

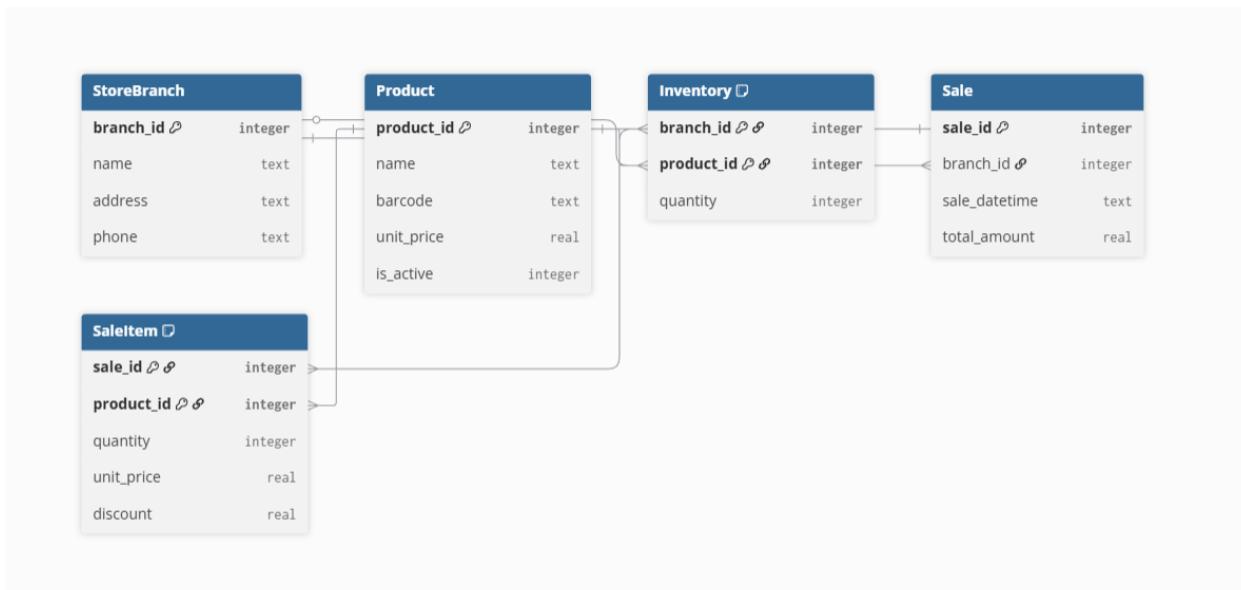
Supermarket Database Management System

Group Members:

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- Description:** Our project is a Supermarket Database Management System that was created to host several branches, keeping record of information for each of those. Our operations will include managing product info like price or category, track item stock, record transactions, and product reports on sales. Our justification for the database is that it is very useful because it allows the company to manage their stocks across multiple branches in real time and allows sales to be managed under one construct. If there was no database then each branch would have to manually track their data. This allows the company to track all of their data in one central location, allowing them to easily observe revenue, stock, etc.

2. E-R diagram



3. Relational schema:

- StoreBranch(branch_id [PK], name, address, phone)
 - Product(product_id [PK], name, barcode [U], unit_price, is_active, category)
 - Inventory(branch_id [PK, FK -> StoreBranch.branch_id],
 product_id [PK, FK -> Product.product_id],
 quantity)
 - Sale(sale_id [PK], branch_id [FK -> StoreBranch.branch_id],
 sale_datetime, total_amount)
 - SaleItem(sale_id [PK, FK -> Sale.sale_id],
 product_id [PK, FK -> Product.product_id],
 quantity, unit_price, discount)
-
- a) StoreBranch – represents each supermarket branch
 - b) Product – stores product info such as price and category
 - c) Inventory – maps which products are stocked at which branch
 - d) Sale – records transactions
 - e) SaleItem – details which products were sold in each sale

4. Test Queries

Sale history

```
PS C:\Users\natha\OneDrive\Desktop\CSC4402-Supermarket-main\db> ./sqlite3 supermarket.db
SQLite version 3.51.1 2025-11-28 17:28:25
Enter ".help" for usage hints.
sqlite> SELECT sale_id, sale_datetime, total_amount
...> FROM Sale
...> ORDER BY sale_datetime DESC
...> LIMIT 20;
5|2025-12-03 21:16:59|12.9
4|2025-11-25 09:10:00|19.15
3|2025-11-24 13:30:00|14.56
2|2025-11-24 11:05:00|8.47
1|2025-11-24 10:15:00|9.77
```

Total amount

```
sqlite> SELECT ROUND(SUM(total_amount), 2) AS total_sales
...> FROM Sale;
64.85
```

Top selling products

```
sqlite> SELECT si.product_id, p.name, SUM(si.quantity) AS total_qty
...> FROM SaleItem si
...> JOIN Product p ON si.product_id = p.product_id
...> GROUP BY si.product_id, p.name
...> ORDER BY total_qty DESC
...> LIMIT 10;
10|Black Beans Canned 15oz|12
2|Cheddar Cheese 8oz|3
1|Whole Milk 1 Gal|2
8|Croissants 6ct|2
3|Chicken Breast 1lb|1
4|Ground Beef 1lb|1
5|Romaine Lettuce Head|1
6|Gala Apples 1lb|1
7|Sliced Wheat Bread|1
9|Long Grain Rice 5lb|1
```

Revenue per day

```
sqlite> SELECT
...>     substr(s.sale_datetime, 1, 10) AS sale_date,
...>     ROUND(SUM(s.total_amount), 2) AS revenue
...> FROM Sale s
...> GROUP BY sale_date
...> ORDER BY sale_date;
2025-11-24|32.8
2025-11-25|19.15
2025-12-03|12.9
```

Inventory count

```
sqlite> SELECT
...>     sb.branch_id,
...>     sb.name AS branch_name,
...>     SUM(i.quantity) AS total_items
...> FROM Inventory i
...> JOIN StoreBranch sb ON i.branch_id = sb.branch_id
...> GROUP BY sb.branch_id, sb.name
...> ORDER BY sb.branch_id;
1|LSU Market Main|405
```

5. Application User Interface

Main menu:

```
==== LSU Market CLI ====
1. List available products
2. Add product to cart
3. View cart
4. Checkout
5. Statistics
6. Exit
Choose an option: _
```

Option 1 Available products:

```
==== Available Products ====
ID      Name          Price    Stock
-----
10     Black Beans Canned 15oz   1.29     80
2      Cheddar Cheese 8oz       3.99     30
3      Chicken Breast 1lb      4.99     25
8      Croissants 6ct          3.59     30
6      Gala Apples 1lb         1.99     45
4      Ground Beef 1lb         5.49     20
9      Long Grain Rice 5lb     6.49     60
5      Romaine Lettuce Head    1.49     50
7      Sliced Wheat Bread      2.79     35
1      Whole Milk 1 Gal        3.49     40
```

```
==== LSU Market CLI ====
1. List available products
2. Add product to cart
3. View cart
4. Checkout
5. Statistics
6. Exit
Choose an option: _
```

Option 2 Add product to cart:

```
==== LSU Market CLI ====
1. List available products
2. Add product to cart
3. View cart
4. Checkout
5. Statistics
6. Exit
Choose an option: 2
```

```
==== Available Products ====
ID      Name          Price    Stock
-----
10     Black Beans Canned 15oz   1.29     80
2      Cheddar Cheese 8oz       3.99     30
3      Chicken Breast 1lb      4.99     25
8      Croissants 6ct          3.59     30
6      Gala Apples 1lb         1.99     45
4      Ground Beef 1lb         5.49     20
9      Long Grain Rice 5lb     6.49     60
5      Romaine Lettuce Head    1.49     50
7      Sliced Wheat Bread      2.79     35
1      Whole Milk 1 Gal        3.49     40
```

```
Enter product ID to add to cart (0 to cancel): 10
Enter quantity of 'Black Beans Canned 15oz' to add: 10
Added 10 x 'Black Beans Canned 15oz' to cart.
```

Option 3 View cart:

```
==== LSU Market CLI ====
1. List available products
2. Add product to cart
3. View cart
4. Checkout
5. Statistics
6. Exit
Choose an option: 3
```

```
==== Cart ====
ID      Name          Qty    Price    Subtotal
-----
10     Black Beans Canned 15oz   10     1.29     12.90
-----
```

Total: 12.90

Option 4 Check out:

```
== LSU Market CLI ==
1. List available products
2. Add product to cart
3. View cart
4. Checkout
5. Statistics
6. Exit
Choose an option: 4
```

Checkout completed. Sale ID: 5, Total: 12.90

Option 5: Statistics (AKA Queries)

```
== LSU Market CLI ==
1. List available products
2. Add product to cart
3. View cart
4. Checkout
5. Statistics
6. Exit
Choose an option: 5

== Statistics ==
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue & Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 1
== Sales History ==
(5, '2025-12-03 21:16:59', 12.9)
(4, '2025-11-28 09:18:01', 19.15)
(3, '2025-11-28 10:15:00', 10.56)
(2, '2025-11-24 11:05:00', 8.47)
(1, '2025-11-24 10:15:00', 9.77)

== Statistics ===
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 4
== Inventory Counts ==
(1, 'LSU Market Main', 405)

== Statistics ===
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 7
== Total Sales ==
(64.85,)

== Statistics ===
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 8
== Products With Stock ==
(1, 'Whole Milk 1 Gal', 'Dairy', 3.49, 40)
(2, 'Cheddar Cheese 8oz', 'Dairy', 3.99, 38)
(3, 'Chicken Breast 1lb', 'Meat', 4.99, 25)
(4, 'Ground Beef 1lb', 'Meat', 5.49, 20)
(5, 'Romaine Lettuce Head', 'Pantry', 1.49, 58)
(6, 'Gala Apples 1lb', 'Pantry', 1.99, 45)
(7, 'Sliced Wheat Bread', 'Bakery', 2.79, 35)
(8, 'Croissants 6ct', 'Bakery', 3.59, 38)
(9, 'Long Grain Rice 5lb', 'Pantry', 6.49, 68)
(10, 'Black Beans Canned 16oz', 'Pantry', 1.29, 78)

== Statistics ===
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 3
== Top Selling Products ==
(10, 'Black Beans Canned 16oz', 12)
(2, 'Cheddar Cheese 8oz', 3)
(1, 'Whole Milk 1 Gal', 2)
(8, 'Croissants 6ct', 2)
(3, 'Chicken Breast 1lb', 1)
(5, 'Romaine Lettuce Head', 1)
(6, 'Gala Apples 1lb', 1)
(7, 'Sliced Wheat Bread', 1)
(9, 'Long Grain Rice 5lb', 1)

Choose an option: 2
== Statistics ===
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 3
== Revenue Per Day ==
('2025-11-24', 32.8)
('2025-11-25', 19.15)
('2025-12-03', 12.9)

== Statistics ===
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 6
== Revenue by Category ==
('Pantry', 21.97)
('Dairy', 18.95)
('Meat', 10.48)
('Bakery', 9.97)
('Produce', 3.48)

== Statistics ===
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back

Choose an option: 9
== Low Stock Products ==

```

```

==== Statistics ====
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back
Choose an option: 10

==== Recent Sales ====
(5, '2025-12-03 23:16:59', 12.9)
(4, '2025-11-25 09:10:00', 19.15)
(3, '2025-11-24 13:30:00', 14.56)
(2, '2025-11-24 11:05:00', 8.47)
(1, '2025-11-24 10:15:00', 9.77)

==== Statistics ====
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back
Choose an option: 11

==== Revenue by Day ====
('2025-12-03', 12.9, 1)
('2025-11-25', 19.15, 1)
('2025-11-24', 32.8, 3)

==== Statistics ====
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back
Choose an option: 12

==== Top Products by Quantity ====
(10, 'Black Beans Canned 16oz', 12)
(2, 'Cheddar Cheese 8oz', 3)
(1, 'Whole Milk 1 Gal', 2)
(8, 'Croissants 6ct', 2)
(3, 'Chicken Breast 1lb', 1)
(4, 'Ground Beef 1lb', 1)
(6, 'Romaine Lettuce Head', 1)
(7, 'Gala Apples 1lb', 1)
(9, 'Sliced Wheat Bread', 1)
(9, 'Long Grain Rice 5lb', 1)

==== Statistics ====
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back
Choose an option: 13

==== Revenue by Product ====
(10, 'Black Beans Canned 16oz', 16.48)
(2, 'Cheddar Cheese 8oz', 13.97)
(8, 'Sliced Wheat Bread', 18.49)
(1, 'Whole Milk 1 Gal', 6.98)
(9, 'Long Grain Rice 5lb', 6.49)
(4, 'Ground Beef 1lb', 10.49)
(3, 'Chicken Breast 1lb', 4.99)
(7, 'Gala Apples 1lb', 2.79)
(6, 'Romaine Lettuce Head', 1.49)

==== Statistics ====
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back
Choose an option: 14

==== Revenue and Units by Category ====
('Pantry', 21.97, 13)
('Dairy', 18.950000000000003, 5)
('Meat', 10.48, 2)
('Bakery', 9.969999999999999, 3)
('Produce', 3.48, 2)

==== Statistics ====
1. Sales History
2. Top Selling Products
3. Revenue Per Day
4. Inventory Counts
5. Products Never Sold
6. Revenue by Category
7. Total Sales
8. Products With Stock
9. Low Stock Products
10. Recent Sales
11. Revenue by Day
12. Top Products by Quantity
13. Revenue by Product
14. Revenue & Units by Category
15. Products Sold Today
16. Inventory Value
0. Back
Choose an option: 15

==== Products Sold Today ====
(10,)


```

Option 6 Exit:

```

==== LSU Market CLI ====
1. List available products
2. Add product to cart
3. View cart
4. Checkout
5. Statistics
6. Exit
Choose an option: 6
Goodbye.
guidofajardo@5e-bd-87-17-cd-48 app %

```

6. Participation details

Names:	Tasks:
Guido M. Fajardo Gabrie	ER Diagram, Data Generation, Test Queries, Schema & Application User Interface
Jonathan Martinez	Relational Schema, Test Queries
Nathan Rodrigue	Data Generation, Report, Relational Schema
Candor Alemu	Data Generation & Relational Schema
Yu Joo	Test Queries, Schema, ER Diagram, Data Generation & Application User Interface
Troy Boatner	Data Generation, Test Queries