MarketFlash-DataBase Design & Creation

Entities:

- Campaigns (ID, StartDate, EndDate, Channel, Client, ContactInfo, Audience, Likes, Clicks, Conversions, Expense, Executive)
- Clients (CompanyName, Address, Email, Phone#, ContactPerson)
- Employees (EmpID, FName, LName, Address, Email, Phone#, Supervisor)
- Channels (ChanelID, Name)

Entities and Attributes:

Campaigns

1. CamID (Primary Key, Varchar 10)
2. CamName (Varchar (50),NN)
3. StartDate (Date,NN)
4. EndDate (Date,NN)
5. ChannelID (Foreign Key, Varchar (10))
6. ClientID (Foreign Key, Varchar (10))

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7. Audience (Varchar (30))
8. Views (Integer)
9. Likes (Integer)
10. Clicks (Integer)
11. Conversions (Integer)
12. Expense (Decimal)
13. Total Sale (Integer)
14. ROI (Integer)
15. ExecutiveID (Varchar)
16. locationID (Varchar (10))

Clients

1. ClientID (Primary Key, varchar (10))
2. CompanyName (Varchar (50),NN)
3. Address (Varchar (100))
4. Email (Varchar (50), unique, NN)
5. Phone (Varchar (15), NN)

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6. ContactPerson (Varchar (50), NN)

Employees

1. EmpID (Primary Key, Varchar (10))
2. FName (varchar, NN)
3. LName (varchar, NN)
4. Address (varchar (250))
5. Email (varchar (30), NN)
6. Phone (varchar (15))
7. SupervisorID (Foreign Key, varchar (10), NN)

Channels

1. ChannelID (Primary Key, Varchar (10))
2. Name (Varchar(50), NN)

Location

1. LocationID (Primary Key, Varchar (10))
2. Location (Varchar(50), NN)

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Relationships:

- All campaigns must have one and only one client, one client may have multiple campaigns.
- All campaigns must have one and only one channel, one channel may be part of multiple campaigns.
- One employee may manage multiple campaigns, one campaign must have one and only one manager.
- Each employee may supervise one or more employees, one employee must be supervised by one and only one employee.

Step 1: Create a Functional ER Diagram

Based on the given entities and relationships, here's the Functional ER Diagram:

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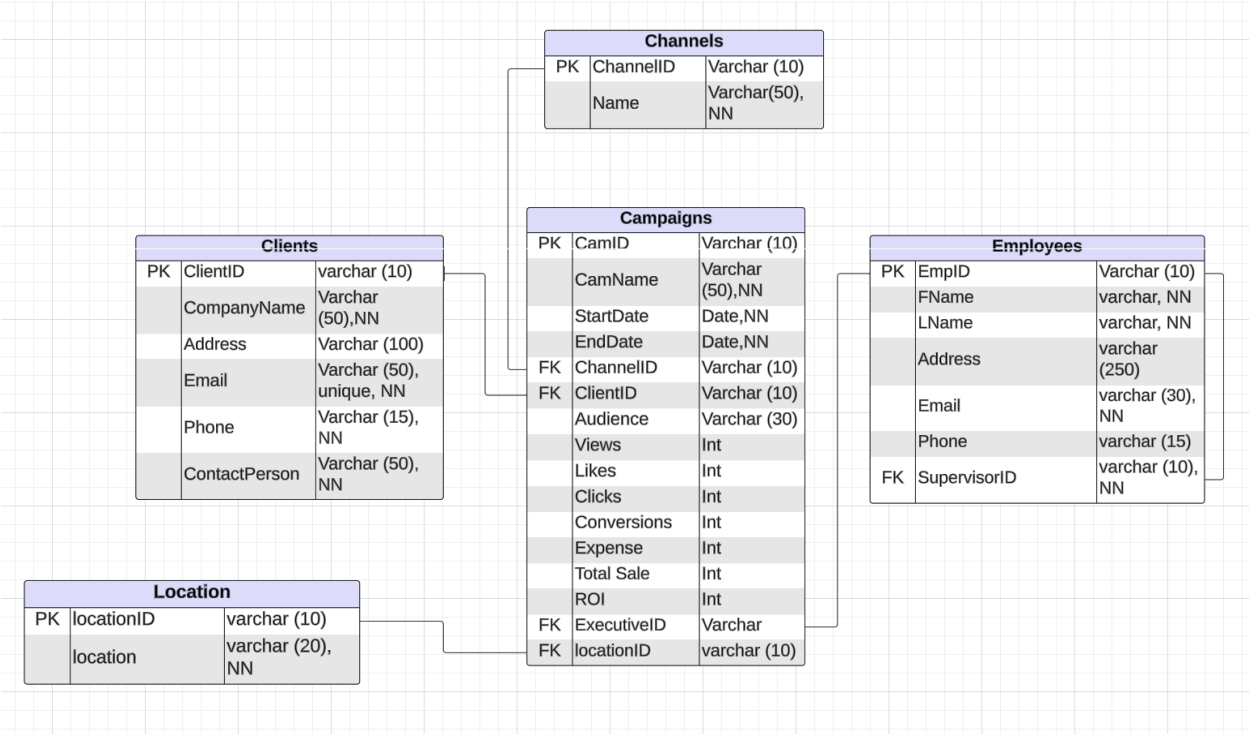

Link for lucid
https://lucid.app/lucidchart/0b801c75-5de1-478d-a745-51f3a9ce55bd/edit?invitationId=inv_70a77ebd-f7d0-435f-9e14-844b9d54c0b7

Step 2: Code the Database including all Keys, Datatypes and Constraints

Here's the SQL code to create the database schema for MarketFlash, including all keys, data types, and constraints:

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```
-- Create the Clients table
CREATE TABLE Clients (
    ClientID Varchar PRIMARY KEY,
    CompanyName Varchar NOT NULL,
    Address Varchar NOT NULL,
    Email Varchar NOT NULL,
    Phone Varchar NOT NULL,
    ContactPerson Varchar NOT NULL,
    CONSTRAINT chk_email_format CHECK (Email LIKE '%_@__%.__%')
);

-- Insert data into Clients
INSERT INTO Clients (ClientID,CompanyName, Address, Email, Phone,
ContactPerson) VALUES
('001', 'Lopez PLC', '0806 Watson Drive Suite 662, Port Andrea, DE
42578-2286', 'zmcintyre@bauer.info', '3724028579', 'Barbara Walker'),
('002', 'Weaver, Garner and Ramos', '2933 Ortiz Overpass Suite 099,
South Douglasburgh, KY 52632-7557', 'oscott@gmail.com',
'498.978.7718x501', 'Melinda Johnston'),
('003', 'Salinas-Chavez', '53637 Bonnie Walk Suite 961, South
Adrianaport, IA 49560', 'richard84@hotmail.com', '2545622603',
'Chelsea Hoffman'),
('004', 'Russell, Wilson and Rogers', '27907 Deborah Hill Suite 235,
Abigailbury, CO 58408', 'michael78@yahoo.com', '(995)213-6315',
'Michael Howard'),
('005', 'White Ltd', '172 Angela Crescent Apt. 306, North Laura, HI
69094-7497', 'jeremy56@gmail.com', '(320)185-3187x395', 'Nathan
Weber')

Select * from Clients
```

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```
-- Create the Employees table
CREATE TABLE Employees (
    EmpID Varchar PRIMARY KEY,
    FName Varchar NOT NULL,
    LName Varchar NOT NULL,
    Address Varchar,
    Email Varchar,
    Phone Varchar,
    SupervisorID Varchar,
    CONSTRAINT fk_supervisor FOREIGN KEY (SupervisorID) REFERENCES
Employees(EmpID),
    CONSTRAINT chk_email_format_emp CHECK (Email LIKE '%_@__%.__%')
);

-- Insert data into Employees
INSERT INTO Employees (EmpID, FName, LName, Address, Email, Phone,
SupervisorID) VALUES
('001','Lauren', 'Riggs', Null, Null, Null, '001'),
('002','Brandon', 'Townsend Jr.', Null, Null, Null, '002'),
('003','Thomas', 'Ryan',Null, Null, Null, '003'),
('004','Thomas', 'Ryan', Null, Null, Null, '004'),
('005','Jesus', 'Rivera',Null, Null, Null, '005')


Select * from Employees

-- Create the Channels table
CREATE TABLE Channels (
    ChannelID Varchar PRIMARY KEY,
    Name Varchar NOT NULL
);

-- Insert data into Channels
```

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```
INSERT INTO Channels (ChannelID,Name) VALUES
('001','Youtube'),
('002','Facebook'),
('003','Instagram'),
('004','TickTok'),
('005','Email')

Select * from Channels

-- Create the Location table
CREATE TABLE Location (
    LocationID Varchar PRIMARY KEY,
    Location Varchar NOT NULL
);
-- Insert data into Location
INSERT INTO Location (LocationID,Location) VALUES
('001','UK'),
('002','USA'),
('003','Europe),
('004','India'),
('005','Australia')

Select * from Location


-- Create the Campaigns table
CREATE TABLE Campaigns (
    CamID Varchar PRIMARY KEY,
    CamName Varchar NOT NULL,
    StartDate DATE NOT NULL,
    EndDate DATE NOT NULL,
    ChannelID Varchar,
    ClientID Varchar,
```

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```
    Audience TEXT,
    Views INT DEFAULT 0,
    Likes INT DEFAULT 0,
    Clicks INT DEFAULT 0,
    Conversions INT DEFAULT 0,
    Expense DECIMAL(10, 2),
    TotalSale INT,
    ROI INT,
    ExecutiveID INT
    CONSTRAINT fk_channel FOREIGN KEY (ChannelID) REFERENCES
Channels(ChannelID),
    CONSTRAINT fk_client FOREIGN KEY (ClientID) REFERENCES
Clients(ClientID),
    CONSTRAINT fk_executive FOREIGN KEY (ExecutiveID) REFERENCES
Employees(EmpID)
);
-- Insert data into Campaigns
INSERT INTO Campaigns (CamID,CamName, StartDate, EndDate, ChannelID,
ClientID, Audience, Views, Likes, Clicks, Conversions, Expense,
TotalsSale,ROI, ExecutiveID) VALUES
('001','Campaign 1', '2023-12-18', '2024-01-10', '001', '001', 'Adults
18-40', 23458, 7718, 1056, 702,Null,Null, 13961.03, '001'),
('002','Campaign 2', '2023-10-12', '2023-11-09', '002', '002', 'Female
60+', 92422, 8075, 1360, 182, 50878.17, 16.15, 43804.31, '002'),
('003','Campaign 3', '2023-05-18', '2023-06-04', '003', '003', 'Male
40-60', 45934, 2446, 1655, 669, 76729.41, 113.09 36007.47, '003'),
('004','Campaign 4', '2023-02-23', '2023-03-09', '004', '004', 'Female
18-40', 30391, 1700, 2669, 669,42784.94, 14.32, 37425.85, '004'),
('005','Campaign 5', '2023-11-20', '2023-12-11', '005', '005', 'Male
60+', 52042, 191, 4242, 753, 64163.39, 32.05, 48590.34, '005')

Select * from Campaigns
```

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Step 3: Use SQL queries to check your database.

Extra Challenge: Try and create SQL code for the following:

- Average cost per click.
- Cost per conversion and ROI.
- Audience Segment Performance.
- Monthly and Quarterly Performance Trends.

```
--Average cost per click
SELECT AVG(Expense / Clicks) AS AverageCostPerClick
FROM Campaigns
WHERE Clicks > 0;

--Cost per conversion and ROI
SELECT
    CamID,
    CamName,
    (Expense / Conversions) AS CostPerConversion,
    ((Conversions * 100) / Expense) AS ROI
FROM Campaigns
WHERE Conversions > 0;

--Audience Segment Performance
SELECT
    Audience,
    SUM(Clicks) AS TotalClicks,
    SUM(Conversions) AS TotalConversions,
    SUM(Expense) AS TotalExpense
FROM Campaigns
GROUP BY Audience;

-- Monthly Performance Trends
```

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```
SELECT
strftime('%Y-%m', StartDate) AS Month,
    SUM(Clicks) AS TotalClicks,
    SUM(Conversions) AS TotalConversions,
    SUM(Expense) AS TotalExpense
FROM Campaigns
GROUP BY Month;

-- Quarterly Performance Trends
SELECT
    strftime('%Y', StartDate) AS Year,
    (CAST(strftime('%m', StartDate) AS INTEGER) - 1) / 3 + 1 AS
Quarter,
    SUM(Clicks) AS TotalClicks,
    SUM(Conversions) AS TotalConversions,
    SUM(Expense) AS TotalExpense
FROM Campaigns
GROUP BY Year, Quarter;
```