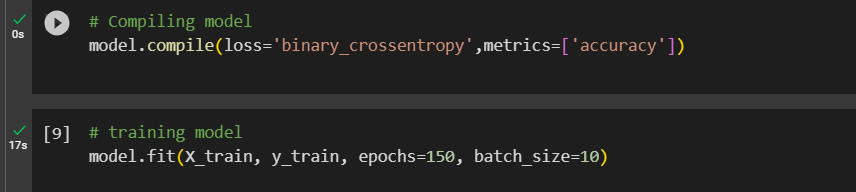
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| TASK NO | OBJECTIVE |
| 1 | **Train the Artificial Neural Network using the dataset provided in the lab.** |
| 2 | **Train the Artificial Neural Network using the iris dataset and discussed the results.** |

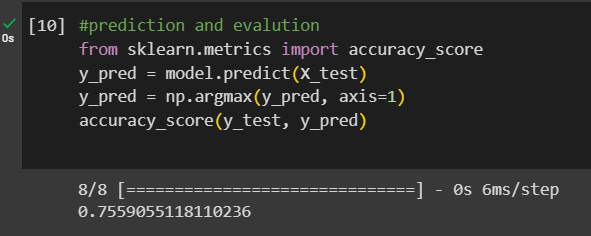
**Task 1: Train the Artificial Neural Network using the dataset provided in the lab.**

**Solution:**

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# **Task 2: Train the Artificial Neural Network using the iris dataset and discuss the results.**

**Solution**

from sklearn.datasets import load\_iris

from sklearn.model\_selection import train\_test\_split

from sklearn.preprocessing import StandardScaler

from sklearn.neural\_network import MLPClassifier

from sklearn.metrics import accuracy\_score

# Load the iris dataset

iris = load\_iris()

X = iris.data

y = iris.target

# Split the data into training and testing sets

X\_train, X\_test, y\_train, y\_test = train\_test\_split(X, y, test\_size=0.2, random\_state=42)

# Normalize the feature values

scaler = StandardScaler()

X\_train = scaler.fit\_transform(X\_train)

X\_test = scaler.transform(X\_test)

# Train the ANN

model = MLPClassifier(hidden\_layer\_sizes=(10, 10), max\_iter=1000, random\_state=42)

model.fit(X\_train, y\_train)

# Make predictions on the test set

y\_pred = model.predict(X\_test)

# Calculate accuracy

accuracy = accuracy\_score(y\_test, y\_pred)

print("Accuracy:", accuracy)

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Description automatically generated

An accuracy score of 0.9667 suggests that the trained neural network successfully classified the iris flowers with a 96.67% accuracy rate. This high accuracy indicates that the model has effectively learned the data patterns and can make accurate predictions. It is a desirable outcome, especially considering the small and well-structured nature of the iris dataset.