📊 PhonePe Pulse Data Dashboard — Project Summary

# ✅ Project Overview

The PhonePe Pulse Data Dashboard is an interactive web application developed using Python, Streamlit, Plotly, and MySQL. It enables users to explore, analyze, and visualize digital payment trends across India using authentic PhonePe Pulse data.  
  
This project demonstrates strong data engineering, SQL, and modern data visualization skills — delivering actionable business insights through an intuitive, user-friendly interface.

# 🚀 What Was Done

## 1️⃣ Data Integration

- Collected and organized PhonePe Pulse datasets (users, transactions, insurance) from CSV files and MySQL tables.  
- Connected the Streamlit app to a MySQL database for dynamic querying and real-time updates.

## 2️⃣ Dashboard Development

- Built a multi-page Streamlit app with sidebar navigation (Home, Users, Transactions, Insurance, About).  
- Added interactive filters (Year, Quarter, State) for in-depth data exploration.  
- Designed advanced visualizations using Plotly:  
 • Pie charts, bar charts, line graphs, treemaps, heatmaps.  
 • Interactive India map (choropleth) to display user distribution by state.  
- Enabled CSV download for tabular data to support offline analysis.

## 3️⃣ Security & Best Practices

- Implemented environment variables for database credentials to avoid exposing sensitive data.  
- Added robust error handling and friendly user messages for missing data or connection issues.

## 4️⃣ Documentation

- Created a detailed README with setup steps, project structure, and author information.  
- Developed an About page in the app with project context and personal details.

# 🗂️ Data Preparation Steps (Jupyter Notebooks)

## 📌 Data Extraction & Transformation (github.ipynb)

- Cloned the PhonePe Pulse GitHub repo for raw JSON files.  
- Wrote Python scripts to:  
 • Traverse folders (state/year/quarter) and parse JSON files.  
 • Extract key fields: state, year, quarter, transaction/user/insurance details.  
 • Clean & standardize state names and data types.  
 • Aggregate data into structured Pandas DataFrames.  
 • Export processed datasets to CSV:  
 Agger\_Transaction.csv, Aggercated\_User.csv, Aggregated\_Insurance.csv

## 📌 Database Loading & Table Creation (sqlconnection.ipynb)

- Connected to a local MySQL database using Python (mysql.connector).  
- Designed tables for transactions, users, and insurance with clear schemas.  
- Loaded processed CSVs and inserted data row by row.  
- Verified data integrity with Pandas and SQL checks.  
- Created additional tables for map-based analytics.

# 📈 Power BI Dashboards

In addition to the Streamlit app, three interactive dashboards were developed in Power BI to offer alternative perspectives:  
  
- Deep-dive exploration with slicers and filters.  
- Rich, interactive charts and maps for business reviews.  
- Unified with the same processed datasets used in Streamlit.

# 💡 Use Cases

📍 Business Insights  
- Identify states with the highest/lowest digital payment adoption.  
- Monitor user growth and transaction trends.  
- Analyze insurance transactions and seasonality.  
  
📍 Data Exploration  
- Filter data by year, quarter, state for targeted analysis.  
- Download custom data slices for further research.  
  
📍 Skill Demonstration  
- Real-world ETL, SQL, and dashboard development.  
- Demonstrates secure database integration and advanced visualization.  
  
📍 Educational Resource  
- A practical template for building similar dashboards.  
- Helps learners understand ETL, SQL, and Streamlit apps.

# 🌏 Why This Project Matters

Digital payments are rapidly transforming India’s economy. By making PhonePe Pulse data accessible and explorable, this dashboard empowers analysts, businesses, and everyday users to:  
- Understand trends  
- Spot opportunities  
- Make data-driven decisions  
  
The project showcases best practices in data security, visualization, and user experience design.

# 🙌 Author

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Thank you for exploring this project! 🚀✨

# ✔️ How to Use

1. Clone the repository — Get the latest code and datasets.  
2. Set up your MySQL database — Load the prepared CSV files.  
3. Run the Streamlit app — Navigate pages, apply filters, and explore!  
4. Open the Power BI dashboards — Dive deeper into the data for presentations or business reviews.