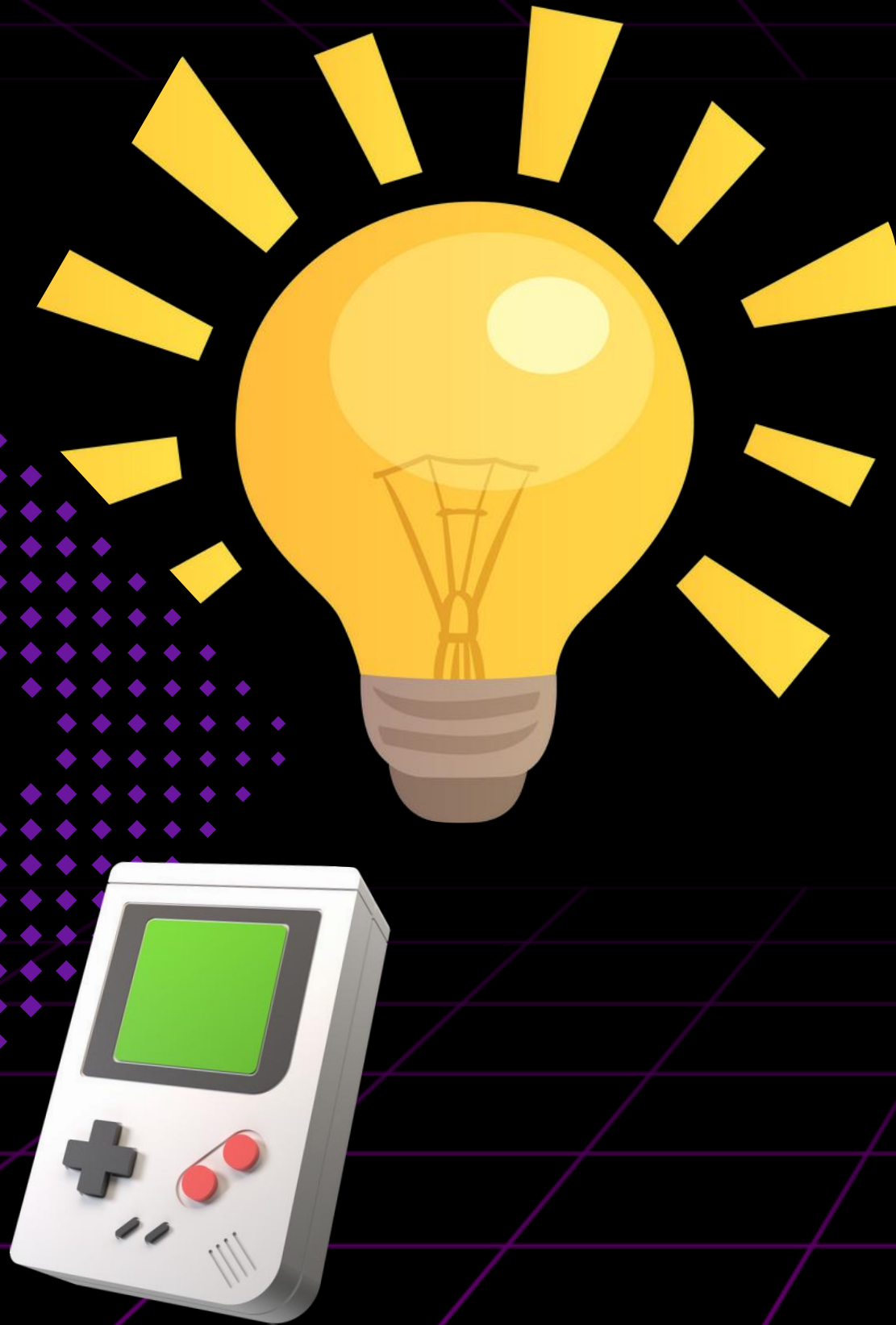# FUNCORE

Gaming Analytics Dashboard
(SQL + Power BI)

PROBLEM STATEMENT

- Online gaming platforms generate a large amount of user interaction and gameplay data, but this data often remains unstructured and underutilized.
- There was no system to analyze which games are most engaging or how much time users spend playing each game.
- It was difficult to identify high-performing users or games based on score patterns or session frequency.
- Tracking how user preferences vary by age or game category was not possible without structured analysis.
- There was no central dashboard or visual tool to summarize overall gameplay behavior, trends, or top performers.

OBJECTIVE

- Online gaming platforms generate a large amount of user interaction and gameplay data, but this data often remains unstructured and underutilized.
- There was no system to analyze which games are most engaging or how much time users spend playing each game.
- It was difficult to identify high-performing users or games based on score patterns or session frequency.
- Tracking how user preferences vary by age or game category was not possible without structured analysis.
- There was no central dashboard or visual tool to summarize overall gameplay behavior, trends, or top performers.

PROJECT OVERVIEW

- I wrote and executed over 25 complex SQL queries to extract gameplay patterns, performance metrics, and session-based trends.
- Cleaned, joined, and transformed data across multiple relational tables for meaningful analysis.
- Built a fully interactive and insightful Power BI dashboard with slicers, tooltips, page navigation, and category-based filtering.
- Applied advanced DAX measures to calculate KPIs like total play time, top users, game popularity, and score rankings.
- Delivered a visually rich report that reveals user behavior, top games, and deep gameplay insights in a structured and interactive format.

DATA COLLECTION & PREPARATION

- Synthetic data generated with realistic behaviors from 1000+ users.
- Game categories included: Classic, Puzzle, Word, Arcade, Endless, Multiplayer.
- Structured into 4 key tables: Users, Games, GameSession, UserLeaderBoard.
- Metrics included: scores, session durations, most played game, total time, etc.

TOOLS & TECHNOLOGIES USED

- MySQL Workbench
- Microsoft Power BI
- Power Query
- Microsoft Excel

POWER BI

MYSQL

XLS

ADVANCE TOPICS APPLIED

- Common Table Expressions (CTEs)
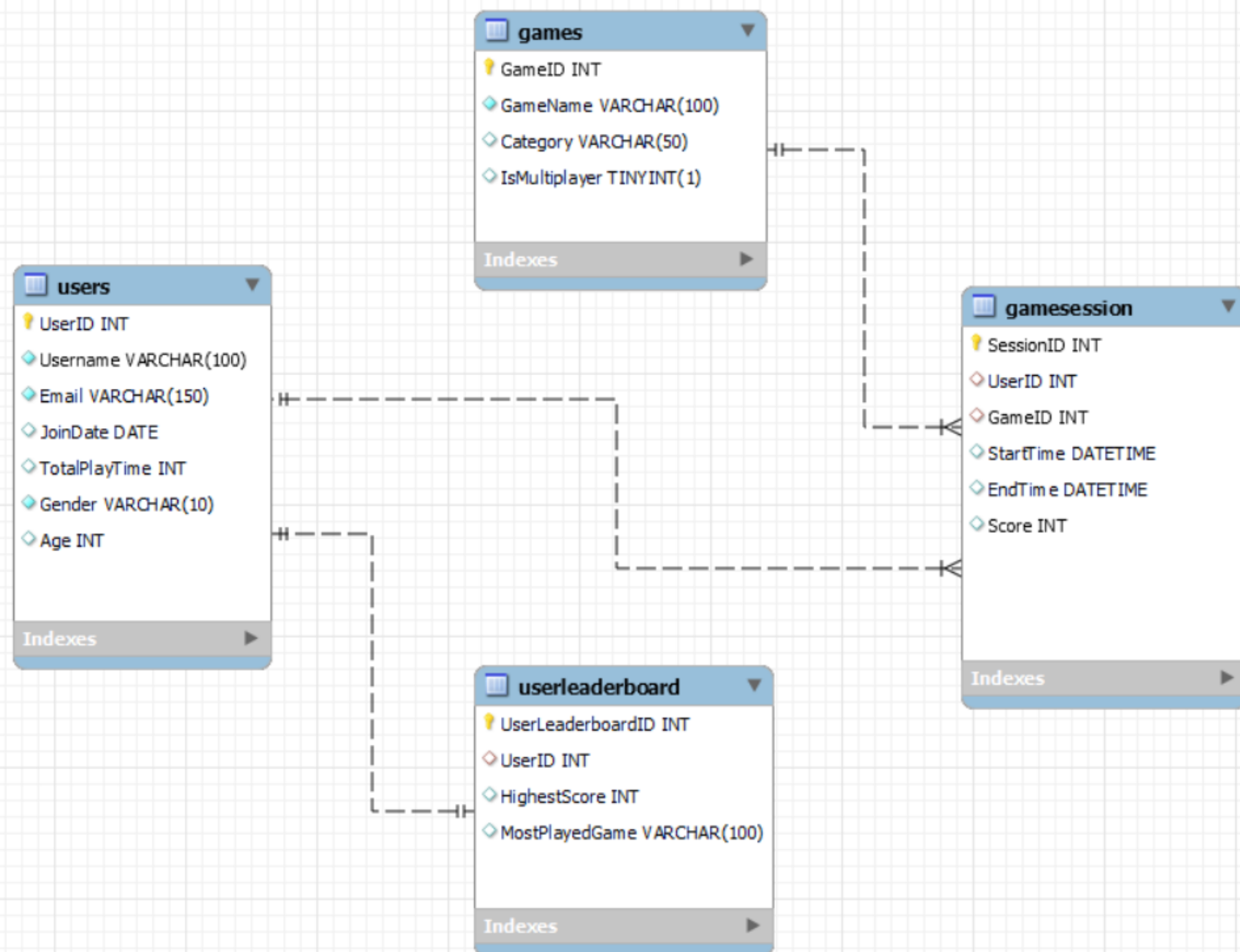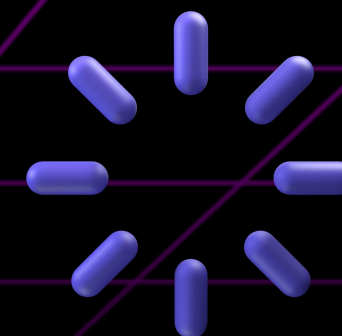- Window Functions
- Subqueries
- Date and Time Functions

- Multi-table Joins
- Data Segmentation and Filtering
- DAX Functions
- ToolTip Feature

SQL QUERY HIGHLIGHTS

- Top 3 games with longest average session duration.
- Power users (played >04 sessions and in top 10% highest score).
- Highest average scorer for each game.
- Users who improved their scores over time (using LAG).
- Retention: users played 2nd session within 2 days of first session

Note : Not all queries are included in this presentation.
Please visit the GitHub repository to view the complete set of 25+ SQL queries with logic and results.

Top 3 games with longest average session duration

```sql
WITH AvgDuration AS (
    SELECT
        g.GameName,
        AVG(TIMESTAMPDIFF(SECOND, StartTime, EndTime)) AS AvgSessionDuration
    FROM
        GameSession gs
    JOIN
        Games g ON gs.GameID = g.GameID
    GROUP BY
        g.GameName
)
SELECT
    *
FROM (
    SELECT
        *,
        ROW_NUMBER() OVER (ORDER BY AvgSessionDuration DESC) AS rnk
    FROM AvgDuration
) Ranked
```

OUTPUT

GameName	AvgSessionDuration	rnk
Crossword Puzzle	2129.8137	1
Sliding Puzzle	2065.5319	2
Flappy Bird	2056.3636	3

Power users (played >04 sessions and in top 10% highest score)

```sql
WITH SessionCount AS (
  SELECT UserID, COUNT(*) AS SessionCount
  FROM GameSession
  GROUP BY UserID
),
TopScorers AS (
  SELECT UserID, PERCENT_RANK() OVER (ORDER BY HighestScore DESC) AS ScoreRank
  FROM UserLeaderBoard
)
SELECT
  sc.UserID
FROM
  SessionCount sc
JOIN
  TopScorers ts ON sc.UserID = ts.UserID
WHERE
  sc.SessionCount > 4 AND ts.ScoreRank <= 0.10;
```

OUTPUT

UserID
547
461
537
916

Highest average scorer for each game

```sql
WITH AvgUserGameScore AS (
    SELECT
        GameID,
        UserID,
        AVG(Score) AS AvgScore
    FROM
        GameSession
    GROUP BY
        GameID, UserID
)
SELECT
    *
FROM (
    SELECT
        GameID, UserID, AvgScore,
        ROW_NUMBER() OVER (PARTITION BY GameID ORDER BY AvgScore DESC) AS rnk
    FROM AvgUserGameScore
) Ranked
WHERE rnk = 1;
```

OUTPUT

GameID	UserID	AvgScore	rnk
1	632	9945.0000	1
2	537	9959.0000	1
3	83	9935.0000	1
4	130	9789.0000	1

@funcore

Users who improved their scores over time (using LAG)

```sql
WITH ScoredSessions AS (
    SELECT
        UserID,
        StartTime,
        Score,
        LAG(Score) OVER (PARTITION BY UserID ORDER BY StartTime) AS PrevScore
    FROM
        GameSession
)
SELECT
    UserID,
    StartTime,
    Score,
    PrevScore
FROM ScoredSessions
WHERE PrevScore IS NOT NULL AND Score > PrevScore;
```

OUTPUT

UserID	StartTime	Score	PrevScore
2	2024-09-02 23:14:01	6674	1130
3	2024-10-01 08:57:03	1517	1050
3	2025-03-25 17:38:36	6494	1517
4	2024-10-26 07:57:06	5607	1469

Retention: users played 2nd session within 2 days of first session

```sql
WITH SessionTimes AS (
    SELECT
        UserID,
        StartTime,
        ROW_NUMBER() OVER (PARTITION BY UserID ORDER BY StartTime) AS SessionOrder
    FROM
        GameSession
)
SELECT
    st1.UserID,
    u.UserName
FROM
    SessionTimes st1
JOIN
    SessionTimes st2 ON st1.UserID = st2.UserID AND st2.SessionOrder = 2
JOIN
    Users u ON st1.UserID = u.UserID
WHERE
    st1.SessionOrder = 1
    AND DATEDIFF(st2.StartTime, st1.StartTime) = 2;
```

OUTPUT

UserID	UserName
115	rohanthakur35
202	amitthakur50
267	nishakumar87
323	vikasverma25

POWER BI REPORT

- Home Page: Central hub with navigation to all report sections
- User Performance: Top Users, Avg. sessions per user, Session count vs avg. score
- Gameplay Performance: Sessions by game, avg. score, top games, monthly trends
- Features: Slicers, tooltips, KPIs, clean layout, custom visuals for deep insights

@funcore

HOME   USERS   GAMEPLAY

FUNCORE

KEY INSIGHTS

- Stick Hero, Boggle, and Catch the Falling Stars emerged as the most played games across all users.
- The Classic game category received the highest overall engagement.
- Male users made up the majority of the player base, accounting for approximately 72.5%.
- A significant 70% of users fell within the 15–25 age group, indicating a primarily young audience.
- Adult males (ages 25–40) showed a strong preference for playing Boggle.
- Multiplayer games recorded the longest average session times, suggesting higher user retention during interactive gameplay.

CHALLENGES FACED

- Maintaining data consistency across relational tables.
- Writing efficient SQL queries for large datasets.
- Balancing dashboard clarity with complexity.

CONCLUSION

- Funcore's analytics dashboard offers deep insight into player behavior.
- SQL uncovered key patterns in game usage and user habits.
- Power BI turned raw gameplay data into visually compelling business insights.
- This project demonstrates expertise in SQL, dashboarding, and data storytelling.

THANK YOU

Endless Games, One Destination

@piyush_upadhyay