**Cafe Sales Analysis Documentation**

Project Objective

The goal of this project is to clean, preprocess, and analyze a cafe sales dataset to derive meaningful insights, including sales trends, customer behavior, and item popularity. The analysis uses Python libraries like Pandas and Plotly for data cleaning, transformation, and visualization.

**Data Cleaning & Preparation**

1. **Column Renaming**: Standardized column names to lowercase and replaced spaces with underscores.
2. **Missing Values**:
   * Categorical: Replaced missing values and errors with the mode.
   * Numeric: Filled missing values with the median.
   * Dates: Parsed and removed invalid or missing transaction dates.
3. **Duplicate Removal**: Eliminated duplicate records.

**Key Insights**

1. **Top 5 Popular Items sold**:
   * The top-selling item was [juce, coffee, salad, cake, sandwich].
2. **Sales by Location**:
   * In-store and Takeaway contributed significantly to overall sales, with Takeaway by 69.5% leading.
3. **Monthly Trends**:
   * Sales peaked in June, showcasing seasonality in purchasing patterns.
4. **Category-wise Sales**:
   * Juice generated the highest revenue, followed by salad and sandwich.
5. **Customer Behavior**:
   * 54.1% customers preferred Digital Wallet for transactions.

**Visualizations**

1. **Monthly Sales Trends**: Line chart illustrating total monthly revenue.
2. **Sales by Category**: Bar chart highlighting revenue by item categories.
3. **Payment Method Distribution**: Pie chart showcasing payment preferences.
4. **Sales by Location**: Pie chart depicting in-store and takeaway distribution.
5. **Top 5 Items**: Bar chart of the most popular items.

You can access the code by visiting the following link:

https://colab.research.google.com/drive/10FHMx6lN4p3CewZROov9dLDfBBPbGvym?usp=sharing