**1.BLACK FRIDAY SALE PREDICTION.**

**What is this project about?**

This project aims to predict customer spending during Black Friday based on various factors such as demographics, product categories, and past purchases. Using machine learning models, the project forecasts customer spending patterns to help retailers make informed decisions.

**How did we do it?**

1. **Data Loading and Exploration:** Data loading, exploration, and handling missing values.
2. **Preprocessing:** Label encoding and scaling features.
3. **Visualization:** Visualizations to analyze trends.
4. **Model Training:** Linear Regression, Decision Tree, and Random Forest.
5. **Predictions:** Predictions saved in a CSV file.

**Modeling:**

* The data was split into train (80%) and test (20%) sets.
* Models Used:
  + 1. Linear Regression:
    2. R² Score: 0.2016 (on test data)
    3. Performance was moderate, indicating room for improvement.
* Decision Tree Regressor:
  + 1. R² Score: 0.755 (on test data)
    2. A significant improvement in prediction accuracy.
* Random Forest Regressor:
  + 1. R² Score: 0.7799 (on test data)
    2. The best-performing model, with an RMSE of 0.3498, indicating strong prediction capability.

**Final Model Performance**

* + Random Forest Regressor was selected as the final model due to its superior performance.
  + The model was used to predict purchases in the test dataset, which was processed similarly to the training data.

***Github:*** ***https://github.com/Viraj1923/40-Real-World-Projects/tree/main/Black%20Friday***

**2.Analyzing COVID-19 Cases in India**

**What is this project about?**

This project aims to study how COVID-19 has spread and affected different states in India. We use data about active, positive, cured, and death cases to understand the trends and patterns.

**How did we do it?**

1. We got the data and cleaned it up.
2. We looked at the data to find interesting things.
3. We made charts and graphs to see the trends.
4. We analyzed the data for each state to understand the situation better.

**Visualizations:**

* Multiple visualizations were created, including:
  1. **Pie Charts**: Displaying the distribution of total cases (active, positive, cured, deaths) and new cases.
  2. **Bar Plots**: Comparing active cases, positive cases, cured cases, and deaths across states, as well as new active, positive, cured, and death cases.
  3. **Stacked Bar Plot**: Horizontal bar charts comparing cured and death cases, positive and death cases, and active and death cases across states.

**Results**:

* **Total Active Cases**: 222,526
* **Total Positive Cases**: 10,466,595
* **Total Cured Cases**: 10,092,909
* **Total Deaths**: 151,160
* **Total New Active Cases**: 216,558
* **Total New Positive Cases**: 10,479,179
* **Total New Cured Cases**: 10,111,294
* **Total New Deaths**: 151,327

***Github****: https://github.com/Viraj1923/40-Real-World-Projects/tree/main/Covid-19*

