MACHINE LEARNING WITH PYTHON

DEMONSTRATION ON REAL TIME APPLICATIONS

CREDIT CARD FRAUD DETECTION

SUBMITTED BY

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ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

TITLE : CREDIT CARD FRAUD DETECTION

DESCRIPTION :

This Python program is developed to detect credit card fraud using Linear Regression. The program uses a dataset (creditcard.csv) that contains transaction details such as the Amount and a label Class, which indicates whether a transaction is fraudulent (1) or not fraudulent (0). The model is trained using the Amount column as the input feature and Class as the target. The dataset is split into training and testing sets using the train_test_split() function. A Linear Regression model from sklearn.linear_model is trained on the training data. The model is then used to predict fraud values on the test data. Red dots represent the actual data points. Blue line represents the predicted values.

CODING :

```python
import pandas as pd

import numpy as np

import matplotlib.pyplot as plt

from sklearn.model_selection import train_test_split

from sklearn.linear_model import LinearRegression


# Load dataset

df = pd.read_csv(r"C:\\Users\LENOVO\Downloads\creditcard.csv")


X = df[['Amount']]      # Feature: transaction amount

y = df['Class']         # Target: fraud status


# Split the dataset

X_train, X_test, y_train, y_test = train_test_split(X, y,
test_size=0.3, random_state=42)


# Train the model

model = LinearRegression()

model.fit(X_train, y_train)
```

```python
# Predict

y_pred = model.predict(X_test)


# Show some predictions

print("Predicted values:", y_pred[:10])

print("Actual values:", y_test.values[:10])


# Visualize

plt.scatter(X_test, y_test, color='red', label='Actual')

plt.plot(X_test, y_pred, color='blue', linewidth=2,
label='Predicted')

plt.xlabel("Transaction Amount")

plt.ylabel("Fraud Probability")

plt.title("Credit Card Fraud Detection - Linear Regression")

plt.legend()

plt.show()
```
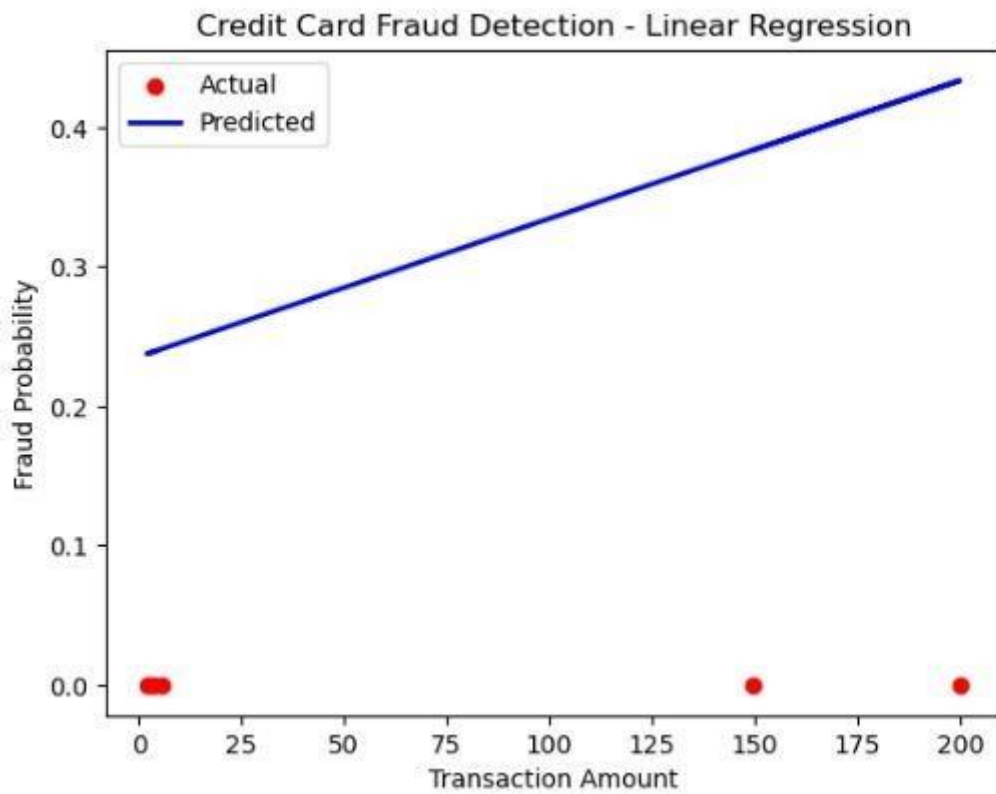
OUTPUT :

Predicted values: [0.38354439 0.43338922 0.24095533 0.23817518 0.23747272 0.23914477]
Actual values: [0 0 0 0 0 0]

RESULT :

The Credit Card Fraud Detection program using Linear Regression was successfully executed. The model was trained using the transaction amount data and tested with new data. The results showed that the model was able to identify which transactions were normal and which were likely to be fraudulent. The predictions were generated correctly, and the program successfully detected suspicious (fraud) transactions based on the pattern in the data.