📊Sales Data Analysis Dashboard

1. Project Overview

The **Sales Data Analysis Dashboard** is an interactive data analytics project developed using **Python and Streamlit**. The dashboard visualizes sales performance from a CSV dataset and enables users to analyze sales trends, regional performance, and product-wise revenue through dynamic filters and KPIs.

This project demonstrates practical skills in **data analysis, data visualization, and dashboard development**, making it suitable for portfolios, interviews, and academic submissions.

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2. Objectives

- Analyze sales data efficiently using Python
- Build an interactive and user-friendly dashboard
- Provide key business insights using visualizations
- Enable filtering by **Region** and **Product**
- Present KPIs for quick decision-making

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3. Dataset Description

The dataset is stored in a CSV file named `sales_data.csv` and contains **100 records**.

Columns Description

Column Name	Description
Date	Date of the sales transaction
Product	Product name (Laptop, Phone, Tablet, etc.)
Quantity	Number of units sold
Price	Price per unit
Customer_ID	Unique customer identifier
Region	Sales region (North, South, East, West)
Total_Sales	Total sales value (Quantity × Price)

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4. Tools & Technologies Used

- **Programming Language:** Python
- **Libraries:**

- Pandas (Data manipulation)
- Matplotlib (Data visualization)
- Streamlit (Dashboard development)
- **IDE:** VS Code / PyCharm
- **Operating System:** Windows

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5. System Requirements

Software Requirements

- Python 3.8 or above
- Streamlit
- Pandas
- Matplotlib

Hardware Requirements

- Minimum 4 GB RAM
- Any modern processor

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6. Project Architecture

```
SalesDashboard/
│
├── app.py
├── sales_data.csv
└── README.md
```

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7. Dashboard Features

7.1 KPI Metrics

- 💰Total Sales
- 📦Total Quantity Sold
- 🏷️Average Product Price

These KPIs provide a quick snapshot of business performance.

7.2 Interactive Filters

- Region Filter (Multi-select)
- Product Filter (Multi-select)

Users can dynamically filter the dataset to analyze specific segments.

7.3 Visualizations

a) Total Sales by Region (Bar Chart)

- Compares revenue generated across regions
- Helps identify top-performing regions

b) Total Sales by Product (Bar Chart)

- Shows product-wise revenue distribution
- Identifies best-selling products

c) Monthly Sales Trend (Line Chart)

- Displays sales performance over time
- Highlights peak and low sales months

7.4 Raw Data View

- Expandable table to view filtered raw data
- Useful for validation and detailed analysis

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8. Implementation Steps

1. Load CSV data using Pandas
2. Perform date conversion and data cleaning
3. Create sidebar filters in Streamlit
4. Calculate KPIs dynamically
5. Generate visualizations using Matplotlib
6. Render dashboard using Streamlit components

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9. How to Run the Project

Step 1: Install Dependencies

```
pip install streamlit pandas matplotlib
```

Step 2: Navigate to Project Folder

```
cd SalesDashboard
```

Step 3: Run the Application

```
streamlit run app.py
```

The dashboard will open automatically in the web browser.

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10. Results & Insights

- North region recorded the highest sales
- Laptop is the top-selling product
- Sales peaked during March
- Clear visibility into sales trends and performance

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11. Limitations

- Uses static CSV data
- No database integration
- Limited advanced analytics (forecasting not included)

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12. Future Enhancements

- Integration with SQL database
- Power BI / Tableau version
- Predictive sales forecasting
- Export dashboard reports
- User authentication

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13. Conclusion

The **Sales Data Analysis Dashboard** successfully transforms raw sales data into meaningful insights using Python. It showcases practical data analytics skills and provides a strong foundation for advanced BI projects.

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14. Author Details

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🔗 *This project is ideal for resumes, interviews, and academic submissions.*