Market Flash

Comprehensive Entity Relationship Modeling and Database Implementation

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Introduction

- Aspiring data analyst with a strong interest in database design, data visualization, and predictive analytics.

- Currently pursuing an intensive 14-month program in Data Analysis at MasterSchool.
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- Passionate about transforming data into actionable insights to drive impactful decisions.
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- Experienced (intermediate) in designing relational models, performing data cleaning, and conducting exploratory data analysis.

Company Overview

Market Flash Marketing Services

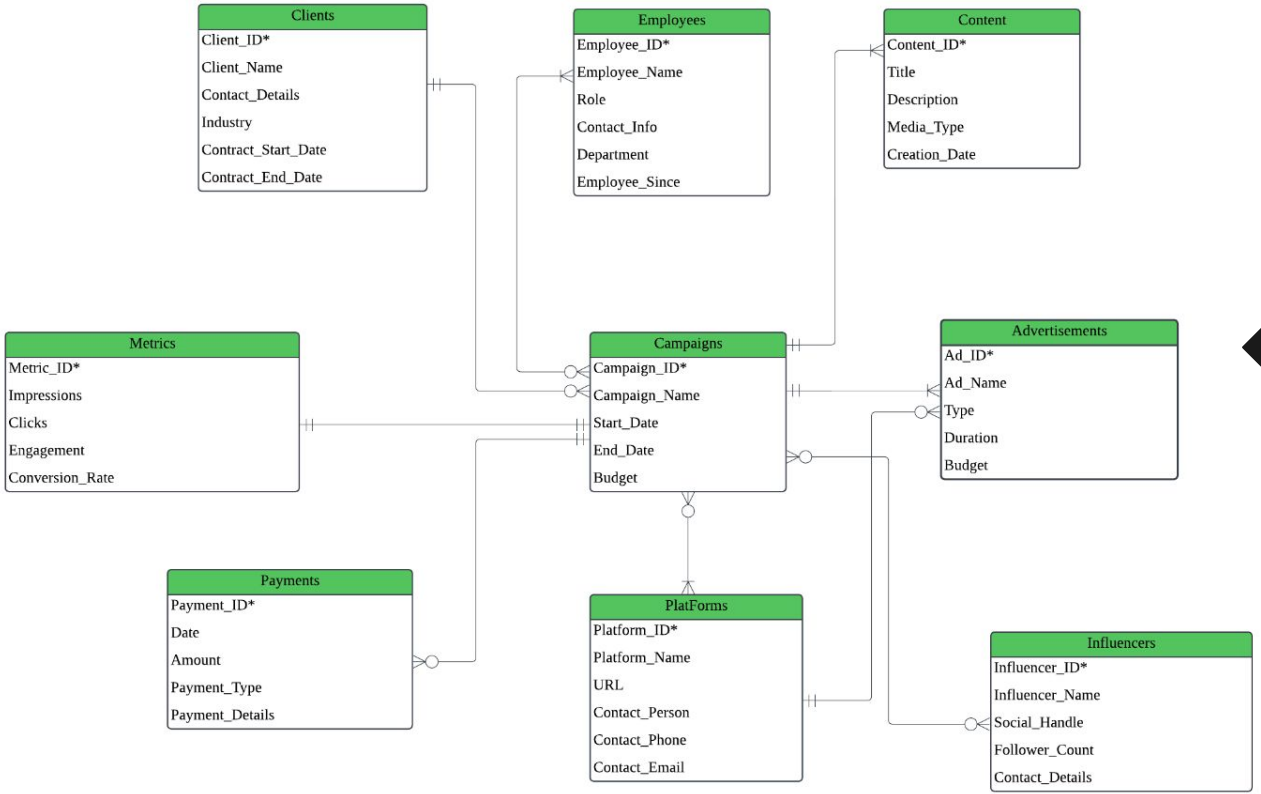
- A marketing agency specializing in social media marketing campaigns.
- Works with advertisers, influencers, and platforms to create impactful campaigns.
- Services include campaign management, influencer collaboration, and analytics reporting.

Business Challenges

- Inefficient management of data related to campaigns, clients, influencers, and performance metrics.
- Need for a centralized database to streamline operations, improve data accessibility, and enhance decision-making.

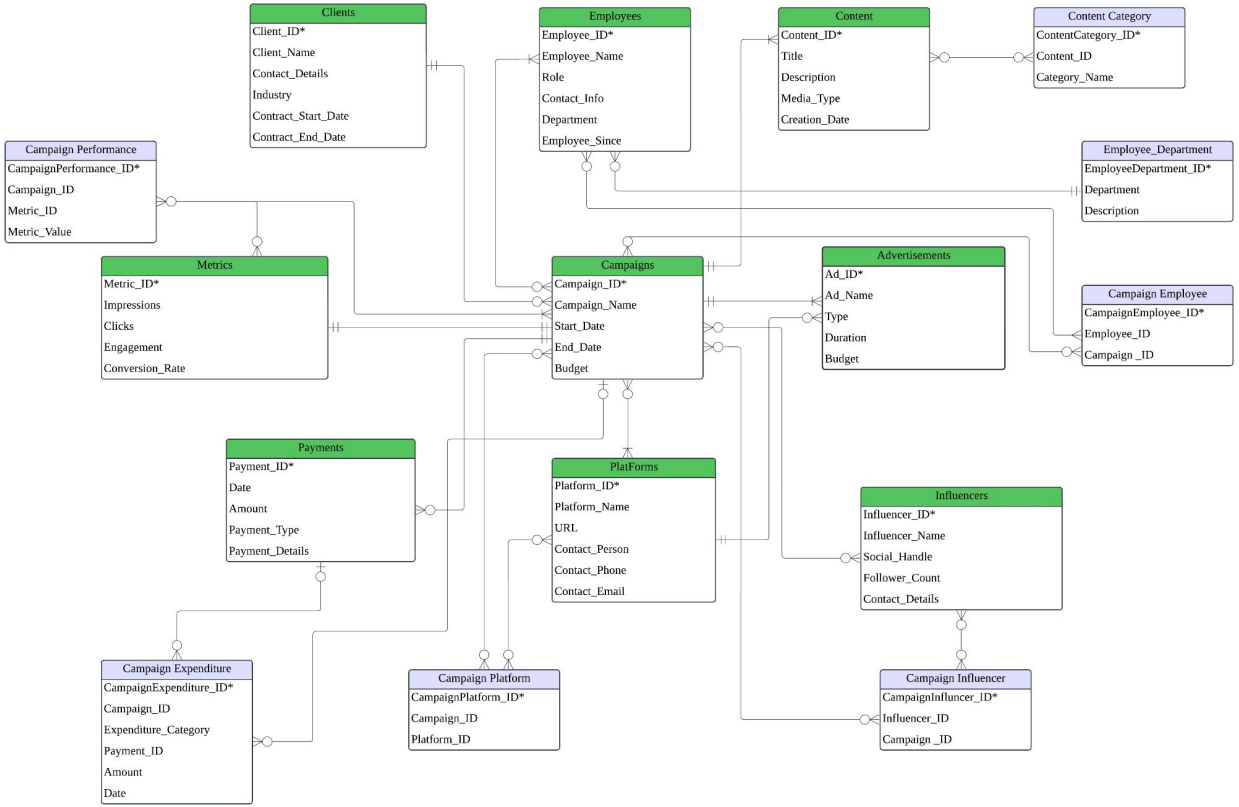
Project Goal:
Develop a relational database to address data redundancy, improve query efficiency, and support analytics for campaign performance.

i. Entity Relationship Design



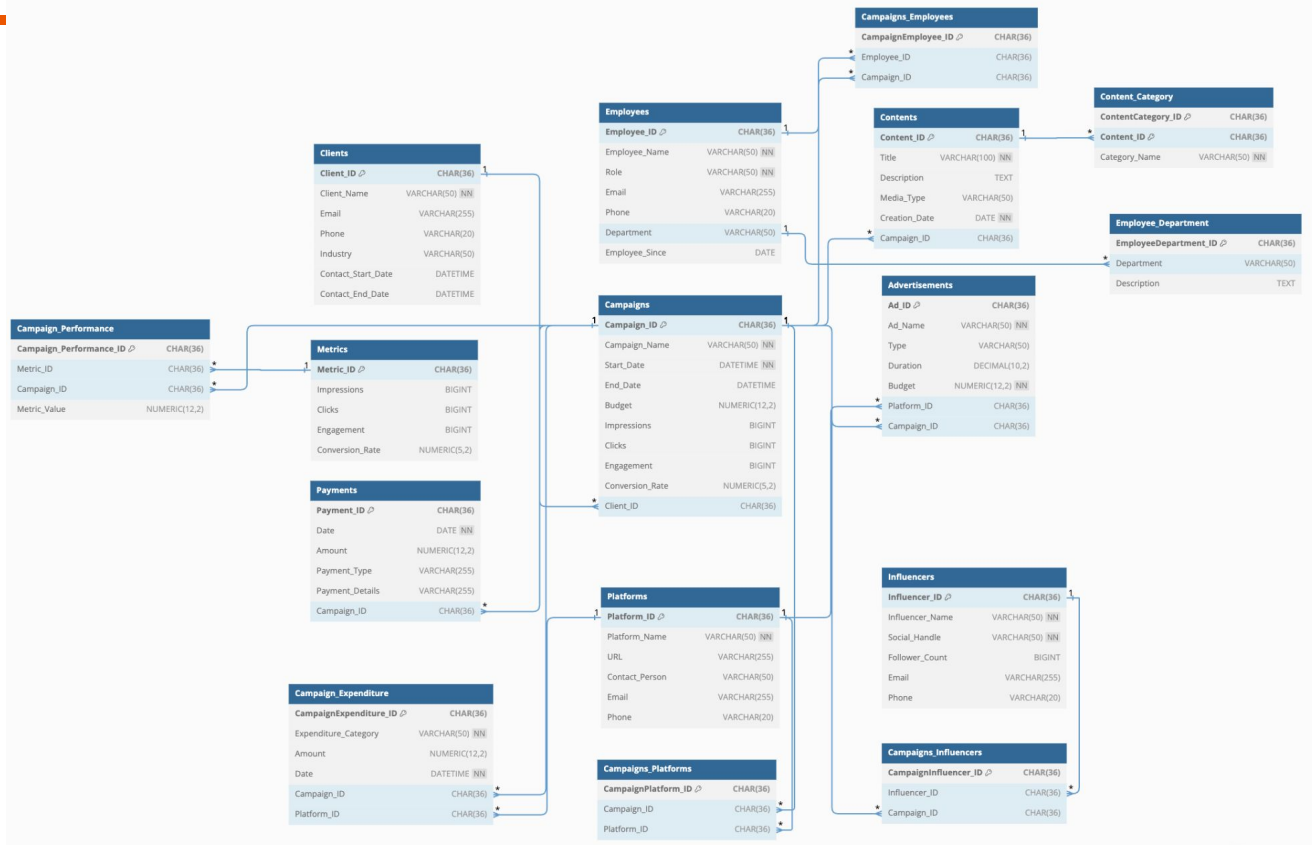
Existing entities as provided by the client

i. Entity Relationship Design - *with new entities*



New entities added to improve the data model and address potential issues

ii. Functional Entity Relationship Design



ii. Functional Entity Relationship Design - *Key Designs Decisions*

Managing Many-to-Many Relationships

- **Employees and Campaigns**:
  - Resolved via the **Campaigns_Employees** junction table.
  - **Benefits**: Tracks employee assignments without redundancy.
  - **Constraints**: Composite primary key (**Campaign_ID**, **Employee_ID**).

- **Influencers and Campaigns**:
  - Handled through **Campaigns_Influencers** table.
  - **Purpose**: Tracks influencer collaborations for specific campaigns, including their roles and rates.

- **Platforms and Campaigns**:
  - Resolved via the **Campaigns_Platforms** table.
  - **Benefits**: Tracks platform-specific details, such as budget allocation and performance metrics.

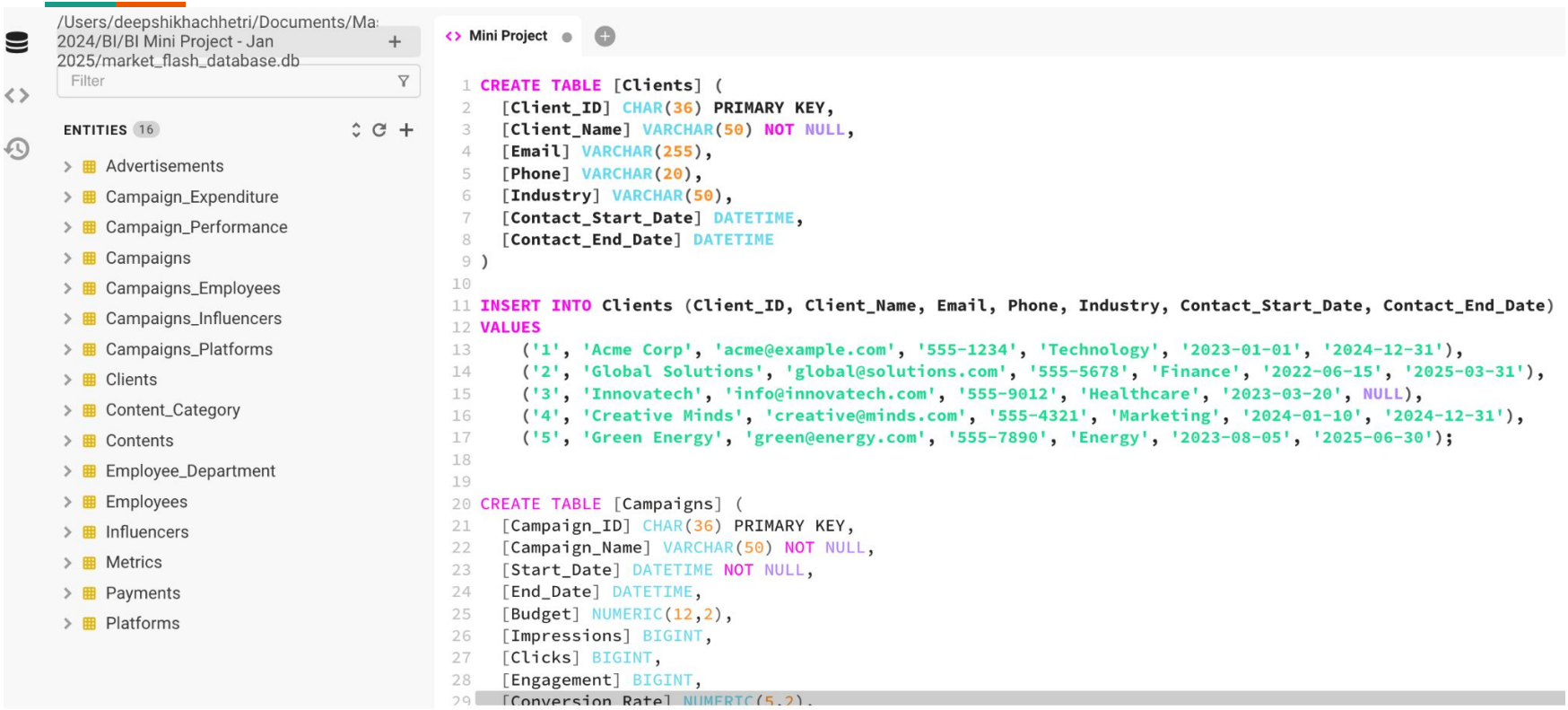
ii. Functional Entity Relationship Design - *Reducing Redundancy*

Normalization Principles Applied, eg.

1. **Campaign Expenditure**:
   - Created a **Campaign_Expenditure** table to track campaign-specific financial details (e.g., costs for ads, influencer fees).
     Rationale:Avoids redundancy in budget and expense data, making financial tracking more efficient.
2. **Campaign Performance**:
   - Consolidated metrics (e.g., engagement, conversions) into a **Campaign_Performance** table.
     Rationale: Centralizes performance data for better analytical insights.
3. **Employee Department**:
   - Introduced an **Employee_Department** table to organize employees into distinct departments (e.g., creative, management).
     Rationale: Simplifies resource allocation and workload management.

Data Types:
- IDs as INT for quick indexing
- FLOAT for financial and performance metrics
- Attributes like Email were defined as **VARCHAR(100)** with a **UNIQUE** constraint to ensure data quality.
- Dates for campaigns and payments were stored as **DATETIME** to handle timestamp requirements.

iii. Coding on SQL + Testing



iii. Coding on SQL + Testing

```
278 3. Get Ad details with Platform and Campaign information
279 LECT a.Ad_Name, a.Type, p.Platform_Name, c.Campaign_Name
280 OM Advertisements a
281 IN Platforms p ON a.Platform_ID = p.Platform_ID
282 IN Campaigns c ON a.Campaign_ID = c.Campaign_ID;
283
```

Ad_Name	Type	Platform_Name	Campaign_Name
Summer Sale Banner	Banner	Facebook	Summer Campaign
Holiday Gift Guide Video	Video	Instagram	Holiday Sale
New Product Launch Ad	Video	Twitter	New Product Launch
Spring Promotion Carousel	Carousel	Facebook	Spring Promotion
Green Energy Initiative Story	Story	Instagram	Green Energy Initiative

a. Tables successfully created with data types and constraints.
b. Connections between tables tested with JOIN statements

iv. Benefit for Market Flash

1. Enhanced Data Management

- Centralized storage for all critical business entities like campaigns, employees, platforms, and advertisements.
- Eliminates redundancy, ensuring clean, structured, and easily accessible data.

2. Improved Campaign Performance Tracking

- Separate Campaign_Performance table provides insights into key metrics like ROI, reach, and engagement.
- Enables MarketFlash to evaluate campaigns efficiently and make data-backed improvements.

3. Scalable Design

- The modular ERD allows for seamless addition of new platforms, campaigns, or business operations.
- Supports future growth and ensures long-term usability.

iv. Benefit for Market Flash

4. Better Relationship Management

- Many-to-many relationships resolved through junction tables (e.g., Campaigns_Employees), providing granular details.
- Tracks employee contributions and platform-specific details effectively.

5. Data Integrity and Consistency

- Implementation of constraints (primary keys, foreign keys) prevents errors and ensures accurate, reliable data.
- Default values and appropriate data types maintain consistency across the database.

6. Simplified Analysis

- Separate tables for advertisements and performance metrics make analytical queries simpler and faster.
- Helps MarketFlash generate actionable insights for targeted marketing strategies.

Thank You