Lab Assignment 5

Machine Learning

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**1.Implementing Logistic Regression algorithm**

import pandas as pd

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

from sklearn.linear\_model import LogisticRegression

from sklearn.metrics import accuracy\_score, confusion\_matrix

# Reading the CSV file

data = pd.read\_csv('your\_file\_path.csv')

# Assuming 'Age' and 'Income' are the features and 'Loan\_Approval' is the target variable

X = data[['age', 'income']]

y = data['Loan\_approval']

# Splitting 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)

# Creating a logistic regression model

model = LogisticRegression()

# Training the model

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

# Making predictions on the test set

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

# Calculating accuracy

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

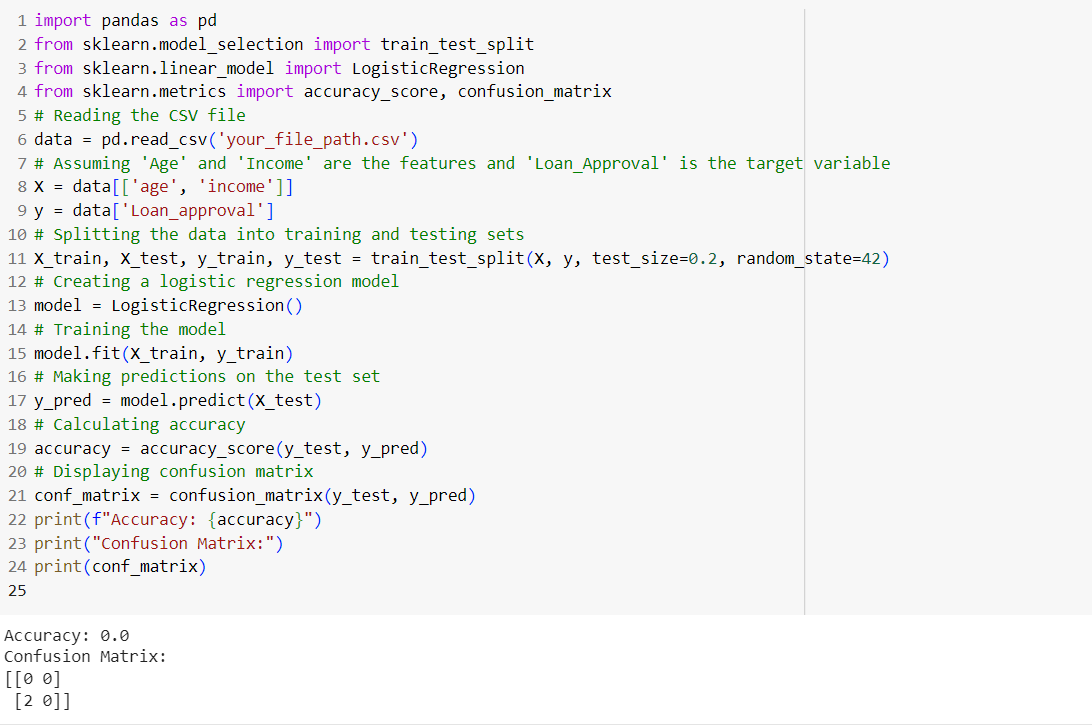
# Displaying confusion matrix

conf\_matrix = confusion\_matrix(y\_test, y\_pred)

print(f"Accuracy: {accuracy}")

print("Confusion Matrix:")

print(conf\_matrix)



This code reads the data, splits it into training and testing sets, trains a logistic regression model, makes predictions, and prints accuracy along with a confusion matrix.

we import necessary libraries:

* **pandas**: For data manipulation and analysis.
* **train\_test\_split**: To split the dataset into training and testing sets.
* **LogisticRegression**: Implementation of logistic regression from scikit-learn.
* **accuracy\_score** and **confusion\_matrix**: Metrics to evaluate the performance of the model.

Logistic Regression is a statistical method used for modelling the probability of a binary outcome. Despite its name, it's commonly employed for classification tasks rather than regression. The algorithm predicts the probability that an instance belongs to a particular category.

Logistic Regression is a foundational algorithm in machine learning and is particularly useful when dealing with binary classification problems.

**GITHUB LINK: https://github.com/Jeyapathy/Machine-Learning**