DATABASE MANAGEMENT FOR ONLINE ORDERING

ENHANCING OPERATIONAL EFFICIENCY AND CUSTOMER EXPERIENCE

Introduction

Objective: Highlight the goal of developing a comprehensive database management system to support the client's online ordering platform.

Problem Statement: Managing member data, analyzing customer behaviors, and coordinating marketing activities pose challenges for the online ordering startup. Without a centralized database system, inefficiencies arise in order processing and marketing strategies, hindering data accuracy and customer experience. Developing a tailored database solution is crucial to enhance operational efficiency and customer satisfaction.

Key Points:

- Enhancing member management operations.
- Analyzing customer behaviors and preferences.
- Facilitating marketing activities and menu management.

Building a Customer-Centric Database

Key Objectives:

- **Track & Analyze:** Deeply understand customer behavior and preferences.
- **Personalize Experiences:** Deliver tailored services and offerings.
- **Localize:** Customize offerings based on unique geographic needs.

Guiding Principles:

- **Unified View:** Seamlessly integrate data across all touchpoints.
- **Data-Driven Decisions:** Prioritize accuracy and integrity for reliable insights.
- **Scalability:** Adapt to future growth and expansion effortlessly.
- **Security First:** Protect sensitive customer data with robust protocols.

Components:

- **Member Management:** Track member information, preferences, and orders to personalize offerings and enhance loyalty programs.
- **Order Management:** Capture detailed order data, including geographic location, to analyze regional preferences and optimize inventory.
- **Marketing Activities:** Track marketing campaigns, their effectiveness, and impact on customer engagement and orders.
- **Menu & Staffing Management:** Ensure up-to-date menu levels and efficient staffing levels based on real-time demand and forecasts.

Powering Growth with a Customer-Centric Database

Key Features:

- **Understand Needs:** Analyze preferences for personalized experiences.
- **Comprehensive Data:** Manage member, order, and marketing data seamlessly.
- **Operational Efficiency:** Optimize staffing, inventory, and quality control.
- **Marketing Analysis:** Target campaigns, track effectiveness, and boost engagement.
- **Real-Time Updates:** Ensure accurate information and responsive decisions.
- **Decision-Making Support:** Leverage data insights for strategic growth.

Business Rules:

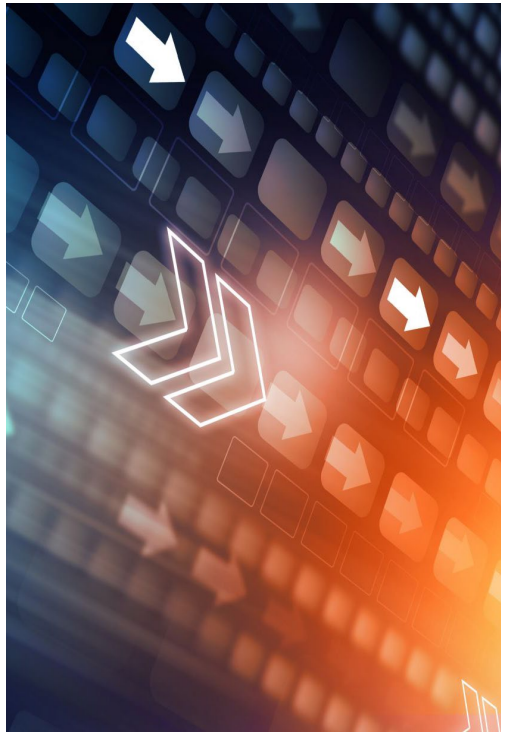
- **One Customer, One Voice:** Streamline experience with unique identifiers.
- **Flexible Cancellations:** Empower choice within defined timelines.
- **Targeted Outreach:** Deliver relevant campaigns, drive action.
- **Honest Feedback:** Encourage ratings for continuous improvement.
- **Measurable Impact:** Track engagement and optimize marketing efforts.
- **Live Menu Availability:** Maintain trust with accurate inventory updates.

Benefits:

- Enhanced customer satisfaction and loyalty.
- Increased operational efficiency and profitability.
- Data-driven marketing for smarter decisions.
- Competitive advantage in a dynamic market.

Next Steps:

- Schedule a demo to explore the platform in action.
- Partner with us to build your customer-centric future.



Business Needs

Client Background:

- **Online Ordering Startup:** Covers 30 restaurants across 6 cities.
- **Services:** Facilitates to-go meal orders from participating restaurants via an online platform.
- **Member Management Team:** Responsible for capturing data on members and their orders.
- **Objective:** Improve member management operations and provide data for marketing analysis.
- **Geographical Variation:** Customer preferences may vary based on location (e.g., climate-driven food preferences).

Client Requirements:

- **Member Management:** Maintain current member order practices and conduct behavioral analysis.
- **Geographical Consideration:** Adapt marketing strategies based on regional preferences.
- **Data Capture:** Collect information on member behaviors and preferences for analysis.
- **Marketing Activities:** Track and analyze marketing initiatives for effectiveness.
- **Menu Offerings:** Manage and update menu offerings based on customer demand.
- **Staffing Requirements:** Maintain records of employee information for staffing management.

Database Overview and Business Rules

Database Entities:

- Customer Information: CustomerID, Name, Email, Phone, Address, City

- Order Details: OrderID, CustomerID, OrderDate, TotalAmount

- Restaurant Information: RestaurantID, Name, Address, City

- Menu Items: ItemID, RestaurantID, Name, Price, MealType, ItemType

- Marketing Activities: ActivityID, RestaurantID, Date, Description, TargetAudience

- Employee Information: EmployeeID, RestaurantID, Name, DOB, DateOfJoining

Business Rules:

- Each entity has a unique identifier for efficient referencing.

- Mandatory customer details ensure accurate order processing.

- Orders are linked to valid customers and restaurants for data integrity.

- Menu items are associated with specific restaurants for accurate menu management.

- Marketing activities are linked to relevant restaurants for effective targeting.

- Accurate employee information is recorded for administrative purposes and compliance.

Entity Attributes:

Customer Information: CustomerID (Primary Key), Name, Email, Phone, Address, City

Order Details: OrderID (Primary Key), CustomerID (Foreign Key), OrderDate, TotalAmount

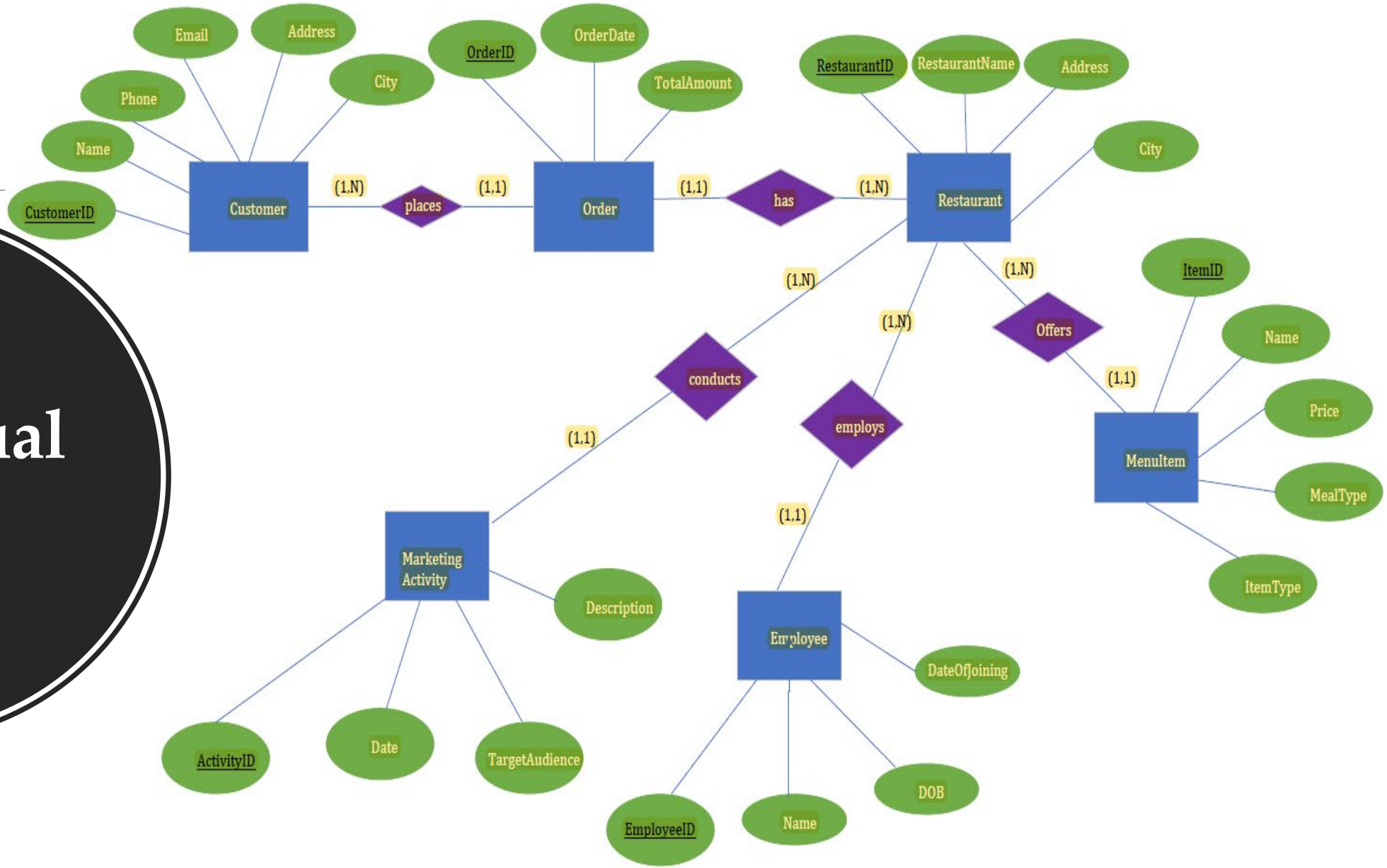
Restaurant Information: RestaurantID (Primary Key), RestaurantName, Address, City

Menu Items: ItemID (Primary Key), RestaurantID (Foreign Key), Name, Price, MealType, ItemType

Marketing Activities: ActivityID (Primary Key), RestaurantID (Foreign Key), Date, Description, TargetAudience

Employee Information: EmployeeID (Primary Key), RestaurantID (Foreign Key), Name, DOB (Date of Birth), DateOfJoining

Conceptual Model



Database Entities Overview & Transformation Rules

Customer Table:

- CustomerID (PK, int, not null)
- Name (varchar, not null)
- Email (varchar, not null)
- Phone (varchar, null)
- Address (varchar, not null)
- City (varchar, not null)

Order Table:

- OrderID (PK, int, not null)
- CustomerID (FK, int, not null)
- RestaurantID (FK, int, not null)
- OrderDate (datetime, not null)
- TotalAmount (decimal (10,2), not null)

Restaurant Table:

- RestaurantID (PK, int, not null)
- RestaurantName (varchar, not null)
- Address (varchar, not null)
- City (varchar, not null)

MenuItem Table:

- ItemID (PK, int, not null)
- RestaurantID (FK, int, not null)
- Name (varchar, not null)
- Price (decimal (10,2), not null)
- MealType (varchar, not null)
- ItemType (varchar, not null)

Marketing Activity Table:

- ActivityID (PK, int, not null)
- RestaurantID (FK, int, not null)
- Date (date, not null)
- Description (text, not null)
- TargetAudience (varchar, not null)

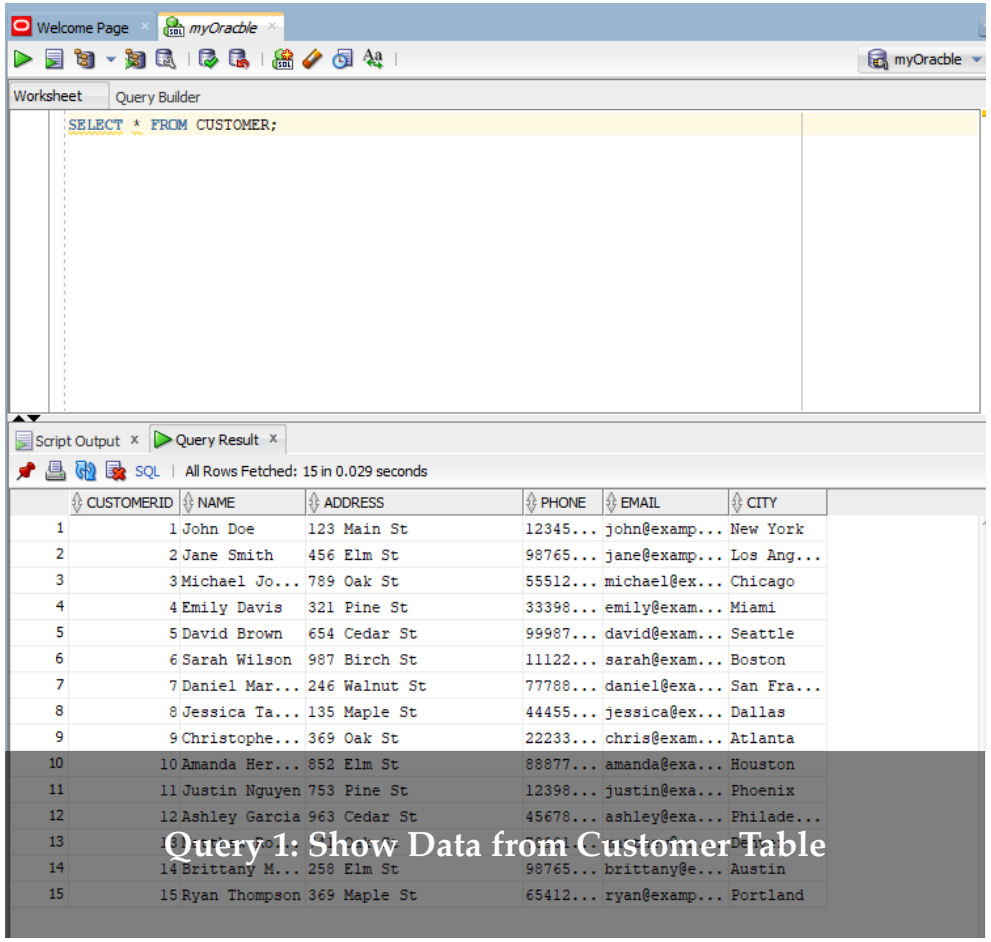
EmployeeID (PK, int, not null)

- RestaurantID (FK, int, not null)
- Name (varchar, not null)
- DOB (date, not null)
- DateOfJoining (date, not null)

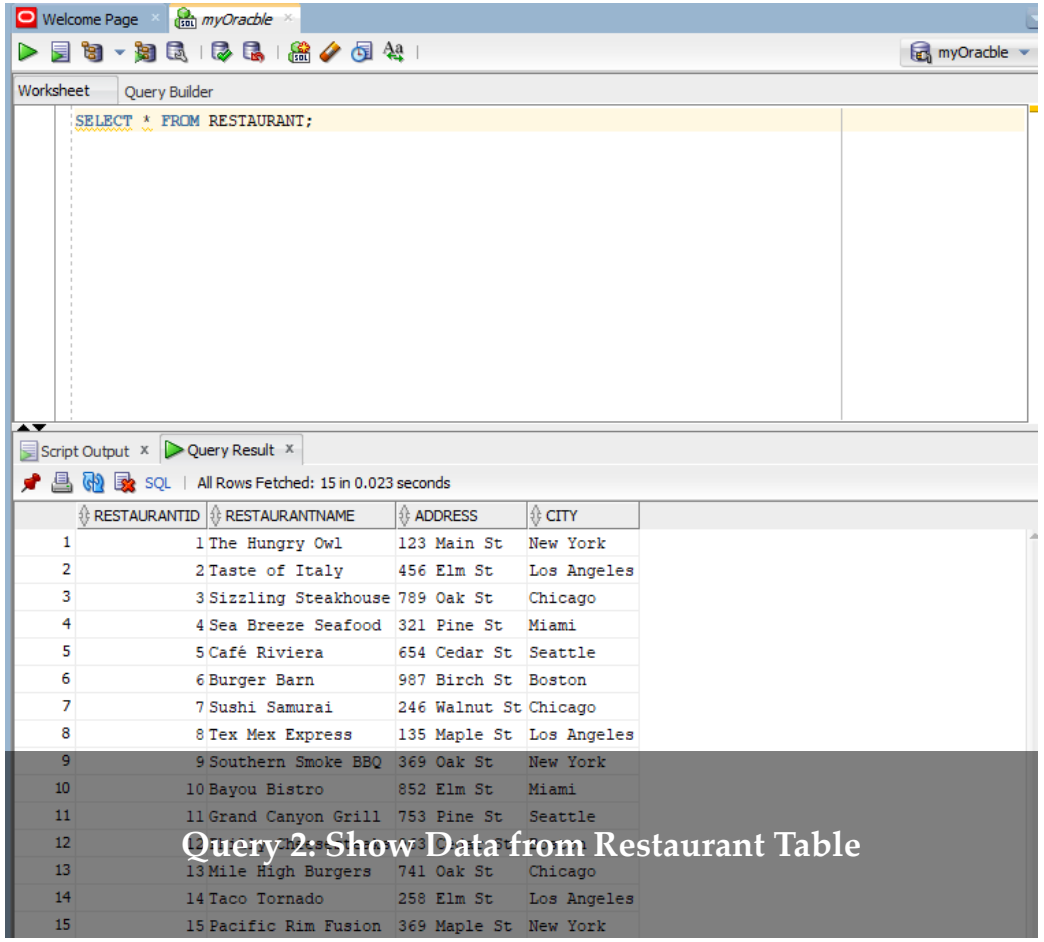
Transformation Rules:

- Entities to Tables
- Attributes to Columns
- Primary Keys Designation
- Foreign Keys Establishment
- Data Types Assignment
- Constraint Enforcement (e.g., not null)

Sample Queries showing Data from Tables



Query 1: Show Data from Customer Table



Query 2: Show Data from Restaurant Table

Non-trivial Queries

1. **Query 1: Average Total Amount Spent per Order for Each Restaurant**

   Importance: Understand customer purchasing behaviors and revenue patterns for pricing strategies and service enhancements.

2. **Query 2: Retrieve Customers Who Have Placed Orders > $50**

   Importance: Identify high-value customers, analyze purchasing patterns, and optimize marketing strategies.

3. **Query 3: Employee Names and Employment Duration in Each Restaurant**

   Importance: Monitor workforce longevity, assess retention rates, and make strategic HR decisions.

4. **Query 4: Total Number of Orders Placed by Each Customer**

   Importance: Analyze customer engagement, identify loyal customers, and tailor marketing strategies.

5. **Query 5: Latest Marketing Activities per Restaurant**

   Importance: Assess recent promotional efforts, inform future marketing strategies, and enhance customer engagement.

6. **Query 6: Customer Diversity: Number of Restaurants Ordered From**

   Importance: Understand customer behavior, enable targeted marketing efforts, and enhance loyalty.

7. **Query 7: Total Revenue Generated by Each Restaurant in Last Quarter**

   Importance: Analyze revenue performance, identify top-performing restaurants, and optimize strategies.

8. **Query 8: Ensuring Positive Total Amounts in Orders (Integrity Constraint)**

   Importance: Maintain data consistency, prevent invalid entries, and ensure accurate financial records.

9. **Query 9: Identify Restaurants with High Employee Turnover Rates**

   Importance: Address HR issues, improve employee satisfaction, and reduce recruitment costs.

10. **Query 10: Analysis of Popular Menu Items by Restaurant**

    Importance: Optimize inventory, pricing, and marketing strategies to enhance customer satisfaction and drive revenue growth.

Sample Non-trivial Queries Output

Query 1

```
SELECT r.RestaurantName, AVG(o.TotalAmount) AS AvgTotalAmount
FROM Restaurant r
JOIN Orders o ON r.RestaurantID = o.RestaurantID
GROUP BY r.RestaurantName;
```

All Rows Fetched: 15 in 0.031 seconds

	RESTAURANTNAME	AVGTOTALAMOUNT
1	Taste of Italy	75
2	Burger Barn	70
3	Mile High Burgers	65
4	The Hungry Owl	50
5	Café Riviera	55
6	Tex Mex Express	45
7	Grand Canyon Grill	55
8	Philly Cheesesteaks	70
9	Sizzling Steakhouse	40
10	Sea Breeze Seafood	60
11	Sushi Samurai	65
12	Pacific Rim Fusion	85
13	Southern Smoke BBQ	80
14	Bayou Bistro	90
15	Taco Tornado	75

Query 2

```
SELECT DISTINCT c.CustomerID, c.Name, c.Email, c.Phone, o.TotalAmount
FROM Customer c
JOIN Orders o ON c.CustomerID = o.CustomerID
WHERE o.TotalAmount > 50;
```

All Rows Fetched: 12 in 0.031 seconds

	CUSTOMERID	NAME	EMAIL	PHONE	TOTALAMOUNT
1	2	Jane Smith	jane@example.com	9876543210	75
2	6	Sarah Wilson	sarah@example.com	1112223333	70
3	7	Daniel Martinez	daniel@example.com	7778889999	65
4	10	Amanda Hernandez	amanda@example.com	8887776666	90
5	11	Justin Nguyen	justin@example.com	1239876543	55
6	9	Christopher Anderson	chris@example.com	2223334444	80
7	12	Ashley Garcia	ashley@example.com	4567890123	70
8	13	Matthew Rodriguez	matthew@example.com	7890123456	65
9	4	Emily Davis	emily@example.com	3339876543	60
10	14	Brittany Martinez	brittany@example.com	9876543210	75
11	15	Ryan Thompson	ryan@example.com	6541239876	85
12	5	David Brown	david@example.com	9998765432	55

Query 3

```
SELECT e.Name AS EmployeeName, r.RestaurantName,
       TRUNC(MONTHS_BETWEEN(SYSDATE, e.DateOfJoining) / 12) AS YearsEmployed
FROM Employee e
JOIN Restaurant r ON e.RestaurantID = r.RestaurantID;
```

All Rows Fetched: 15 in 0.035 seconds

	EMPLOYEENAME	RESTAURANTNAME	YEARSEMPLOYED
1	John Smith	The Hungry Owl	5
2	Emily Johnson	Taste of Italy	5
3	Michael Brown	Sizzling Steakhouse	3
4	Jessica Davis	Sea Breeze Seafood	6
5	William Wilson	Café Riviera	7
6	Emma Taylor	Burger Barn	5
7	Daniel Martinez	Sushi Samurai	4
8	Olivia Anderson	Tex Mex Express	6
9	Ethan Thompson	Southern Smoke BBQ	4
10	Sophia Hernandez	Bayou Bistro	5
11	Alexander Nguyen	Grand Canyon Grill	4
12	Isabella Garcia	Philly Cheesesteaks	6
13	Mason Rodriguez	Mile High Burgers	7
14	Charlotte Martinez	Taco Tornado	4
15	Lucas Thompson	Pacific Rim Fusion	5

Drive Growth & Delight Customers with Data-Driven Insights

Uncover

Uncover Profitable Opportunities:

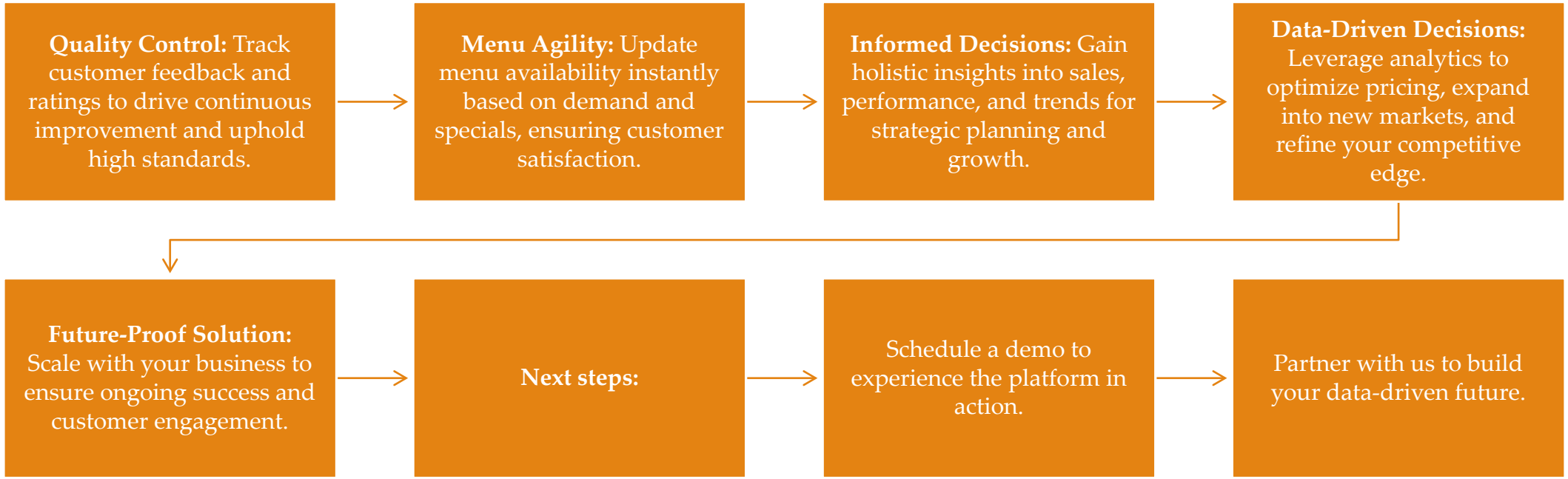
- **Customer Preferences:** Tailor inventory and marketing based on top menu items by region.
- **Location-Based Targeting:** Boost ROI by focusing campaigns on high-spending areas.
- **Marketing ROI Analysis:** Optimize future efforts for maximum impact.

Enhance

Enhance Efficiency & Engagement:

- **Optimized Staffing:** Ensure ideal staff levels based on real-time demand.
- **Faster Customer Service:** Access complete order details instantly.
- **Smarter Inventory Management:** Prevent stockouts and maintain availability.

Powering Performance with Real-Time Updates



Real-World Significance of CRM Database

Customer Segmentation Data:	Categorizes customers based on demographics and preferences for targeted promotions, enhancing marketing efforts and sales.
Order Preferences and History:	Tracks individual order history to offer personalized recommendations, improving customer experience and encouraging repeat purchases.
Feedback and Reviews:	Provides insights into customer satisfaction levels and areas for improvement, fostering brand loyalty and reputation management.
Loyalty Program Management:	Incentivizes repeat purchases through a loyalty program, identifying loyal customers for tailored offers and increased lifetime value.
Integration with Social Media:	Facilitates direct communication with customers, strengthens brand loyalty, and enhances visibility, driving overall customer engagement and satisfaction.

Your Competitive Edge Starts Here!!

Empower Your Startup to Thrive:

- **Centralized Data:** Gain unified insights across all aspects of your business.
- **Operational Efficiency:** Simplify workflows and maximize resource utilization.
- **Strategic Insights:** Leverage data to inform smart decisions and drive growth.

Superior Customer Experience:

- **Personalization:** Build loyalty with tailored offers and recommendations.
- **Real-Time Updates:** Ensure product availability and maintain trust.
- **Quality Control:** Continuously improve based on customer feedback.

Future-Proof Foundation:

- **Scalable Solution:** Adapt and grow seamlessly with your business needs.
- **Market Responsiveness:** Stay ahead of trends and customer demands.
- **Sustainable Success:** Deliver operational excellence and exceptional service.

Partner with us to unlock your data-driven future!!

THANK YOU

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