Ahmed Douaya

Task 1 - Data Collection and Processing

1.1.1 - Please write an SQL-script that allows to display the list of vehicle nations that have fought more than 10,000 battles as of the selected date, for example, 15.09.2018

```sql
SELECT vehicle_name[:4] AS nation, COUNT(*) AS battle_count
FROM player_battles
WHERE dt <= '15.09.2018'
GROUP BY vehicle_name[:4]
HAVING COUNT(*) > 10000;
```

1.1.2 - Please write an SQL script that allows you to get the information about the number of unique players who fought a certain number of battles by cohorts. The cohorts should be as follows:
• [0;10) battles
• [10;20) battles
• [20;50) battles
• [50;100) battles
• [100; +inf) battles

```sql
SELECT
  CASE WHEN battles < 10 THEN '[0;10)'
       WHEN battles BETWEEN 10 AND 20 THEN '[10;20)'
       WHEN battles BETWEEN 20 AND 50 THEN '[20;50)'
       WHEN battles BETWEEN 50 AND 100 THEN '[50;100)'
       ELSE '[100; +inf)'
  END AS cohort,
  COUNT(DISTINCT player_id) AS unique_player_count
FROM (
  SELECT DISTINCT player_id, COUNT(*) AS battles
  FROM player_battles
  GROUP BY player_id
) AS battles_per_player
GROUP BY cohort;
```

1.1.3 - Please write an SQL script that allows you to count the number of players which were active on both days: 14.09.2018 and 15.09.2018

```sql
SELECT COUNT(*) AS player_count
FROM (
  SELECT player_id
  FROM player_battles
  WHERE dt = '14.09.2018'
  INTERSECT
  SELECT player_id
  FROM player_battles
  WHERE dt = '15.09.2018'
) AS active_on_both_days;
```

Task 1.2

1.2.1 - The amount of damage done to the enemies and earned credits in the last player's won battle excluding developers

```sql
SELECT player_id, damage, credits, battle_start
FROM (
  SELECT player_id, damage, credits, battle_start, team_won_id
  FROM battle_statistics
  WHERE team_won_id = 1
  AND player_id NOT IN (SELECT dev_player_id FROM dev_player_id)
) AS won_battles
ORDER BY battle_start DESC
LIMIT 1;
```

1.2.2 - date and time of the first lost player's battle excluding developers

```sql
SELECT player_id, battle_start
FROM (
  SELECT player_id, battle_start, team_won_id
  FROM battle_statistics
  WHERE team_won_id = 0
  AND player_id NOT IN (SELECT dev_player_id FROM dev_player_id)
) AS lost_battles
ORDER BY battle_start ASC
LIMIT 1;
```

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Task 2 — Analysis Requirements Formalization

2.1 - Formulate 10 questions that you would ask the Producer to better understand the in-game activity that is being launched :

1) How many players have purchased the battle pass (BP) ?
2) How will the success of this BP be measured (e.g., specific KPIs)?
3) Are there any existing benchmarks or historical data for past BP seasons?
4) What is the player sentiment towards the BP features and rewards ?
5) Are players progressing through the chapters at a similar pace, or are they focusing on specific chapters ?
6) Are players purchasing Stages with the Improved Pass, or primarily relying on earning Points?
7) What are the most popular items purchased with tokens and points?
8) How many players are completing daily missions?
9) What is the average spending per player participating in the BP?
10) Have we observed any correlations between the timing of Battle pass events and changes in player activity, such as spikes during weekends or specific holidays?

2.2 - Suggest at least 10 metrics that you would suggest to the Producer to monitor the event Status :

1) BP purchases (overall and by type)
2) Player progression through BP tiers
3) Completion rate of specific BP challenges
4) Player sentiment and feedback about the BP
5) Average time spent playing per day during the BP season
6) Average daily Points earned per player
7) Chapter completion rates and progression distribution
8) Daily Mission completion rates
9) Conversion rate of free players to paying BP participants
10) Average spending per player participating in the BP

2.3 - Suggest ways and tools to complete the received request :

- Conduct A/B testing to compare different Battle Pass features or rewards
- Track specific BP-related actions like claiming rewards, activating Chapters, and completing missions
- Analyze conversion rates (free to paying, inactive to active players) throughout the Season
- Develop ML models to predict player behavior, obtain insightful clusters, and optimize BP features based on historical data
- Implement in-game surveys or feedback forms to collect direct insights from players regarding their experiences with the BP

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Task 3 — Analysis Report Preparation

See attached zipfile (contains ipynb files)
Or browse on :
https://github.com/AhmedDouaya/Wargaming-test