



CHRIST

(DEEMED TO BE UNIVERSITY)

PUNE LAVASA CAMPUS

The Hub of Analytics

DATABASE MANAGEMENT SYSTEM

COMMUNITY HUB

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Introduction

The "CommunityHub" project is a comprehensive influencer database designed to manage and analyze data related to influencers, their courses, Instagram activities, posts, collaborations, community engagements, and analytics. The project utilizes a relational database management system (RDBMS) and involves the creation of multiple tables, each serving a specific purpose.

Entity-Relationship (ER) Diagram

1. Influencers Table

Attributes: influencer_id, first_name, last_name, dob, gender, email, phone_number, date_joined, category, assets, liabilities, bus_vent_gp, expenses.

Primary Key: influencer_id

Relationships:

One-to-one with Courses (influencer_id as a foreign key)

One-to-Many with Instagram (influencer_id as a foreign key)

One-to-Many with Collaborations (influencer_id as a foreign key)

One-to-Many with Community Engagement (influencer_id as a foreign key)

One-to-one with Analytics (influencer_id as a foreign key)

2. Courses Table

Attributes: influencer_id, Course, College_name, End_date, Enroll_date.

Primary Key: (influencer_id, Course)

Relationships:

Many-to-One with Influencers (influencer_id as a foreign key)

3. Instagram Table

Attributes: account_name, influencer_id, ad_revenue, joining_date, followers, engagement_rate, audience_demographics.

Primary Key: account_name

Relationships:

Many-to-One with Influencers (influencer_id as a foreign key)

4. Posts Table

Attributes: post_id, account_name, post_date, likes, comments, post_type.

Primary Key: post_id

Relationships:

Many-to-One with Instagram (account_name as a foreign key)

5. Collaborations Table

Attributes: collaboration_id, brand_name, influencer_id, collaboration_earnings, collaboration_type.

Primary Key: collaboration_id

Relationships:

Many-to-One with Influencers (influencer_id as a foreign key)

6. Community Engagement Table

Attributes: engagement_id, influencer_id, event_name, event_date, participants, rating.

Primary Key: engagement_id

Relationships:

Many-to-One with Influencers (influencer_id as a foreign key)

7. Analytics Table

Attributes: influencer_id, age, studying, avg_net_worth, avg_reach.

Primary Key: influencer_id

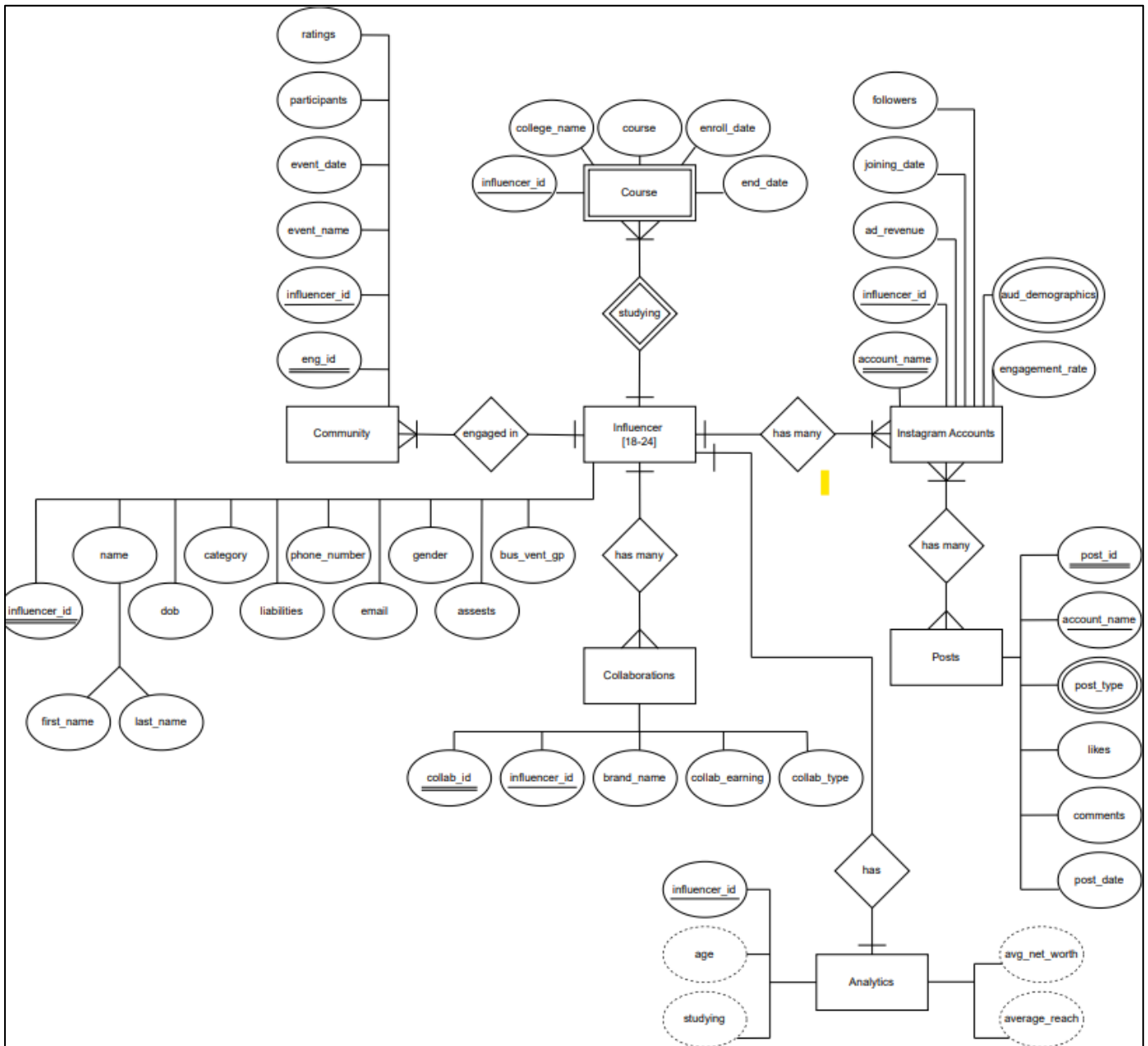
Relationships:

One-to-one with Influencers (influencer_id as a foreign key)

Functionalities

- Influencers Table: Tracks basic information about influencers, including personal details, contact information, and financial data.
- Courses Table: Manages the educational background of influencers, including details about courses, college names, and enrollment dates.
- Instagram Table: Stores Instagram-specific data, such as account name, ad revenue, followers, and engagement rate. Relates to influencers, posts, and community engagements.
- Posts Table: Records details about posts made on Instagram, including post type, likes, and comments. Connected to the Instagram table through the account_name foreign key.

- Collaborations Table: Manages collaborations between influencers and brands, including earnings and collaboration types. Linked to influencers through the influencer_id foreign key.
- Community Engagement Table: Tracks community engagement events, such as event names, dates, participants, and ratings. Associated with influencers through the influencer_id foreign key.
- Analytics Table: Stores derived analytics data for influencers, including age, studying status, average net worth, and average reach. Utilizes triggers to calculate values before insertion based on related data.

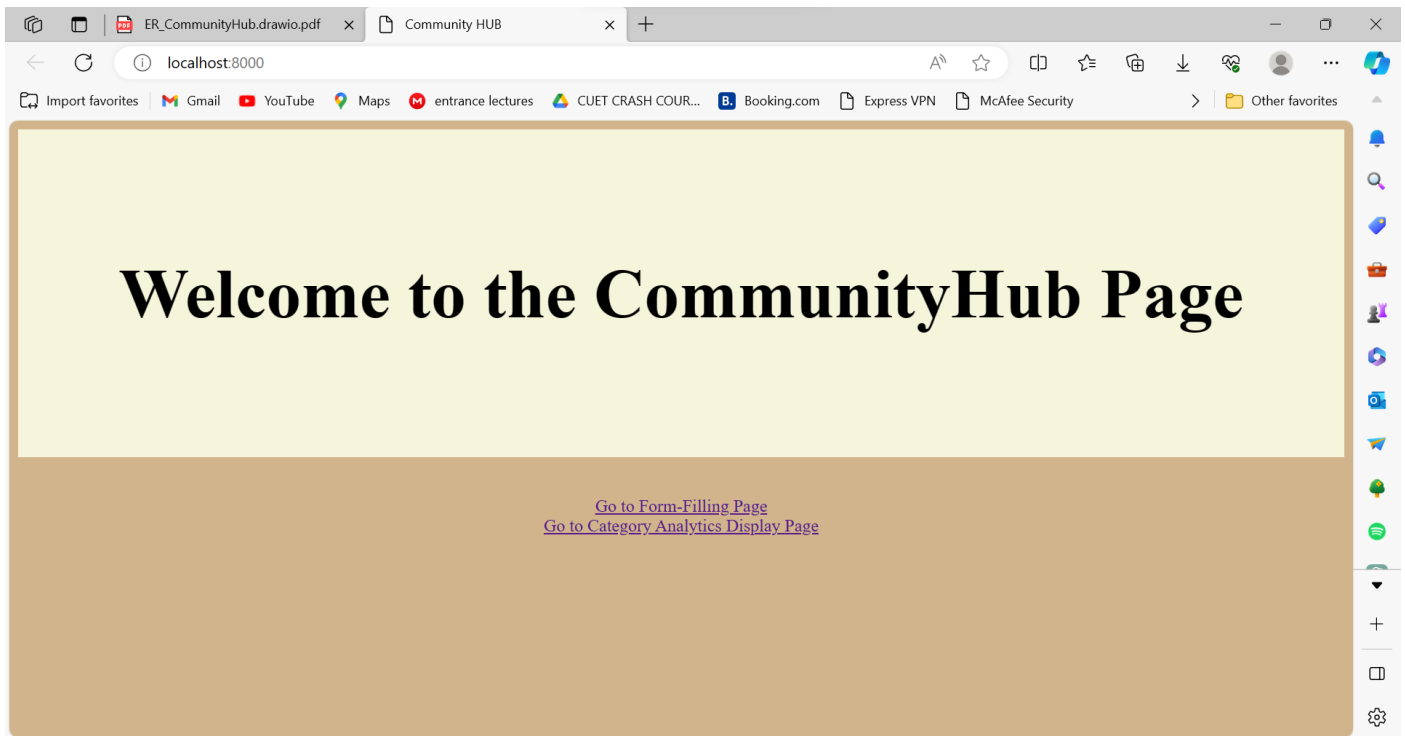


FRONT END

Web Development with Bottle

After establishing the database structure, the next step involves creating a web interface using the Bottle framework. Bottle is a lightweight Python web framework that simplifies the process of building small web applications. The web interface for "CommunityHub" can provide functionalities such as:

1. Display:

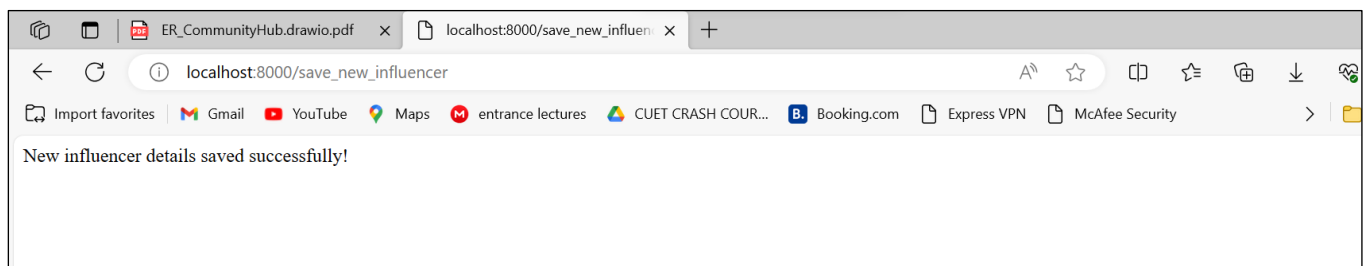


2. Form-filling

A screenshot of a web browser window showing the 'New Influencer Details' form. The browser's address bar displays 'localhost:8000/new_influencer'. The form is titled 'New Influencer Details' and contains the following fields:

- Influencer ID: 990
- First Name: Rhea
- Last Name: Dsouza
- Date of Birth: 08-10-2004
- Gender (M/F): F
- Email: rhea@gmail.com
- Phone Number: 000009987
- Date Joined: 06-02-2013
- Category: Fashion
- Assets: 6878756
- Liabilities: 868768
- Business Venture/General Partnership: 76767
- Expenses: 767576

At the bottom of the form, there is a 'Save' button and a link 'Go to New Course Page'.



ER_CommunityHub.drawio.pdf x New Instagram Details

localhost:8000/new_instagram

Import favorites Gmail YouTube Maps entrance lectures CUET CRAS

New Instagram Details

Account Name:

Influencer ID:

Ad Revenue:

Joining Date:

Followers:

Engagement Rate:

Audience Demographics (JSON):

[Go to New Posts Page](#)

ER_CommunityHub.drawio.pdf x New Course Details

localhost:8000/new_course

Import favorites Gmail YouTube Maps entrance lectures

New Course Details

Influencer ID:

Course Name:

College Name:

End Date:

Enroll Date:

[Go to New Instagram Page](#)

ER_CommunityHub.drawio.pdf x New Collaborations Details

localhost:8000/new_collaborations

Import favorites Gmail YouTube Maps entrance lectures

New Collaborations Details

Collaboration ID:

Brand Name:

Influencer ID:

Collaboration Earnings:

Collaboration Type:

[Go to New Collaborations Page](#)

ER_CommunityHub.drawio.pdf x New Posts Details

localhost:8000/new_posts

Import favorites Gmail YouTube Maps entrance lectures

New Posts Details

Post ID:

Account Name:

Post Date:

Likes:

Comments:

Post Type:

[Go to New Collaborations Page](#)

ER_CommunityHub.drawio.pdf x New Community Engagement

localhost:8000/new_community_engagement

Import favorites Gmail YouTube Maps entrance lectures

New Community Engagement Details

Engagement ID:

Influencer ID:

Event Name:

Event Date:

Participants:

Rating:

[Go to Analytics Input Page](#)

ER_CommunityHub.drawio.pdf x Check and Add Analytics

localhost:8000/check_and_add_analytics

Import favorites Gmail YouTube Maps entrance lectures

Check and Add Influencer ID to Analytics

Influencer ID:

ER_CommunityHub.drawio.pdf x localhost:8000/check_and_add_a x +

localhost:8000/check_and_add_analytics

Import favorites Gmail YouTube Maps entrance lectures CUET CRASH COUR... Booking.com Express VPN McAfee Security

Influencer ID 990 added to analytics table!

```
mysql> Select* from influencers;
```

influencer_id	first_name	last_name	dob	gender	email	phone_number	date_joined	category	assets	liabilities	bus_vent_gp	expenses
1	Shrishti	Gupta	1990-05-15	F	shrishti@example.com	+1234567890	2020-01-01	Fashion	50000.00	20000.00	15000.00	10000.00
2	SIMRAN	ADWANI	2023-11-07	F	simranadwaniii@gmail.com	09981485923	2023-11-09	Fitness	90808.00	48098.00	8979.00	487857.00
6	SIMRAN	ADWANI	2023-11-07	F	simranadwaniii@gmail.com	09981485923	2023-11-09	Fitness	90808.00	48098.00	8979.00	487857.00
12	Sim	As	2022-10-10	F	simranadwaniii@gmail.com	09981485923	2022-10-10	Fashion	28787.00	3845.00	24255.00	24555.00
34	Sim	Las	2003-10-10	F	simranadwaniii@gmail.com	09981485923	2003-10-10	Fitness	78778.00	987878.00	768768.00	76786.00
49	Se	OK	2023-11-09	F	simranadwaniii@gmail.com	09981485923	2023-11-02	Fitness	90808.00	48098.00	8979.00	487857.00
77	Se	OK	2023-11-02	F	simranadwaniii@gmail.com	09981485923	2023-11-02	Fitness	90808.00	48098.00	8979.00	487857.00
78	Se	OK	2023-11-09	F	simranadwaniii@gmail.com	09981485923	2023-11-02	Fitness	90808.00	48098.00	8979.00	487857.00
609	Manya	ADWANI	2023-11-07	F	simranadwaniii@gmail.com	09981485923	2023-11-09	Fitness	90808.00	48098.00	8979.00	487857.00
990	Rhea	Dsouza	2004-10-08	F	rhea@gmail.com	000009987	2013-02-06	Fashion	878756.00	868768.00	76767.00	767576.00

10 rows in set (0.00 sec)

```
mysql>
```

Command Line Prompt

- ### New User- Form Filling

```
Connected to MySQL database
----- Influencer Management System -----
1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
0. Exit
Enter your choice (0-5): 6
Enter id (numeric only): 098
Enter First Name: zayn
Enter Last Name: malik
Enter Date of Birth (YYYY-MM-DD): 2003-10-10
Enter Gender (M/F): M
Enter Email: simranmonishka@gmail.com
Enter Phone Number: 9981485923
Enter Date Joined (YYYY-MM-DD): 2012-10-10
Enter Category: Fitness
Enter Assets: 87886
Enter Liabilities: 75757
Enter Business Venture Gross Profit: 65656
Enter Expenses: 65765
New user added successfully.
```

• Display any table

Enter your choice (0-5): 5
Enter Table Name (Influencers/Course/Instagram/Posts/Collaborations/Community_Engagement/Analytics): Influencers

id	influencer_id	first_name	last_name	dob	gender	email	phone_number	date_joined	category	assets	liabilities	bus_ven
0	1	Shrishti	Gupta	1990-05-15	F	shrishti@example.com	+1234567890	2020-01-01	Fashion	50000	20000	1
1	2	SIMRAN	ADWANI	2023-11-07	F	simranadwaniii@gmail.com	09981485923	2023-11-09	Fitness	90808	48098	
2	6	SIMRAN	ADWANI	2023-11-07	F	simranadwaniii@gmail.com	09981485923	2023-11-09	Fitness	90808	48098	
3	12	Sim	As	2022-10-10	F	simranadwaniii@gmail.com	09981485923	2022-10-10	Fashion	28787	3845	2
4	34	Sim	Las	2003-10-10	F	simranmonishka@gmail.com	09981485923	2003-10-10	Fitness	78778	987878	76
5	49	Se	OK	2023-11-09	F	simranadwaniii@gmail.com	09981485923	2023-11-02	Fitness	90808	48098	
6	77	Se	OK	2023-11-02	F	simranadwaniii@gmail.com	09981485923	2023-11-02	Fitness	90808	48098	
7	78	Se	OK	2023-11-09	F	simranadwaniii@gmail.com	09981485923	2023-11-02	Fitness	90808	48098	
8	98	zayn	malik	2003-10-10	M	simranmonishka@gmail.com	9981485923	2012-10-10	Fitness	87886	75757	6

• Update Course [Economics and Analytics – Economics]

Enter your choice (0-5): 5
Enter Table Name (Influencers/Course/Instagram/Posts/Collaborations/Community_Engagement/Analytics): Course

	influencer_id	Course	College_name	End_date	Enroll_date
0	1	Fashion Design	Fashion Institute	2022-12-31	2020-01-15
1	12	Economics and Analytics	Christ	2022-10-10	2020-10-10

----- Influencer Management System -----
1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
8. Exit
Enter your choice (0-5): 2
Enter Influencer ID: 12
Enter New Course Name: Economics
Course name updated successfully.

----- Influencer Management System -----
1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
8. Exit
Enter your choice (0-5): 5
Enter Table Name (Influencers/Course/Instagram/Posts/Collaborations/Community_Engagement/Analytics): Course

	influencer_id	Course	College_name	End_date	Enroll_date
0	1	Fashion Design	Fashion Institute	2022-12-31	2020-01-15
1	12	Economics	Christ	2022-10-10	2020-10-10

- Delete record [Post id- 1 deleted]

Enter your choice (0-5): 5
Enter Table Name (Influencers/Course/Instagram/Posts/Collaborations/Community_Engagement/Analytics): Posts

	post_id	account_name	post_date	likes	comments	post_type
0	1	shrishti_instyle	2022-01-15	500	50	Image
1	67	simr	2023-10-10	45646	878	Image

----- Influencer Management System -----

1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
0. Exit

Enter your choice (0-5): 4
Enter Post ID to Delete: 1
Record deleted successfully.

----- Influencer Management System -----

1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
0. Exit

Enter your choice (0-5): 5

Enter Table Name (Influencers/Course/Instagram/Posts/Collaborations/Community_Engagement/Analytics): Posts

	post_id	account_name	post_date	likes	comments	post_type
0	67	simr	2023-10-10	45646	878	Image

- Through Influencer ID – Analytics table [Union Formed]

----- Influencer Management System -----

1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
0. Exit

Enter your choice (0-5): 1
Enter Influencer ID: 1

	influencer_id	age	studying	avg_net_worth	avg_reach
0	1	33	No	50000	100794

----- Influencer Management System -----

1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
0. Exit

Enter your choice (0-5):

• Through Category- Retrieving influencer data

```

----- Influencer Management System -----
1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
0. Exit
Enter your choice (0-5): 3
Enter Category (Fashion/Fitness): Fashion

```

	influencer_id	first_name	last_name	dob	gender	email	phone_number	date_joined	category	assets	liab
0	1	Shrishti	Gupta	1990-05-15	F	shrishti@example.com	+1234567890	2020-01-01	Fashion	50000	
1	12	Sim	As	2022-10-10	F	simranadwaniii@gmail.com	09981485923	2022-10-10	Fashion	28787	
2	990	Rhea	Dsouza	2004-10-08	F	rhea@gmail.com	000009987	2013-02-06	Fashion	6.87876e+06	

```

----- Influencer Management System -----
1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category

```

• Adding a new record for a particular influencer in the Collaborations table

```

4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
8. Show Number of Posts
0. Exit
Enter your choice (0-8): 7
Enter collaboration_id: 22
Enter Brand Name: Mischief
Enter Influencer ID: 2
Enter Collaboration Earnings: 97886
Enter Collaboration Type (Product Placement/Sponsored Event): Product Placement
New collaboration record added successfully.
----- Influencer Management System -----
1. Show Analytics Table for an Influencer
2. Update Course Name
3. Display Influencers by Category
4. Delete Record from Posts Table
5. Display All Records in Table Form
6. New User - Form Filling
7. Add New Record for Collaborations
8. Show Number of Posts
0. Exit
Enter your choice (0-8): 5
Enter Table Name (Influencers/Course/Instagram/Posts/Collaborations/Community_Engagement/Analytics): Collaborations

```

	collaboration_id	brand_name	influencer_id	collaboration_earnings	collaboration_type
0	1	XYZ Brand	1	10000	Product Placement
1	2	FitLife Supplements	2	12000	Sponsored Event
2	3	TravelWonders	3	8000	Product Placement
3	4	TasteBuds Kitchenware	4	15000	Product Placement
4	5	ZenLifestyle	5	18000	Sponsored Event
5	22	Mischief	2	97886	Product Placement

BACKEND

Data Definition Language (DDL) Commands:

CREATE TABLE: Used to create a new table with specified columns and their data types.

CREATE TABLE table_name (

 column1 datatype,

 column2 datatype,

 ...

);

CREATE TRIGGER: Used to define a trigger, a set of SQL statements to be executed automatically before or after an event (e.g., INSERT) occurs in a specified table.

CREATE TRIGGER trigger_name

BEFORE INSERT ON table_name

FOR EACH ROW

BEGIN

 -- Trigger body with SQL statements

END;

```
# Create Trigger to update derived columns in Analytics table
create_trigger_query = """
-- Trigger to calculate age, studying, avg_net_worth, and avg_reach before insert
CREATE TRIGGER calculate_analytics_values
BEFORE INSERT ON Analytics
FOR EACH ROW
BEGIN
    SET NEW.age = YEAR(CURDATE()) - YEAR((SELECT dob FROM influencers WHERE influencer_id = NEW.influencer_id));

    SET NEW.studying = (
        SELECT
            CASE
                WHEN CURDATE() BETWEEN Enroll_date AND End_date THEN 'Yes'
                ELSE 'No'
            END
        FROM Course
        WHERE influencer_id = NEW.influencer_id
        ORDER BY End_date DESC
        LIMIT 1
    );

    SET NEW.avg_net_worth = (
        SELECT
            COALESCE(SUM(assets - liabilities + bus_vent_gp + ad_revenue + collaboration_earnings - expenses), 0)
        FROM
            influencers
        LEFT JOIN Instagram ON influencers.influencer_id = Instagram.influencer_id
        LEFT JOIN collaborations ON influencers.influencer_id = collaborations.influencer_id
        WHERE influencers.influencer_id = NEW.influencer_id
    );

    SET NEW.avg_reach = (
        SELECT
            COALESCE(SUM(participants + followers + engagement_rate + likes + comments), 0)
        FROM
            Instagram
        LEFT JOIN posts ON Instagram.account_name = posts.account_name
        LEFT JOIN community_engagement ON Instagram.influencer_id = community_engagement.influencer_id
        WHERE Instagram.influencer_id = NEW.influencer_id
    );
END;
"""
```

```

# Create influencers table
create_influencers_table_query = """
CREATE TABLE influencers (
    influencer_id INT PRIMARY KEY,
    first_name VARCHAR(255),
    last_name VARCHAR(255),
    dob DATE,
    gender CHAR(1) CHECK(gender IN ('M', 'F')),
    email VARCHAR(255),
    phone_number VARCHAR(15),
    date_joined DATE,
    category VARCHAR(255),
    assets DECIMAL(10, 2),
    liabilities DECIMAL(10, 2),
    bus_vent_gp DECIMAL(10, 2),
    expenses DECIMAL(10, 2)
);
"""

# Create Course table
create_course_table_query = """
CREATE TABLE Course (
    influencer_id INT,
    Course VARCHAR(255),
    College_name VARCHAR(255),
    End_date DATE,
    Enroll_date DATE,
    PRIMARY KEY (influencer_id, Course),
    FOREIGN KEY (influencer_id) REFERENCES influencers (influencer_id) ON DELETE CASCADE
);
"""

# Create Instagram table
create_instagram_table_query = """
CREATE TABLE Instagram (
    account_name VARCHAR(255) PRIMARY KEY,
    influencer_id INT,
    ad_revenue DECIMAL(10, 2),
    joining_date DATE,
    followers INT,
    engagement_rate DECIMAL(5, 2),
    audience_demographics JSON,
    FOREIGN KEY (influencer_id) REFERENCES influencers (influencer_id) ON DELETE CASCADE
);
"""

```

```

# Create posts table
create_posts_table_query = """
CREATE TABLE posts (
    post_id INT PRIMARY KEY,
    account_name VARCHAR(255),
    post_date DATE,
    likes INT,
    comments INT,
    post_type ENUM('Image', 'Video', 'Story'),
    FOREIGN KEY (account_name) REFERENCES Instagram (account_name) ON DELETE CASCADE
);
"""

# Create collaborations table
create_collaborations_table_query = """
CREATE TABLE collaborations (
    collaboration_id INT PRIMARY KEY,
    brand_name VARCHAR(255),
    influencer_id INT,
    collaboration_earnings DECIMAL(10, 2),
    collaboration_type ENUM('Product Placement', 'Sponsored Event'),
    FOREIGN KEY (influencer_id) REFERENCES influencers (influencer_id) ON DELETE CASCADE
);
"""

# Create community_engagement table
create_community_engagement_table_query = """
CREATE TABLE community_engagement (
    engagement_id INT PRIMARY KEY,
    influencer_id INT,
    event_name VARCHAR(255),
    event_date DATE,
    participants INT,
    rating DECIMAL(5, 2),
    FOREIGN KEY (influencer_id) REFERENCES influencers (influencer_id) ON DELETE CASCADE
);
"""

# Create Analytics table
create_analytics_table_query = """
CREATE TABLE Analytics (
    influencer_id INT PRIMARY KEY,
    date DATE,
    views INT,
    shares INT,
    comments INT,
    likes INT,
    followers INT,
    engagement_rate DECIMAL(5, 2),
    ad_revenue DECIMAL(10, 2),
    bus_vent_gp DECIMAL(10, 2),
    expenses DECIMAL(10, 2)
);
"""

```

Data Manipulation Language (DML) Commands:

INSERT: Used to insert new records into a table.

```
INSERT INTO table_name (column1, column2, ...)  
VALUES (value1, value2, ...);
```

UPDATE: Used to modify existing records in a table.

```
UPDATE table_name  
SET column1 = value1, column2 = value2, ...  
WHERE condition;
```

DELETE: Used to delete records from a table.

```
DELETE FROM table_name  
  
WHERE condition;
```

SET: Used to assign the result of an expression to a variable.

```
SET variable_name = expression;
```

Data Query Language (DQL) Commands:

SELECT: Used in various functions for fetching and displaying data

```
SELECT column1, column2, ...  
  
FROM table_name  
  
WHERE condition;
```

External Libraries:

- Pandas (import pandas as pd): Pandas are used for data manipulation and analysis. In this context, it's employed to create DataFrames for displaying query results in a tabular format.
- Tabulate (from tabulate import tabulate): The Tabulate library is used to format and display tabular data in a visually appealing way.

- Colorama (from colorama import Fore, Style): Colorama is utilized to add colored text to the console, enhancing the user interface by differentiating menu options and messages.
- The mysql.connector library serves as a reliable and efficient bridge between Python applications and MySQL databases.

Types of Joins Used:

INNER JOIN: The INNER JOIN returns only the rows where there is a match in both tables based on the specified condition.

SELECT *

FROM table1

INNER JOIN table2 ON table1.column_name = table2.column_name;

LEFT JOIN: The LEFT JOIN returns all rows from the left table (Instagram) and the matched rows from the right table (posts). If there is no match, NULL values are returned for columns from the right table.

SELECT *

FROM table1

LEFT JOIN table2 ON table1.column_name = table2.column_name;

OUTER JOIN (or FULL JOIN): The OUTER JOIN returns all rows when there is a match in either the left or right table. If there is no match, NULL values are returned for columns from the table without a match.

SELECT *

FROM table1

FULL JOIN table2 ON table1.column_name = table2.column_name;