Project

1. Project Overview

Financial fraud is a major concern in banking and e-commerce sectors. The goal of this project is to analyze transactional data, identify suspicious patterns, and detect fraudulent transactions using data analysis and visualization techniques.

Objectives:

1. Data Handling & Processing: Work with large transaction datasets, clean, and preprocess the data.
    - Read and write data using Pandas
    - Handle missing values and data inconsistencies
    - Convert timestamps into useful formats (hour, day of the week)
    - Extract high-risk locations (e.g., where fraud is frequent)
2. Fraud Analysis: Identify high-risk transactions based on anomalies in spending patterns.
    - Compute fraud rate (%)
    - Identify high-risk transactions (e.g., transactions over $10,000, made at odd hours)
    - Find the most fraud-prone regions
3. Statistical Insights: Compute fraud percentages, transaction distributions, and high-risk regions.
4. Data Visualization: Create fraud detection dashboards with Matplotlib & Seaborn.
    - Transaction Distribution by Amount
    - Fraud vs Non-Fraud Transactions
    - Hourly Fraud Trend
    - Fraud-Prone Locations
5. Anomaly Detection Using Rules: Define fraud detection rules based on transaction behaviour.
6. Interactive Dashboard: Display fraud trends interactively.
    - Show Fraud Statistics
    - Filter Transaction by amount, time, and location.