Tak-7-SQLite Database using Python

April 17, 2025

1 Import Required Libraries

[18]:
```
import sqlite3
import pandas as pd
import matplotlib.pyplot as plt
```

2 Create and Connect to SQLite Database

[20]:
```
# Connect to SQLite (it will create the file if it doesn't exist)
conn = sqlite3.connect("sales_data.db")
cursor = conn.cursor()
```

Create Table and Insert Sample Data

[22]:
```
# Create 'sales' table
cursor.execute('''
    CREATE TABLE IF NOT EXISTS sales (
        product TEXT,
        quantity INTEGER,
        price REAL
    )
''')

# Insert sample data
sample_data = [
    ('Apples', 10, 2.5),
    ('Bananas', 5, 1.0),
    ('Oranges', 8, 1.8),
    ('Apples', 3, 2.5),
    ('Bananas', 7, 1.0)
]

cursor.executemany('INSERT INTO sales (product, quantity, price) VALUES (?, ?, ?
 ↪)', sample_data)
conn.commit()
```

3 Run SQL Query to Summarize Sales

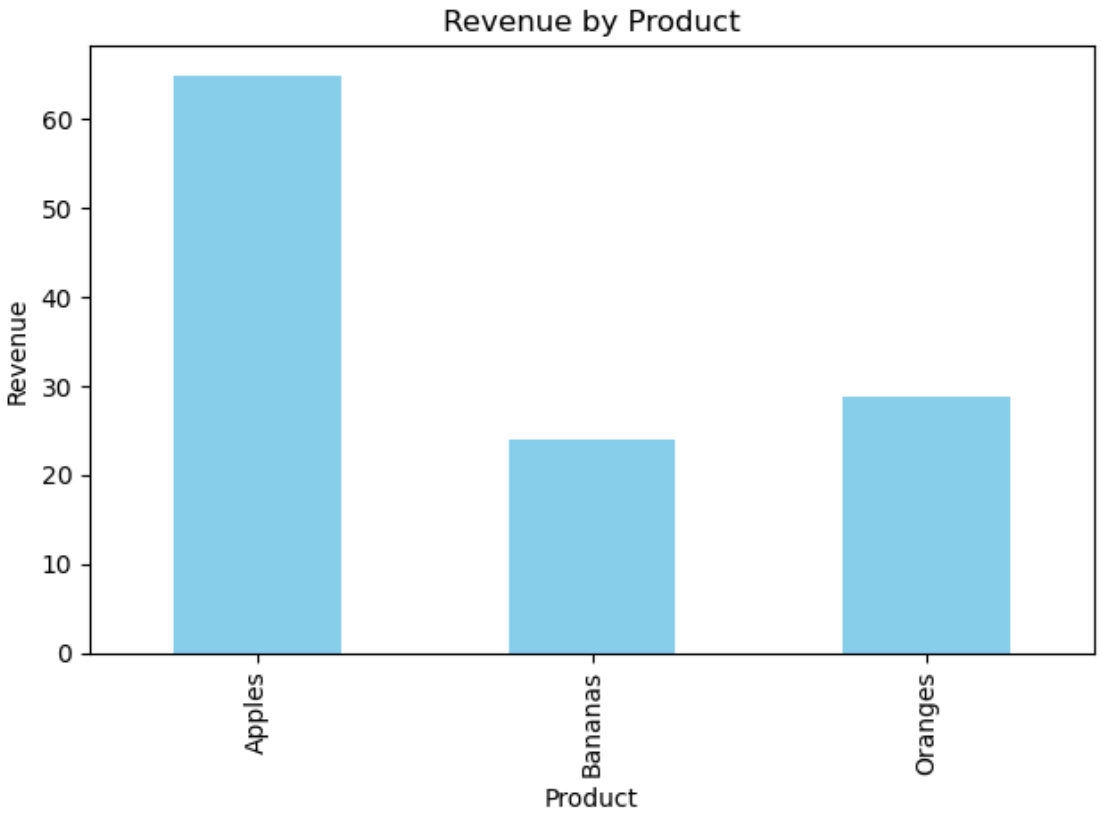
[24]:
```
# Query to get total quantity and revenue per product
query = '''
    SELECT
        product,
        SUM(quantity) AS total_qty,
        SUM(quantity * price) AS revenue
    FROM sales
    GROUP BY product
'''

# Read SQL query into DataFrame
df = pd.read_sql_query(query, conn)
print(df)
```

```
   product  total_qty  revenue
0   Apples         26     65.0
1  Bananas         24     24.0
2  Oranges         16     28.8
```

4 Plot the Bar Chart

[26]:
```
# Plotting the revenue per product
df.plot(kind='bar', x='product', y='revenue', legend=False, color='skyblue')
plt.title("Revenue by Product")
plt.xlabel("Product")
plt.ylabel("Revenue")
plt.tight_layout()
plt.savefig("sales_chart.png")
plt.show()
```



5 Top-selling product by revenue

[28]:
```
query_top_product = '''
    SELECT
        product,
        SUM(quantity * price) AS revenue
    FROM sales
    GROUP BY product
    ORDER BY revenue DESC
    LIMIT 1
'''

df_top = pd.read_sql_query(query_top_product, conn)
print(" Top Selling Product (by Revenue):")
print(df_top)
```

```
 Top Selling Product (by Revenue):
  product  revenue
0  Apples     65.0
```

6 Total overall revenue and quantity

[30]:
```
query_totals = '''
    SELECT
        SUM(quantity) AS total_quantity,
        SUM(quantity * price) AS total_revenue
    FROM sales
'''

df_totals = pd.read_sql_query(query_totals, conn)
print("  Overall Sales Summary:")
print(df_totals)
```

```
  Overall Sales Summary:
   total_quantity  total_revenue
0              66          117.8
```

6.1 Project Summary – Task 7: Basic Sales Summary using SQL in Python

In this project, we used **SQLite** with **Python** to extract and summarize sales data from a small dataset. We practiced using SQL queries inside Python, loaded results using `pandas`, and visualized sales with `matplotlib`.

6.1.1 Key Steps:

- Created a SQLite database (`sales_data.db`)
- Inserted sample sales data (product, quantity, price)
- Ran SQL queries to calculate:
  - Total quantity and revenue per product
  - Top-selling product by revenue
  - Overall total sales (quantity and revenue)
- Loaded SQL results into pandas DataFrame
- Plotted a **bar chart** showing revenue by product

6.1.2 Insights:

- **Apples** generated the highest revenue among all products, making it the top-selling item.
- The **total revenue** from all products was **117.8**, with a **total quantity sold of 66**.
- Visualizing sales made it easier to identify top-performing products — helpful for inventory, pricing, or marketing decisions.

6.1.3 Tools Used:

- Python
- SQLite (`sqlite3`)

- pandas
- matplotlib

6.1.4 Outcome:

By completing this task, we: - Learned to write basic SQL queries - Practiced loading SQL data into Python - Performed simple data summaries - Created our first sales chart!