📄 Project Report

Basic Sales Summary with SQLite and Python

✅ 1. Project Objective

The goal of this project is to:

- Use SQL queries inside Python to extract simple sales summaries.
- Calculate total quantity and total revenue for each product.
- Visualize the revenue using a bar chart with matplotlib.

🛠️ 2. Tools Used

- **SQLite** (in-built Python database)
- **Python** (3.x)
- **Libraries**: sqlite3, pandas, matplotlib
- **Jupyter Notebook** (for code execution and documentation)

📦 3. Dataset Description

A small SQLite database named sales_data.db was created with one table: sales.

Sample Table: sales

id	product	quantity	price
1	Bottle	10	200
2	Lunch Box	5	300
3	Bottle	15	200
4	Lunch Box	10	300
5	Tiffin	7	250

🧠 4. Approach and Implementation

4.1. Database Connection

python

```
import sqlite3
conn = sqlite3.connect("sales_data.db")
```

4.2. SQL Query to Aggregate Data

sql

```
SELECT
    product,
    SUM(quantity) AS total_qty,
    SUM(quantity * price) AS revenue
FROM sales
GROUP BY product;
```

4.3. Load Data into Pandas

python

```
import pandas as pd
df = pd.read_sql_query(query, conn)
```

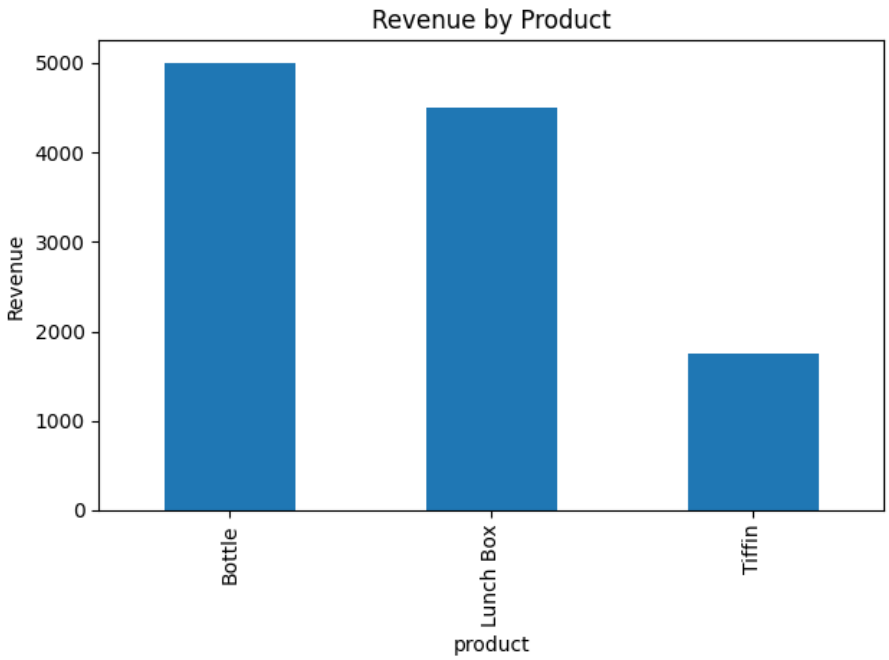
Sales Summary:

	product	total_qty	revenue
0	Bottle	25	5000.0
1	Lunch Box	15	4500.0
2	Tiffin	7	1750.0

4.4. Display & Visualize Data

python

```
print(df)
import matplotlib.pyplot as plt
df.plot(kind='bar', x='product', y='revenue', title='Revenue by Product', legend=False)
plt.ylabel("Revenue")
plt.tight_layout()
plt.savefig("sales_chart.png")
plt.show()
```



📊 5. Results

Output DataFrame:

product	total_qty	revenue
Bottle	25	5000
Lunch Box	15	4500
Tiffin	7	1750

💬 6. Key Learnings

- How to connect SQLite with Python.
- Executing SQL queries inside Python using sqlite3.
- Aggregating data using SQL's GROUP BY, SUM().
- Importing SQL results into pandas for further processing.
- Visualizing data using matplotlib.

🔗 8. GitHub Repository

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✅ 9. Conclusion

This project helped build foundational skills in:

- SQL querying inside Python
- Data aggregation
- Plotting charts using matplotlib
- Combining databases and data science workflows