Team 3 Project Document

The restaurant point of sale system (POS) is designed to manage and synchronize the day-to-day operations employees will perform as well as the behind-the-scenes operations in order for the business to function. This includes taking orders, adding menu items, keeping track of the inventory, sales/employee reports and more.

Deployed Via Azure: https://polite-sand-0f80b0a10.5.azurestaticapps.net/

Type of Data added, modified, and edited

- Added
    - Customers through the “Join Reward Program” at login page
    - Employees through Employee Management
    - Ingredients through Inventory Management
    - Menu Items through Menu Management
    - Promotion Codes through Promotion Management
    - Orders through the Virtual Register
- Modified
    - Customers through “Settings” in the navbar
    - Employees through Employee Management or “Settings” in the navbar
    - Ingredients through Inventory Management
    - Menu Items through Menu Management
    - Promotion Codes through Promotion Management
- Delete
    - Menu item through Menu Management
    - Ingredient through Inventory Management
    - Employee through Employee Management
    - Promotion Code through Promotion Management

Types of User Roles

- Customer
    - When logged in, they get sent to the customer portal where they can see the menu, previous orders, and how many loyalty points they have.
- Waiter
    - When logged in, they get sent to the POS system where they have access to the virtual register where they take customer’s orders.
- Accountant
    - When logged in, they get sent to the POS system where they have access to finance reports, sales and order reports.
- Manager
    - When logged in, they have complete access to the POS system including the virtual register, finance reports, management, and inventory report.
    - Management handles modifying menu items, inventory, employees, and promotion codes

- Inventory report shows the activity log involving the stock of ingredients. This includes discarding, using, and restocking.

Semantic Constraints implemented as Triggers

1. Inventory Changes
    a. Semantic Constraint: When inventory amounts change, the system must automatically log the action type (used, discarded, or restock), track the quantity change, and handle auto-restocking when amounts fall below thresholds
    b. Trigger:
        i. Event: Before Update to the Inventory table
        ii. Condition: Amount changes from old to new value
        iii. Action: Logs the change with appropriate action type, handles negative changes as either 'used' or 'discarded', and initiates auto-restock if enabled and below threshold
    c. Ex: When ingredients are used in an order, the trigger detects the decrease in amount. It creates a log entry marking the change as 'used' with the negative quantity. If this brings flour below its restock threshold of 100 units and auto-restock is enabled, it automatically adds the restock amount and creates another log entry for the restock action.

2. Update Counter
    a. Semantic Constraint: A customer can't have above 100 loyalty points, or else for every 100 points, it will be converted into a $10 discount their next visit
    b. Trigger:
        i. Event: Before Update to the User table
        ii. Condition: the new points are greater than the old points (increase in points) and the new points is greater than or equal to 100
        iii. Action: Determine If the user is already in the discount next visit table, increment the counter attribute by the integer value of new points divided by 100. If they aren't in the table, add a new row with their user ID and the counter attribute at the integer value of new points divided by 100. Set the user's points to new points modulus 100.
    c. Ex: User has 0 points. They make an order worth $130 dollars and provide their email. The trigger detects the update to their points (+130) and automatically subtracts 100 leaving the user at 30 points. The next time the user orders and provides their email, they will automatically be given a $10 discount (assuming the order is greater than or equal to $10 and the loyalty program is the highest discount option out of the other 2 types, military and promotion code).

Types of Queries/Reports

- Inventory Activity Log Report
    - Timestamped log of inventory changes (date, time, item, action, quantity)
    - Sortable columns: date, item name, action type, quantity change
    - Date range filtering with calendar selectors

    - Real-time ingredient search with auto-suggestions
    - Color-coded actions: green for restock, red for discarded
    - Quantity changes shown with +/- indicators
    - Inventory Visualized Actions (Three Bar Charts)
        - Used Items: Top ingredients consumed in recipes
        - Restocked Items: Most frequently replenished ingredients
        - Discarded Items: Ingredients with highest waste
        - Each chart shows:
            - X-axis: Ingredient names
            - Y-axis: Total quantity
            - Data labels displaying exact values
            - Color-coding: Blue for used, Green for restocked, Red for discarded
- Employee Performance Report
    - List employee id, names, order id, discount applied to order, tip amount to order, order subtotal, in a paginated table with all data coming from a query of the employee and orders tables.
    - Filters allow to find specific employee, an employee by their id number, a specific order, and a threshold filter to find orders above a certain amount
    - Order totals = subtotal + tip amount - applied discount
    - Summary available if selected:
        - Data retrieved from a query that displays each individual employee's stats, with the data coming from the table above.
        - Total orders, and total employee earnings recorded
        - Chart to allow comparisons of employees number of orders compared to their total earnings
- Orders Report
    - List order id, items ordered by customer, waiter id, customer id, total price of the order, and table number, in a paginated table with all data coming from a query of the orders and employee table.
    - Date Range filter is used to find orders from specific dates, Search Bar can be used to find orders by an order id, customer id, or waiter’s name, filters allow you to find orders by waiter’s name, table number, and by the total price of the order.
    - Three Bar Charts
        - Number of Orders Made per Hour: Shows the number of orders made per hour
        - Number of Orders Made by Day of the Week: Shows the number of orders made on specific days of the week
        - Number of Order Made by Month: Shows the number of orders made each month
- Digital Receipt Generation
    - Order metadata (ID, time, table, server)
    - Itemized list with quantities and prices
    - Customer details and loyalty points if applicable

- Various amounts (subtotal, tax, tip, discounts)
  - Generates a formatted PDF receipt with:
    - Restaurant header and contact information
    - Complete order details and price breakdown
    - Points earned and updated total for loyalty members
    - Auto-opens in new window for printing or saving