

Natura Cafe Sales & Operations Database Management System

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Project Overview:

Natura Cafe is a cozy coffee shop located in a vibrant Central Florida college town, offering artisanal coffee and a relaxing atmosphere. Natura has thrived at its campus adjacent location as the student body has grown, and with the uptick in business, they have hired more employees, delineated positions and responsibilities for said employees, and increased their number of menu items. The coffee shop processes around 150 customer transactions daily and offers a menu of 25 items, including 15 beverages and 10 food options, and they employ 7 workers altogether with the potential to hire more should their business continue to expand. Additionally, in any given year, Natura typically generates approximately \$450,000 in gross earnings, with average monthly sales of \$37,500.

Given their recent growth, Natura has noticed that their existing system does not provide comprehensive tools to analyze sales trends, track customer spending habits, or efficiently manage employees. This lack of insight results in inefficiencies such as difficulties in identifying high- and low-performing menu items, missed opportunities to optimize offerings, and limited ability to manage employee roles and schedules as the shop plans to hire additional staff. The system also lacks the capability to track customer behavior effectively, which could be used to personalize services and increase customer satisfaction.

To address these issues, the proposed database solution will enhance Natura's operations by incorporating invoice tracking, customer and employee information storage, and role assignment to facilitate the aforementioned tasks. By implementing this database, Natura will be better positioned to streamline operations, optimize its menu, and scale its business effectively while maintaining high levels of customer satisfaction.

Database Outline:

- **Customers:** records basic details for customers who purchase products from Natura
 - *customerID*: int, auto_increment, unique, not NULL, PK
 - *name*: varchar(100), not NULL
 - *email*: varchar(100), unique, NULL
 - Relationships:
 - **1:M** relationship with **Invoices** is implemented with **customerID** as a **FK** in **Invoices**.

- **Employees:** records information for each employee hired at Natura
 - *employeeID*: int, auto_increment, unique, not NULL, PK
 - *name*: varchar(100), not NULL
 - *address*: varchar(100), not NULL
 - *phone*: varchar(100), unique, not NULL
 - *email*: varchar(100), unique, not NULL
 - *dateOfBirth*: DATE, not NULL
 - *hireDate*: DATE, not NULL
 - *payRate*: decimal(4,2), not NULL
 - *roleID*: int, NULL, FK
 - Relationships:
 - **1:M** relationship with **Invoices** is implemented with **employeeID** as a **FK** in **Invoices**.
 - **M:1** relationship with **Roles** is implemented with **roleID** as a **FK** in **Employees**.

- **Roles:** stores the name of each role an employee at Natura can have
 - *roleID*: int, auto_increment, unique, not NULL, PK
 - *name*: varchar(100), unique, not NULL
 - Relationships:
 - **1:M** relationship with **Employees** is implemented with **roleID** as a **FK** in **Employees**

- **Items:** records the details for all menu items and various products sold by Natura
 - *itemID*: int, auto_increment, unique, not NULL, PK
 - *name*: varchar(100), unique, not NULL
 - *price*: decimal(5,2), not NULL
 - Relationships:
 - **M:N** relationship with **Invoices** facilitated by the intersection table **InvoiceItems** which uses **itemID** as a **FK** in **InvoiceItems**.

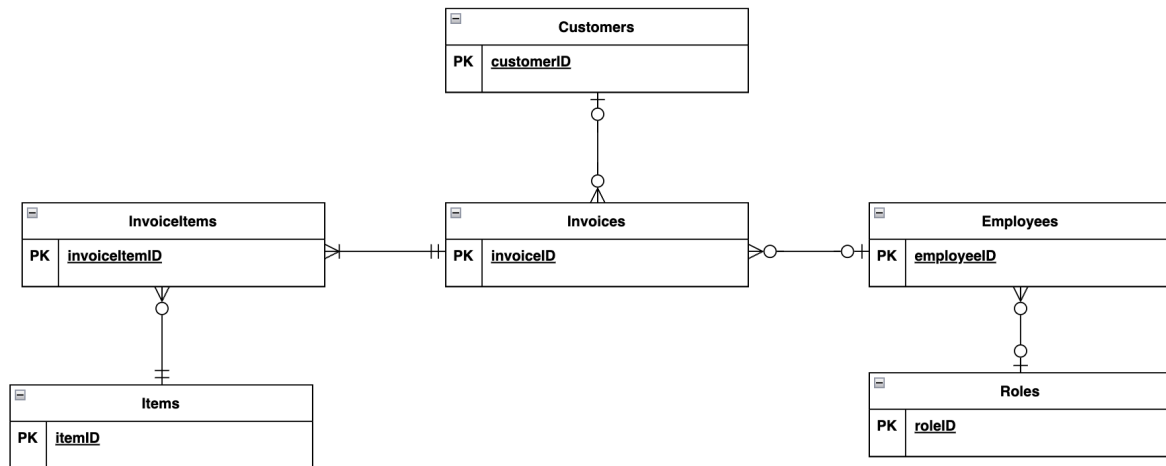
- **Invoices:** records the transaction information for all purchases made at Natura
 - *invoiceID*: int, auto_increment, unique, not NULL, PK
 - *saleDate*: DATETIME, not NULL
 - *netTotal*: decimal(6,2), not NULL
 - *salesTax*: decimal(6,2), not NULL
 - *saleTotal*: decimal(6,2), not NULL
 - *employeeID*: int, NULL, FK
 - *customerID*: int, NULL, FK
 - Relationships:

- **M:1** relationship with **Employees** is implemented with **employeeID** as a **FK** in **Invoices**.
- **M:1** relationship with **Customers** is implemented with **customerID** as a **FK** in **Invoices**.
- **M:N** relationship with **Items** facilitated by the intersection table **InvoiceItems** which uses **invoiceID** as **FK** in **InvoiceItems**.

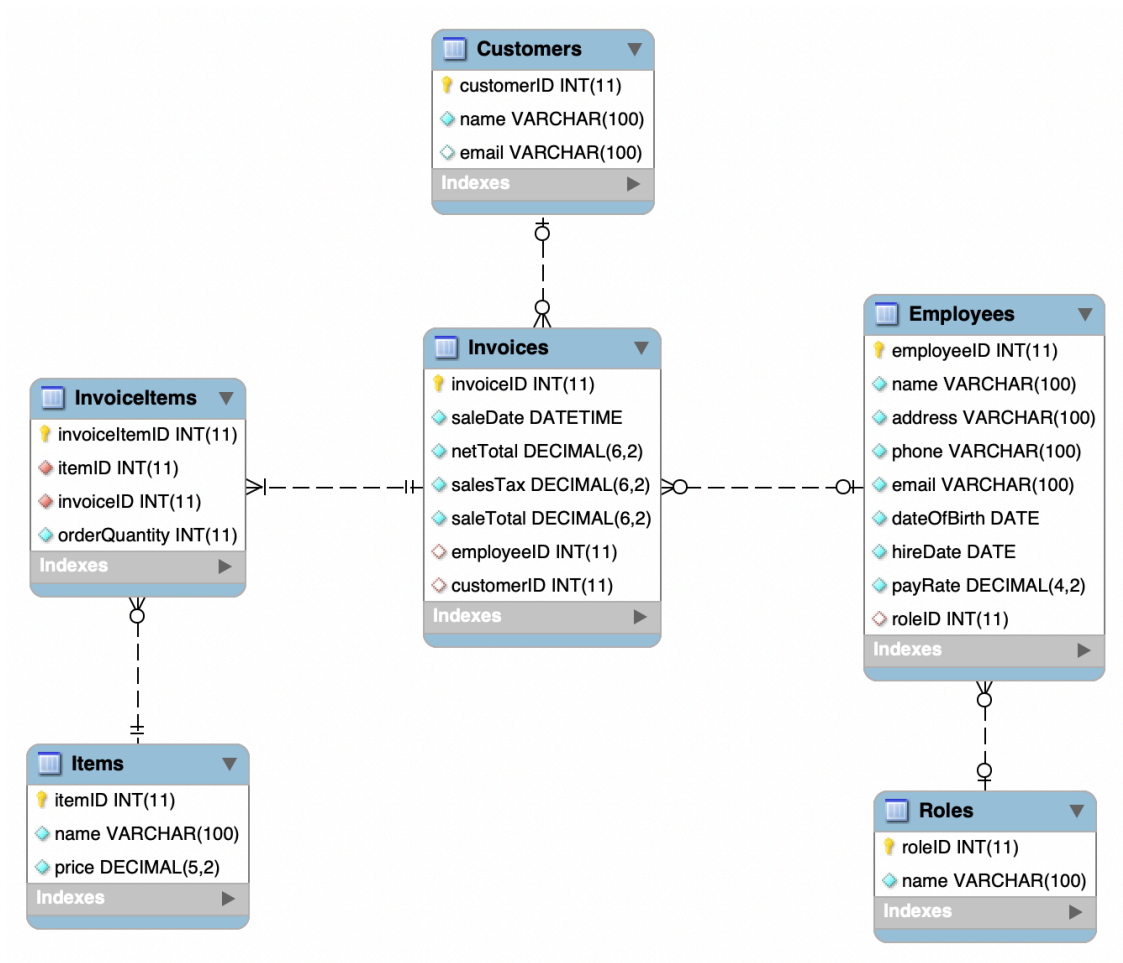
Intersection Table:

- **InvoiceItems**: represents an intersection table for the M:N relationship between Items and Invoices
 - *invoiceItemID*: int, auto_increment, unique, not NULL, PK
 - *itemID*: int, not NULL, FK
 - *invoiceID*: int, not NULL, FK
 - *orderQuantity*: int, not NULL

Entity-Relationship Diagram:



Schema:



Sample Data:

Customers

| customerID (PK) | name | email |
|-----------------|----------------|-----------------------|
| 1 | Clair Hugo | c_hugo@gmail.com |
| 2 | Dylan Warren | warren47@hotmail.com |
| 3 | Zoya Rollins | zoyarollins@yahoo.com |
| 4 | Sebastian Pham | NULL |
| 5 | Darcey Savage | darsavage@gmail.com |

Employees

| employeeID (PK) | name | address | phone | email | dateOfBirth | hireDate | payRate | roleID (FK) |
|-----------------|-----------------|---------------------------|--------------|----------------------------|-------------|------------|---------|-------------|
| 1 | David Martinez | 789 Oak St, Orlando, FL | 321-555-9012 | david.martinez@natura.com | 1988-11-03 | 2021-05-20 | 25.00 | 1 |
| 2 | Emily Carter | 101 Maple St, Orlando, FL | 321-555-3456 | emily.carter@natura.com | 1992-07-14 | 2022-10-30 | 24.00 | 1 |
| 3 | James Rodriguez | 22 Pine St, Orlando, FL | 407-555-7890 | james.rodriguez@natura.com | 1998-03-18 | 2023-06-05 | 17.00 | NULL |
| 4 | Sarah Johnson | 456 Elm St, Orlando, FL | 407-555-5678 | sarah.johnson@natura.com | 1995-09-25 | 2023-01-10 | 18.00 | 2 |
| 5 | Michael Lee | 123 Main St, Orlando, FL | 407-555-1234 | michael.lee@natura.com | 1986-05-12 | 2022-08-15 | 16.00 | 3 |

Roles

| roleID (PK) | name |
|-------------|-------------|
| 1 | 'Manager' |
| 2 | 'Barista' |
| 3 | 'Custodian' |

Items

| itemID (PK) | name | price |
|-------------|------------------|-------|
| 1 | 'Parisian Blend' | 2.00 |
| 2 | 'Cappuccino' | 4.00 |
| 3 | 'Cafe Au Lait' | 4.00 |
| 4 | 'Latte' | 5.00 |
| 5 | 'Earl Grey Tea' | 1.50 |

Invoices

| invoiceID (PK) | saleDate | netTotal | salesTax | saleTotal | employeeID (FK) | customerID (FK) |
|----------------|---------------------|----------|----------|-----------|-----------------|-----------------|
| 1 | 2023-08-01 08:30:20 | 9.00 | 0.54 | 9.54 | NULL | 1 |
| 2 | 2023-08-01 10:45:07 | 6.50 | 0.39 | 6.89 | 4 | 3 |
| 3 | 2023-08-02 09:10:03 | 8.00 | 0.48 | 8.48 | 3 | NULL |
| 4 | 2023-08-02 14:45:57 | 3.50 | 0.21 | 3.71 | 2 | 2 |
| 5 | 2023-08-02 17:20:31 | 13.00 | 0.78 | 13.78 | 3 | 3 |

InvoiceItems (intersection table)

| invoiceItemID (PK) | itemID (FK) | invoiceID (FK) | orderQuantity |
|--------------------|-------------|----------------|---------------|
| 1 | 2 | 1 | 1 |
| 2 | 4 | 1 | 1 |
| 3 | 4 | 2 | 1 |
| 4 | 5 | 2 | 1 |
| 5 | 2 | 3 | 1 |
| 6 | 3 | 3 | 1 |
| 7 | 5 | 4 | 1 |
| 8 | 1 | 4 | 1 |
| 9 | 5 | 5 | 2 |
| 10 | 4 | 5 | 2 |

Screen Captures:

Home page: Summarizes the CRUD steps that are available for each entity.

Natura Cafe

Home Customers Employees Roles Menu Items Invoices Invoice Items

Welcome to the Natura Cafe DBMS!

Use the navigation above to access different database entities.

Below is a summary of available operations for each entity.

| Customers | Employees | Employee Roles |
|---|--|---|
| <ul style="list-style-type: none">• View all customers• Add new customer• Search for customer• Delete customer | <ul style="list-style-type: none">• View all employees• Add new employee• Search for employee• Update employee's role• Delete employee | <ul style="list-style-type: none">• View all roles• Add new role• Delete role |

| Menu Items | Invoices | Invoice Items |
|---|--|--|
| <ul style="list-style-type: none">• View all items• Add new item• Search for item• Delete item | <ul style="list-style-type: none">• View all invoices• Add new invoice• Delete invoice | <ul style="list-style-type: none">• View all invoice items• Add new invoice item• Update invoice item's order quantity• Delete invoice item |

Customers page: Allows to READ all Customers entries, CREATE a new entry (via *Add a Customer* form), and DELETE an existing entry (via *Delete* buttons next to each entry). Additionally, allows to search for a customer by name (via *Search for a Customer* form).

Customers

| Customer ID | Name | Email | |
|-------------|----------------|-----------------------|--------|
| 1 | Clair Hugo | c_hugo@gmail.com | Delete |
| 2 | Dylan Warren | warren47@hotmail.com | Delete |
| 3 | Zoya Rollins | zoyarollins@yahoo.com | Delete |
| 4 | Sebastian Pham | | Delete |
| 5 | Darcey Savage | darsavage@gmail.com | Delete |

Add a Customer

To add a new customer, please enter their information below and click Add.

Name: Email (optional): **Add**

Search for a Customer

To search for a customer, enter their first (then last) name below and click Search. Partial names are allowed. Click Reset to clear the search.

Search by Name: **Search** **Reset**

Employees page: Allows to READ all Employees entries, CREATE a new entry (via *Add an Employee* form), DELETE an existing entry (via *Delete* buttons next to each entry), and UPDATE an existing entry's NULLable relationship (via *Update an Employee's Role* form). The *Update* form allows the user to select an employee's name from a dropdown menu. They can then update the role (foreign key) of a chosen employee by selecting a new role name from a dropdown menu. The *Update* form also allows setting the foreign key (roleID) value to NULL, which the user can do by selecting the "None" role. Additionally, the page allows to search for an employee by name (via *Search for an Employee* form).

Employees

| Employee ID | Name | Address | Phone | Email | Date of Birth | Hire Date | Pay Rate (\$) | Role | |
|-------------|-----------------|---------------------------|--------------|----------------------------|---------------|------------|---------------|-----------|-------------------------|
| 1 | David Martinez | 789 Oak St, Orlando, FL | 321-555-9012 | david.martinez@natura.com | 11/03/1988 | 05/20/2021 | 25 | Manager | <button>Delete</button> |
| 2 | Emily Carter | 101 Maple St, Orlando, FL | 321-555-3456 | emily.carter@natura.com | 07/14/1992 | 10/30/2022 | 24 | Manager | <button>Delete</button> |
| 3 | James Rodriguez | 22 Pine St, Orlando, FL | 407-555-7890 | james.rodriguez@natura.com | 03/18/1998 | 06/05/2023 | 17 | | <button>Delete</button> |
| 4 | Sarah Johnson | 456 Elm St, Orlando, FL | 407-555-5678 | sarah.johnson@natura.com | 09/25/1995 | 01/10/2023 | 18 | Barista | <button>Delete</button> |
| 5 | Michael Lee | 123 Main St, Orlando, FL | 407-555-1234 | michael.lee@natura.com | 05/12/1986 | 08/15/2022 | 16 | Custodian | <button>Delete</button> |

Add an Employee

To add a new employee, please enter their information below and click Add.

Name: Address: Phone: Email:

Date of Birth: Hire Date: Pay Rate: Role (optional): None Add

Search for an Employee

To search for an employee, enter their first (then last) name below and click Search. Partial names are allowed. Click Reset to clear the search.

Search by Name: Search Reset

Update an Employee's Role

To update an employee's role, select their name from the dropdown menu on the left and their new role from the right and click Update.

Name: Select an Employee Role (optional): None Update

Expanded dropdown menus:

Name

✓ Select an Employee
▼

David Martinez

Emily Carter

Role (optional)

✓ None
▼

Barista

Custodian

Manager

Roles page: Allows to READ all Roles entries, CREATE a new entry (via *Add a Role* form), and DELETE an existing entry (via *Delete* buttons next to each entry).

Roles

| Role ID | Name | |
|---------|-----------|--------|
| 2 | Barista | Delete |
| 3 | Custodian | Delete |
| 1 | Manager | Delete |

Add a Role

To add a new role, please enter the following information and click Add.

Role Name:

Menu Items page: Allows to READ all Items entries, CREATE a new entry (via *Add a Menu Item* form), and DELETE an existing entry (via *Delete* buttons next to each entry). Additionally, allows to search for an item by name (via *Search for a Menu Item* form).

Menu Items

| Item ID | Name | Price (\$) | |
|---------|----------------|------------|--------|
| 1 | Parisian Blend | 2 | Delete |
| 2 | Cappuccino | 4 | Delete |
| 3 | Cafe Au Lait | 4 | Delete |
| 4 | Latte | 5 | Delete |
| 5 | Earl Grey Tea | 1.5 | Delete |

Add a Menu Item

To add a new item, please enter its information below and click Add.

Name: Price:

Search for a Menu Item

To search for an item, enter its name below and click Search. Partial names are allowed. Click Reset to clear the search.

Search by Name:

Invoices page: Allows to READ all Invoices entries, CREATE a new entry (via *Add an Invoice* form), and DELETE an existing entry (via *Delete* buttons next to each entry).

Invoices

| Invoice ID | Date of Sale | Net Total (\$) | Sales Tax (\$) | Sale Total (\$) | Employee | Customer | |
|------------|---------------------|----------------|----------------|-----------------|-----------------|--------------|-------------------------|
| 1 | 2023-08-01 08:30:20 | 9 | 0.54 | 9.54 | | Clair Hugo | <button>Delete</button> |
| 2 | 2023-08-01 10:45:07 | 6.5 | 0.39 | 6.89 | Sarah Johnson | Zoya Rollins | <button>Delete</button> |
| 3 | 2023-08-02 09:10:03 | 8 | 0.48 | 8.48 | James Rodriguez | | <button>Delete</button> |
| 4 | 2023-08-02 14:45:57 | 3.5 | 0.21 | 3.71 | Emily Carter | Dylan Warren | <button>Delete</button> |
| 5 | 2023-08-02 17:20:31 | 13 | 0.78 | 13.78 | James Rodriguez | Zoya Rollins | <button>Delete</button> |

Add an Invoice

To add an invoice, please enter its information below and click Add.

Sale Date:

Net Total:

Employee (optional):

Customer (optional):

Expanded dropdown menus:

Employee (optional)

✓

Select an Employee
 David Martinez
 Emily Carter
 James Rodriguez
 Sarah Johnson
 Michael Lee

Customer (optional)

✓

Select a Customer
 Clair Hugo
 Dylan Warren
 Zoya Rollins
 Sebastian Pham
 Darcey Savage

Invoice Items page (intersection table for the M:N relationship of Items and Invoices):

Allows to READ all Invoice Items entries, CREATE a new entry (via *Add an Invoice Item* form), DELETE an existing entry from the M:N relationship (via *Delete* buttons next to each entry), and UPDATE an existing M:N relationship (via *Update an Invoice Item's Order Quantity* form). The *Add* form allows the user to select an existing item's name and an existing invoice's date from dropdown menus to add a new entry to the intersection table. The *Update* form also allows the user to select an existing invoice item's name / date from a dropdown menu and update the order quantity of the chosen invoice item.

Invoice Items

| Invoice Item ID | Item | Invoice | Order Quantity | |
|-----------------|----------------|---------------------|----------------|--------|
| 1 | Cappuccino | 2023-08-01 08:30:20 | 1 | Delete |
| 2 | Latte | 2023-08-01 08:30:20 | 1 | Delete |
| 3 | Latte | 2023-08-01 10:45:07 | 1 | Delete |
| 4 | Earl Grey Tea | 2023-08-01 10:45:07 | 1 | Delete |
| 5 | Cappuccino | 2023-08-02 09:10:03 | 1 | Delete |
| 6 | Cafe Au Lait | 2023-08-02 09:10:03 | 1 | Delete |
| 7 | Earl Grey Tea | 2023-08-02 14:45:57 | 1 | Delete |
| 8 | Parisian Blend | 2023-08-02 14:45:57 | 1 | Delete |
| 9 | Earl Grey Tea | 2023-08-02 17:20:31 | 2 | Delete |
| 10 | Latte | 2023-08-02 17:20:31 | 2 | Delete |

Add an Invoice Item

To add a new invoice item, please enter its information below and click Add.

Item: Invoice: Order Quantity:

Update an Invoice Items's Quantity

To update an invoice item's order quantity, select the item / invoice from the dropdown menu, enter the order quantity and click Update.

Invoice Item: Order Quantity:

Expanded dropdown menus:

Item

✓ Select an Item
Parisian Blend
Cappuccino
Cafe Au Lait
Latte
Earl Grey Tea

Invoice

✓ Select an Invoice
2023-08-01 08:30:20
2023-08-01 10:45:07
2023-08-02 09:10:03
2023-08-02 14:45:57
2023-08-02 17:20:31

Invoice Item

✓ Select an Invoice Item
Cappuccino / 2023-08-01 08:30:20
Latte / 2023-08-01 08:30:20
▼