

B+ THE BEATLES

MEHMET TEMEL

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DEMİRELLİ

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Restaurant Reservation Management System



Why do we need a smarter reservation system ?



Order
Inaccuracies

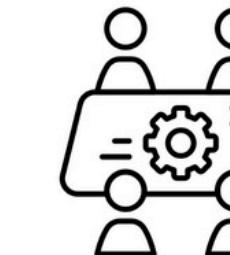


Table
Management
Problems



Delays due to
lack of
automation



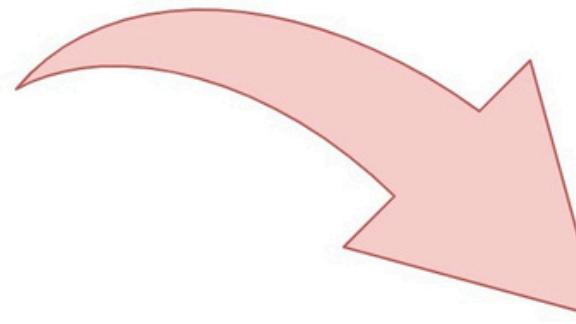
Communication
issues between
customers and
staff

"In today's world, more people dine out or order from restaurants. However, most restaurants still rely on traditional methods, causing various operational issues. Our system addresses these challenges."

Literature and Existing Solutions

What has been done before ?

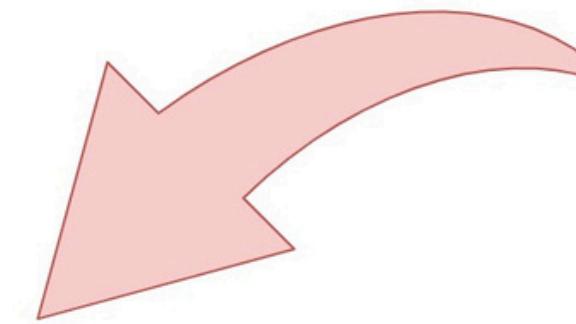
Some restaurants use
apps and booking
platforms



However, many still
use manual
processes



Which has lack of
ordering and pickup
features

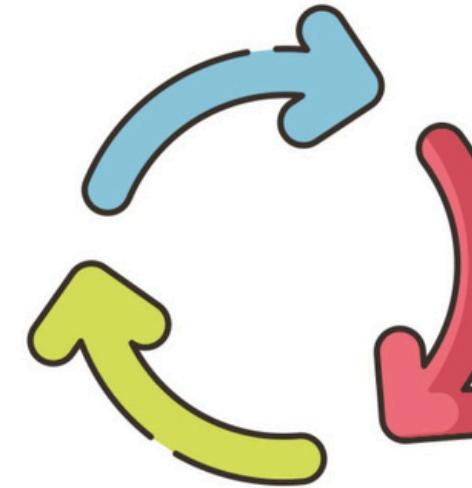


Extra Feature: Pickup Service

"We wanted to add something extra. With the pickup service, customers can get the restaurant easily, especially if they don't have their own vehicle or are unfamiliar with the city."



Ideal for
tourists and
distant
customers



Driver tracking
and vehicle info

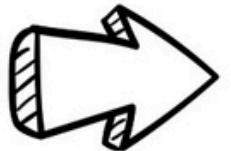


Pickup from
registered
address

System Workflow Overview



Login with
email and
password



Select
restaurant
(future
enhancement)



Choose date,
time and
available table



View menu and
place order via
app



Arrive and sit
assigned table



Choose pickup
service
(optional)

Order & Waiter Assignment



One waiter
per table



Only assigned
waiter can
edit the order



Others can view,
but not change the
orders

“ This avoids confusion.
When a waiter is
assigned to a table, no
one else can modify
its orders. This
ensures accountability
and prevent mistakes. ”

Walk-in Customer Handling



Staff can add walk-ins into the system.



Real-time table availability check



Optimizes empty table usage



Our system isn't only for online reservations. It also handles walk-in customers effectively, helping restaurants maximize capacity and revenue.



How the Pick-up Service Works?



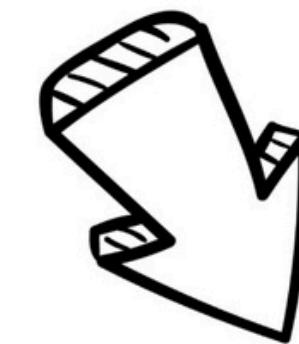
Customer provides
address & people count



Customer sees driver
info and vehicle status

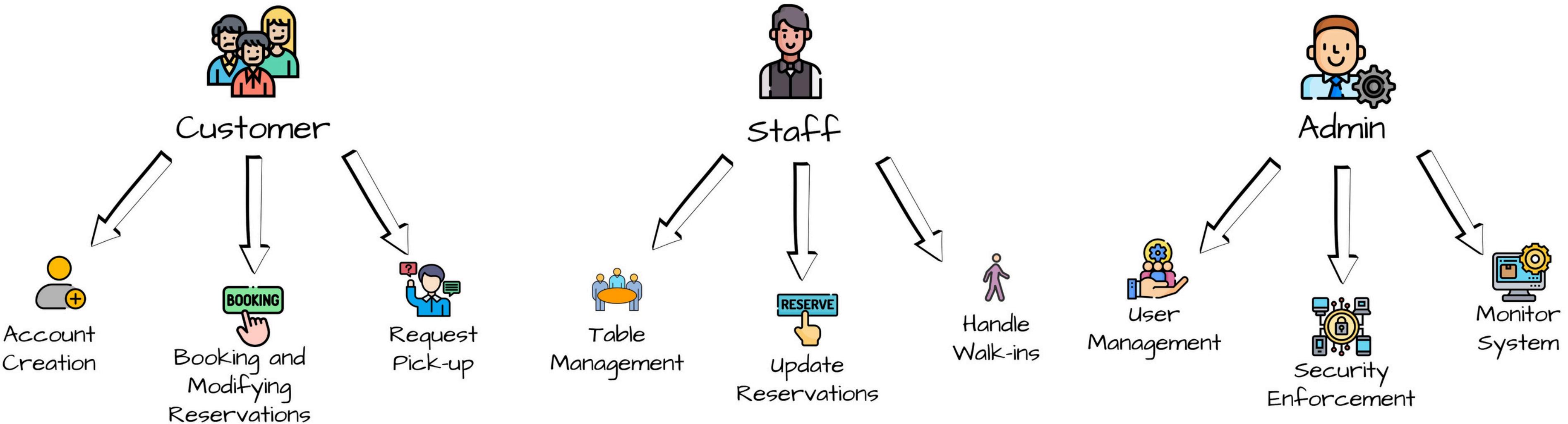


System assigns suitable
vehicle



Restaurant staff
monitors pickup
progress

Role Functionalities



FUNCTIONAL REQUIREMENTS

FR-01	Customers must be able to create an account	FR-09	Administrators must be able to manage reservation data and system settings.
FR-02	Customers could be able to explore restaurant menus, drinks, locations, and real-time table availability.	FR-10	Administrators must be able to manage reservation data and system settings.
FR-03	Customers could be able to reserve tables for a specific date and time.	FR-II	Administrators must be able to track system performance and monitor security logs.
FR-04	Customers must be able to modify or cancel their reservations.	FR-12	The system should generate daily and monthly reports on reservations
FR-05	Customers must have an option to request a pick-up service.	FR-13	The system should analyze peak dining hours to optimize table allocation.
FR-06	Customers could be able to view pick-up service details, including vehicle information and driver details.	FR-14	Customers and staff should have different Access levels to the system.
FR-07	Staff could be able to add walk-in customers to the system based on table availability.	FR-15	The system should generate reports on pick-up service frequency, peak hours, and popular menu items.
FR-08	Staff could be able to view and manage reservations.	FR-16	The system should track how many customers came by pick-up service daily and monthly.

NON-FUNCTIONAL REQUIREMENTS

NFR-01

The system should handle multiple users without performance degradation for system concurrency.

NFR-02

Real-time table availability and vehicle tracking data should be updated within seconds.

NFR-03

User accounts should be securely stored and encrypted.

NFR-04

The application must be compatible with both mobile and desktop browsers.

NFR-05

The system must allow authorized administrators to Access system logs to monitor security threats.

NFR-06

The system must support role-based Access control (RBAC) to restrict unauthorized access.

NFR-07

Reservation transactions should be completed in under 2 seconds to enhance user experience

CONSTRAINTS

C-01	Customers can modify or cancel their reservations only up to 12 hours before the scheduled time.
C-02	Staff members can only manage their assigned tables and cannot modify tables assigned to colleagues.
C-03	Walk-in customers can only be added to the system if a table is available at the time of arrival.
C-04	Customers cannot book multiple reservations at the same restaurant for the same time slot.
C-05	Each driver can only handle one active pick-up request at a time to avoid overbooking.

Database Schema

Customers

Column	Type	Constraints	Description
customer_id	INT	AUTO_INCREMENT	Unique user identifier
customer_name	VARCHAR(200)	NOT NULL	Full name
phone_number	VARCHAR(50)	NOT NULL UNIQUE	Customer phone number
email	VARCHAR(100)	NOT NULL UNIQUE	Customer email
password	VARCHAR(250)	NOT NULL	Hashed password

Pick-up Service

Column	Type	Constraints	Description
pickup_id	INT	AUTO_INCREMENT	Unique pick-up identifier
pickup_user	INT	REFERENCES (customer_id)	Customer ID
pickup_status	BOOLEAN	DEFAULT FALSE	Pickup status
pickup_address	VARCHAR(250)	NOT NULL	Pickup address
pickup_time	DATETIME	NOT NULL	Pickup time

Database Schema

Reservations

Column	Type	Constraints	Description
reservation_id	INT	AUTO_INCREMENT	Unique reservation identifier
reservation_status	ENUM	DEFAULT ACCEPTED	Reservation status
customer_id	INT	REFERENCES (customer_id)	Customer ID
table_id	INT	REFERENCES (table_id)	Table ID
reservation_date	DATETIME	NOT NULL	Reservation date

Vehicles

Column	Type	Constraints	Description
vehicle_id	INT	AUTO_INCREMENT	Unique vehicle identifier
driver_id	INT	REFERENCES (staff_id)	Staff ID
vehicle_type	VARCHAR(100)	NOT NULL	Vehicle type
licence_plate	VARCHAR(50)	NOT NULL UNIQUE	Licence plate
registration_date	DATE	NOT NULL	Registration date
is_available	BOOLEAN	DEFAULT TRUE	Vehicle availability

Database Schema

Tables

Column	Type	Constraints	Description
table_id	INT	AUTO_INCREMENT	Unique table identifier
is_available	BOOLEAN	DEFAULT TRUE	Availability of table
staff_id	INT	REFERENCES (staff_id)	Staff ID
order_id	INT	REFERENCES (order_id)	Order ID

Menu

Column	Type	Constraints	Description
item_id	INT	AUTO_INCREMENT	Unique item identifier
category	VARCHAR(50)	NOT NULL	Item Category
Name	VARCHAR(100)	NOT NULL UNIQUE	Item name
price	DECIMAL(10,2)	NOT NULL	Item price
availability	BOOLEAN	DEFAULT TRUE	Availability of item

Database Schema

Staff			
Column	Type	Constraints	Description
staff_id	INT	AUTO_INCREMENT	Unique staff identifier
name	VARCHAR(200)	NOT NULL	Name
position	VARCHAR(150)	NOT NULL	Position
phone_number	VARCHAR(50)	NOT NULL UNIQUE	Phone number
salary	DECIMAL(10,2)	NOT NULL	Salary

Order			
Column	Type	Constraints	Description
order_id	INT	AUTO_INCREMENT	Unique order identifier
order_table	INT	REFERENCES (table_id)	Order Table
order_item	INT	REFERENCES (item_id)	Order item
quantity	INT	DEFAULT 1	Quantity
total_price	DECIMAL(10,2)	DEFAULT 0	Total Price
order_date	DATETIME	DEFAULT CURRENT_TIMESTAMP	Order Date



Future Improvements



Restaurant Review System

- ▶ Allow customers to rate and comment after their reservation.
- ▶ Helps monitor service quality and improve customer satisfaction.



Integrated Payment System

- ▶ Support various payment methods (credit card, digital wallets, etc.).
- ▶ Enables seamless online and in-person transactions.



Pre-payment for Reservation and Pick-up Service

- ▶ Add secure prepayment options for both reservations and customer pick-up services.
- ▶ Minimizes no-shows and enables better scheduling of pick-up logistics.



Inventory Management Module

- ▶ Track stock levels of ingredients and materials in real-time.
- ▶ Automatically update menu availability based on stock status.

