

Señora Salsa: Sales & Inventory Solutions Driven by Database Implementation

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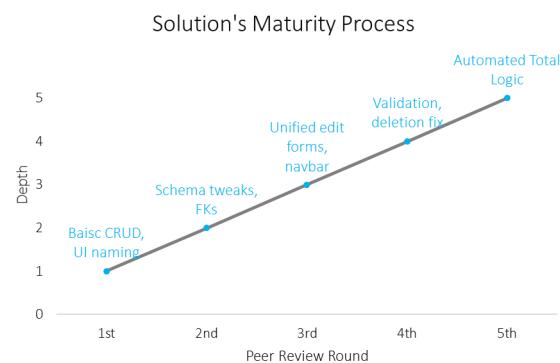
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Group 73

<http://classwork.engr.oregonstate.edu:20668/>

Executive Summary

Evolution Through Peer Feedback

Over five constructive rounds of peer review, our Señora Salsa website matured from a basic prototype into a fully functional web application capable of supporting real-world business operations. Each round of feedback guided our team through progressive layers of refinement, moving from visual adjustments and basic usability enhancements toward deeper technical functionality and business logic implementation.



Early Stages: Interface and Structure

Over five constructive rounds in the first and second rounds of peer review, feedback centered on foundational elements such as naming conventions, consistent UI styling

and clarity of layout. We responded by restructuring sections, enhancing dropdown selections and improving form readability. These changes laid the groundwork for a smoother user experience and clean interface.

Midpoint: Consistency and Interactivity

Peer Review 3 highlighted the need for interface consistency and more intuitive interactivity. Based on this input, we aligned edit form behavior across pages, integrated a site-wide navigation bar and added real-time dropdown linked to foreign keys. These features made the application more coherent and user-friendly.

Final Rounds: Functional Depth

In Peer Reviews 4 and 5, the focus shifted toward data accuracy and backend robustness. We addressed input validation issues (e.g., decimal support), fixed edge cases with deleting behaviors and began implementing key business logic such as auto-calculating total sales based on discounts and taxes. These enhancements positioned the system to behave like a reliable point-of-sale platform, scalable and aligned with our business model.

Conclusion

Each review challenged us to go deeper, from cosmetic changes to structural upgrades and finally to logic-intense features. Our team has embraced this iterative process, treating feedback not just as correction but as an opportunity for growth. As a result, Señora Salsa's database solution has evolved into a solid, functional tool ready to support the real-world needs of a growing business.

Overview

Señora Salsa is a small business startup looking to take in stake in Panama with its Mexican style *macha salsa*.

Initial market research suggests a steady demand of 1,000 bottles/month in the first six month, with projected growth of 500 additional bottles/month, then, reaching 10,000 bottles/month by the end of year two. Assuming an average customer purchase of 2 bottles per sale, the system will need to handle approximately 48,000 sales record and manage 96,000 bottles sold within the first 24 months.

Business Element	Year 1 Estimate	Year 2 Estimate
Bottles Sold	18,000 (avg. 1,500/mo)	78,000 (avg. 6,500/mo)
Customer Sales	~9,000	~39,000
Products	4	Expandable
Employees	2	8

To support this growth, the business will begin with two employees and scale up to eight by year two. The product catalog will initially include four items: three spice levels of the flagship *Picante Pili* and one pickled product.

Database Solution

Despite its startup status, Señora Salsa has ambitious goals – aiming to reach 10,000 bottles sold monthly by the end of its second year. To manage this scale, the company needs a robust, scalable solution for tracking sales, products, employees, and customers. Relying on spreadsheets would eventually become unmanageable, leading to data duplication and inefficient reporting. Instead, a relational database management system (RDBMS) offers structure, consistency, and the ability to grow with the business.

We propose designing and implementing a relational database back-end using MySQL, built within MySQL Workbench and accessed via a three-tier web application hosted on the OSU ENGR server. The system aligns with OLTP (Online Transaction Processing) principles, meaning it is built to handle daily operations of a growing business: fast inserts, updates, and retrievals all with high data integrity.

This structure allows separation between the client tier (user interface), the web tier (logic and routing in Flask or Node.js), and the data tier (the actual MySQL database). This approach ensures that users interact securely with data only through the app logic, keeping the data protected.

Additionally, our schema design embraces the principles of normalization, reducing redundancy and preventing update, insert, and delete anomalies. For example, a single customer's data exists in the *Customers* table only once, even if they make multiple purchases. Similarly, *Products* can appear in multiple sales without duplicating the product description or pricing structure.

In the proposed database schema, we define five core entities and one intersection table, each capturing both the data and metadata (structure, constraints, and relationships) critical to a scalable system.

Description these four entities and intersection table are as follows:

Customers

What

- Records the details of customers who make purchases.

Metadata

- `customerID: INT, PK, AUTO_INCREMENT, NOT NULL`
- `firstName: VARCHAR(50), NOT NULL`
- `lastName: VARCHAR(50), NOT NULL`
- `email: VARCHAR(100), UNIQUE, NOT NULL`
- `phoneNumber: VARCHAR(20)`
- `createdAt: DATETIME, DEFAULT CURRENT_TIMESTAMP`

Relationship

- A 1:M relationship between Customers and Sales (one customer can make many purchases) is implemented with `customerID` as a FK in Sales.

Sales

What

- Records the details of transactions made by customers.

Metadata

- saleID: INT, PK, AUTO_INCREMENT, NOT NULL
- customerID: INT, FK, NOT NULL
- employeeID: INT, FK, NULL
- saleDate: DATE, NOT NULL
- subtotal: DECIMAL(10,2), NOT NULL
- discount: DECIMAL(10,2), DEFAULT 0.00, NOT NULL
- tax: Decimal(10,2), DEFAULT 0.00, NOT NULL
- totalAmount: DECIMAL(10,2), NOT NULL
- paymentMethod: ENUM('Cash', 'Yappy', 'Credit Card', 'Debit Card'), NOT NULL

Relationship

- A 1:M relationship between Sales and Sale_Products.
- A M:1 relationship with Customers.
- A M:1 relationship with Employees.

Products

What

- Inventory of products that are available for sale.

Metadata

- productID: INT, PK, AUTO_INCREMENT, NOT NULL
- productName: VARCHAR(100), NOT NULL
- description: TEXT
- price: DECIMAL(10, 2), NOT NULL
- stockQuantity: INT, NOT NULL
- isActive: TINYINT(1)
- categoryID: INT, FK, NOT NULL

Relationship

- A M:N relationship exists between Sales and Products. This is implemented through a join table Sales_Products.
- A M:1 relationship with Categories.

Employees

What

Tracks staff members who handle sales or support customers.

Metadata

- employeeID: INT, PK, AUTO_INCREMENT, NOT NULL
- firstName: VARCHAR(50), NOT NULL
- lastName: VARCHAR(50), NOT NULL
- email: VARCHAR(100), NOT NULL
- role: ENUM('Sales', 'Manager', 'Support'), NOT NULL
- hireDate: DATE, NOT NULL
- isActive: TINYINT(1)

Relationship

- A 1:M relationship between Employees and Sales.

SalesProducts (intersection table)

What

Connects products and sales, capturing quantity and pricing.

Metadata

- saleProductID: INT, PK, AUTO_INCREMENT
- saleID: INT, FK, NOT NULL
- productID: INT, FK, NOT NULL
- quantity: INT, NOT NULL
- unitPriceAtSale: DECIMAL(10,2), NOT NULL (updated price in case produce price changes over time)

Categories

What

- Represents product groupings used to organize and classify inventory. Examples: salsa, pickled products and limited-edition items.

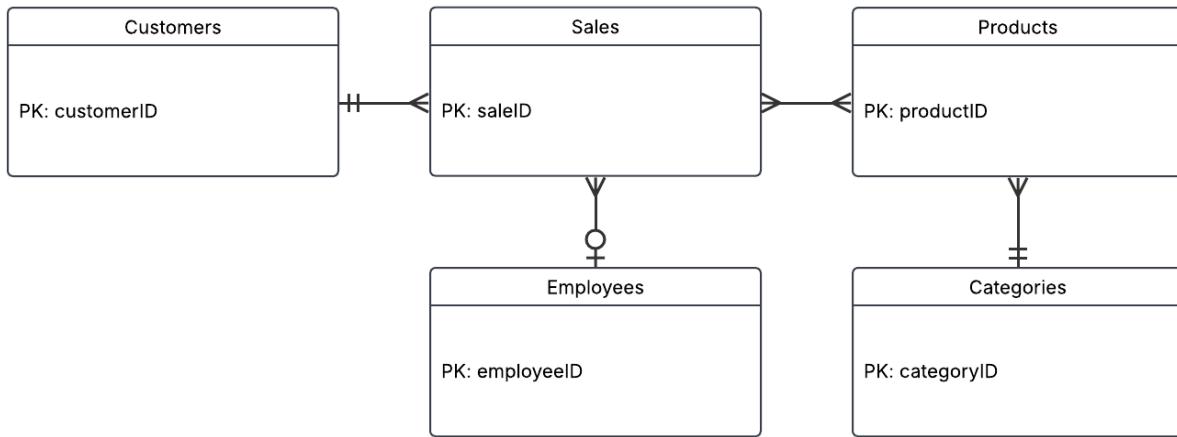
Metadata

- categoryID: INT, PK, AUTO_INCREMENT, NOT NULL
- categoryName: VARCHAR(50), UNIQUE, NOT NULL
- description: TEXT, NULL
- isActive: TINYINT(1), DEFAULT 1, NOT NULL

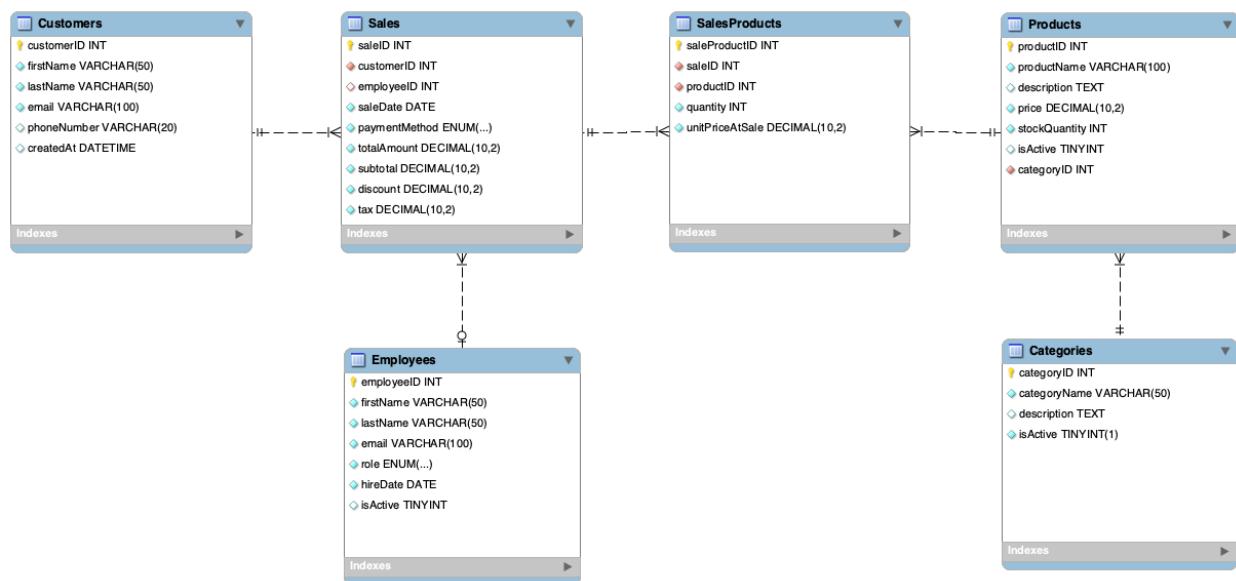
Relationship

- A 1:M relationship between Categories and Products.

ER Diagram:



Schema:



Example Data:

Customer:

customerID	firstName	lastName	email	phoneNumber	createdAt
1	Carlos	Ramirez	carlos.ramirez@example.com	50761234567	4/17/25 0:00
2	Maria	Lopez	maria.lopez@example.com	50769876543	4/3/25 0:00
3	Ernesto	Diaz	ernesto.diaz@example.com	50763457890	2/17/25 0:00
4	Lucia	Fernandez	lucia.fernandez@example.com	50762345678	1/29/25 0:00
5	Jorge	Mendoza	jorge.mendoza@example.com	50764567890	1/27/25 0:00

Sales:

saleID	customerID	employeeID	saleDate	subtotal	discount	tax	totalAmount	paymentMethod
1	1	1	1/10/25	13	0	0.91	13.91	Credit Card
2	2	2	1/20/25	10	1	0.63	9.63	Yappy
3	3	3	2/5/25	10.5	0	0.74	11.24	Cash
4	4	1	2/25/25	9.5	0	0.66	10.16	Debit Card
5	5	4	3/1/25	13	0	0.91	13.91	Credit Card
6	1	2	3/15/25	14.5	1	0.94	14.44	Cash
7	2	5	3/25/25	10.25	0	0.72	10.97	Yappy
8	3	1	4/2/25	15	2	0.91	13.91	Credit Card
9	4	2	4/10/25	5	0	0.35	5.35	Debit Card
10	5	3	4/22/25	8.5	0	0.6	9.1	Cash

Products:

productID	productName	description	price	stockQuantity	isActive	categoryID
1	La Pili (Hot)	Original hot chili oil salsa.	6.5	100	1	1
2	La Pili (Mild)	Mild version of La Pili.	6	100	1	1
3	La PanaMex (Hot)	Hot salsa blending Panamanian and Mexican flavors.	5.5	100	1	1
4	La PanaMex (Mild)	Mild salsa blending Panamanian and Mexican flavors.	5	100	1	1
5	El Chombi (Hot)	Fiery salsa with bold spices.	5.5	100	1	1
6	El Chombi (Mild)	Smooth and mild variation of El Chombi.	5	100	1	1
7	Pickled Jalapeños and Veggies	Crunchy mix of jalapeños and seasonal vegetables.	4.75	80	1	2
8	Hummus	Smooth chickpea-based spread with olive oil.	4.25	60	1	3

Employees:

employeeID	firstName	lastName	email	role	hireDate	isActive
1	Ana	Torres	ana.torres@salsa.com	Sales	1/10/25	1
2	Luis	Gomez	luis.gomez@salsa.com	Manager	1/15/25	1
3	Camila	Vega	camila.vega@salsa.com	Sales	2/1/25	1
4	Rafael	Castillo	rafael.castillo@salsa.com	Support	2/10/25	1
5	Valeria	Morales	valeria.morales@salsa.com	Sales	3/1/25	1

SalesProducts:

saleProductID	saleID	productID	quantity	unitPriceAtSale
1	1	1	2	6.5
2	2	4	2	5
3	3	5	2	5.5
4	4	2	1	6
5	4	3	1	5.5
6	5	1	2	6.5
7	6	2	1	6
8	6	6	1	5
9	6	8	1	4.25
10	7	2	1	6
11	7	7	1	4.75
12	7	8	1	4.25
13	8	1	1	6.5
14	8	3	1	5.5
15	9	6	1	5
16	10	3	1	5.5
17	10	2	1	6

Categories:

categoryID	categoryName	description	isActive
1	Salsa	Traditional chili oil and tomato-based sauces.	1
2	Pickled products	Vegetables preserved in vinegar or brine.	1
3	Hummus	Chickpea-based spreads with spices and olive oil.	1

Conclusion

The proposed relational database solution for Señora Salsa provides a well-structured foundation to support a day-to-day business operation and long-term growth. By implementing clearly defined entities, normalized relationships, and leveraging the benefits of a three-tier web architecture, the system ensures data integrity, scalability, and ease of access. This design will serve as the backbone for future development, including a full-stack web application, and positions Señora Salsa for a streamlined and data-driven operation.

Appendix: UI Pages

Home Page

Navigation bar displays available pages and gives the user the ability reset their database.



Customers Page

Page allows the user to display, edit, add and delete customers.

Home Customers Employees Sales Categories Products Sales Products

Customers List

Add New Customer

First Name:

Last Name:

Email:

Phone:

[Add Customer](#)

ID	First Name	Last Name	Email	Phone	Created At	Actions
1	Carlos	Ramirez	carlos.ramirez@example.com	50761234567	2025-06-02 10:14:40	Edit Delete
2	Maria	Lopez	maria.lopez@example.com	50769876543	2025-06-02 10:14:40	Edit Delete
3	Ernesto	Diaz	ernesto.diaz@example.com	50763457890	2025-06-02 10:14:40	Edit Delete
4	Lucia	Fernandez	lucia.fernandez@example.com	50762345678	2025-06-02 10:14:40	Edit Delete
5	Jorge	Mendoza	jorge.mendoza@example.com	50764567890	2025-06-02 10:14:40	Edit Delete

Employees Page

Page allows the user to display, edit, add and delete employees.



Employees List

Add New Employee

First Name:

Last Name:

Email:

Role:

Hire Date:

Active:

ID	First Name	Last Name	Email	Role	Hire Date	Actions
1	Ana	Torres	ana.torres@salsa.com	Sales	2025-01-10	Edit Delete
2	Luis	Gomez	luis.gomez@salsa.com	Manager	2025-01-15	Edit Delete
3	Camila	Vega	camila.vega@salsa.com	Sales	2025-02-01	Edit Delete
4	Rafael	Castillo	rafael.castillo@salsa.com	Support	2025-02-10	Edit Delete
5	Valeria	Morales	valeria.morales@salsa.com	Sales	2025-03-01	Edit Delete

Sales Page

Page allows the user to display, edit, add and delete sales.

Home	Customers	Employees	Sales	Categories	Products	Sales Products
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Sales List

Add New Sale

Customer:

Employee:

Sale Date:

Subtotal:

Discount:

Payment Method:

ID	Customer	Employee	Sale Date	Subtotal	Discount	Tax	Total Amount	Payment Method	Actions
1	Carlos Ramirez	Ana Torres	2025-01-10	13.00	0.00	0.91	13.91	Credit Card	Edit Delete
2	Maria Lopez	Luis Gomez	2025-01-20	10.00	1.00	0.63	9.63	Yappy	Edit Delete
3	Ernesto Diaz	Camila Vega	2025-02-05	10.50	0.00	0.74	11.24	Cash	Edit Delete
4	Lucia Fernandez	Ana Torres	2025-02-25	9.50	0.00	0.66	10.16	Debit Card	Edit Delete
5	Jorge Mendoza	Rafael Castillo	2025-03-01	13.00	0.00	0.91	13.91	Credit Card	Edit Delete
6	Carlos Ramirez	Luis Gomez	2025-03-15	14.50	1.00	0.94	14.44	Cash	Edit Delete
7	Maria Lopez	Valeria Morales	2025-03-25	10.25	0.00	0.72	10.97	Yappy	Edit Delete
8	Ernesto Diaz	Ana Torres	2025-04-02	15.00	2.00	0.91	13.91	Credit Card	Edit Delete
9	Lucia Fernandez	Luis Gomez	2025-04-10	5.00	0.00	0.35	5.35	Debit Card	Edit Delete
10	Jorge Mendoza	Camila Vega	2025-04-22	8.50	0.00	0.60	9.10	Cash	Edit Delete

Categories Page

Page allows the user to display, edit, add and delete categories.

Home Customers Employees Sales Categories Products Sales Products

Categories List

Add New Category

Name:

Description:

Is Active: Yes/No

ID	Category name	Description	Actions	
1	Salsa	Traditional chili oil and tomato-based sauces.	Edit	Delete
2	Pickled products	Vegetables preserved in vinegar or brine.	Edit	Delete
3	Hummus	Chickpea-based spreads with spices and olive oil.	Edit	Delete

Products Page

Page allows the user to display, edit, add and delete products.

Home Customers Employees Sales Categories Products Sales Products

Products List

Add a Product

Name:

Description:

Price:

Quantity:

Is Active: Yes/No

Category: Select a category

ID	Product Name	Description	Price	Stock quantity	Category name	Actions
1	La Pili (Hot)	Original hot chili oil salsa.	6.50	100	Salsa	Edit Delete
2	La Pili (Mild)	Mild version of La Pili.	6.00	100	Salsa	Edit Delete
3	La PanaMex (Hot)	Hot salsa blending Panamanian and Mexican flavors.	5.50	100	Salsa	Edit Delete
4	La PanaMex (Mild)	Mild salsa blending Panamanian and Mexican flavors.	5.00	100	Salsa	Edit Delete
5	El Chombi (Hot)	Fiery salsa with bold spices.	5.50	100	Salsa	Edit Delete
6	El Chombi (Mild)	Smooth and mild variation of El Chombi.	5.00	100	Salsa	Edit Delete
7	Pickled Jalapeños and Veggies	Crunchy mix of jalapeños and seasonal vegetables.	4.75	80	Pickled products	Edit Delete
8	Hummus	Smooth chickpea-based spread with olive oil.	4.25	60	Hummus	Edit Delete

Sales Products Page

Page allows the user to display, edit, add and delete sales-products This page displays the intersection between the Sales and Products page.

Home Customers Employees Sales Categories Products Sales Products

Sales Products List

Add a SaleProduct

Sale ID:

Product Name:

Quantity:

Unit Price At Sale:

Sale Product ID	Sale ID	Customer	Date	Total	Product name	Quantity	Unit price at sale	Actions
1	1	Carlos Ramirez	2025-01-10	13.91	La Pili (Hot)	2	6.50	Edit Delete
2	2	Maria Lopez	2025-01-20	9.63	La PanaMex (Mild)	2	5.00	Edit Delete
3	3	Ernesto Diaz	2025-02-05	11.24	El Chombi (Hot)	2	5.50	Edit Delete
4	4	Lucia Fernandez	2025-02-25	10.16	La Pili (Mild)	1	6.00	Edit Delete
5	4	Lucia Fernandez	2025-02-25	10.16	La PanaMex (Hot)	1	5.50	Edit Delete
6	5	Jorge Mendoza	2025-03-01	13.91	La Pili (Hot)	2	6.50	Edit Delete
7	6	Carlos Ramirez	2025-03-15	14.44	La Pili (Mild)	1	6.00	Edit Delete
8	6	Carlos Ramirez	2025-03-15	14.44	El Chombi (Mild)	1	5.00	Edit Delete
9	6	Carlos Ramirez	2025-03-15	14.44	Hummus	1	4.25	Edit Delete
10	7	Maria Lopez	2025-03-25	10.97	La Pili (Mild)	1	6.00	Edit Delete
11	7	Maria Lopez	2025-03-25	10.97	Pickled Jalapeños and Veggies	1	4.75	Edit Delete
12	7	Maria Lopez	2025-03-25	10.97	Hummus	1	4.25	Edit Delete
13	8	Ernesto Diaz	2025-04-02	13.91	La Pili (Hot)	1	6.50	Edit Delete
14	8	Ernesto Diaz	2025-04-02	13.91	La PanaMex (Hot)	1	5.50	Edit Delete
15	9	Lucia Fernandez	2025-04-10	5.35	El Chombi (Mild)	1	5.00	Edit Delete
16	10	Jorge Mendoza	2025-04-22	9.10	La PanaMex (Hot)	1	5.50	Edit Delete
17	10	Jorge Mendoza	2025-04-22	9.10	La Pili (Mild)	1	6.00	Edit Delete