

Loyalty Points Assignment – ABC Gaming Company

1. Introduction

ABC is a real-money online gaming company providing multiplayer games like Ludo. Players can deposit money, play games, and withdraw winnings, while the platform charges a nominal service fee. To retain users, ABC rewards loyalty points based on their activity, including deposits, withdrawals, and games played. This report analyzes player activity data and implements loyalty points computation, bonus distribution, and fairness evaluation.

2. Data Sources and Preprocessing

Three datasets were used from Google Sheets:

- User Gameplay Data: Contains User ID, Games Played, and Datetime
- Deposit Data: Contains User ID, Deposit Amount, and Datetime
- Withdrawal Data: Contains User ID, Withdrawal Amount, and Datetime

Steps performed:

1. Loaded data from the 4th row onward using `get_all_values()`.
2. Renamed columns to lowercase and standardized them.
3. Converted 'Datetime' to datetime format with `pd.to_datetime(..., dayfirst=True)`.
4. Extracted Date and Time Slot (S1: 12am-12pm, S2: 12pm-12am).
5. Converted numeric columns (Games Played, Amount) to appropriate types.

3. Loyalty Point Calculation

The following formula was used to compute loyalty points for each player:

$$\text{Loyalty Points} = (0.01 \times \text{Deposit Amount}) + (0.005 \times \text{Withdrawal Amount}) + (0.001 \times \max(\#\text{Deposits} - \#\text{Withdrawals}, 0)) + (0.2 \times \text{Number of Games Played})$$

This formula rewards deposits, net deposit activity, withdrawals (mildly), and gameplay count.

4. Part A – Slot-Based and Monthly Analysis

Q1: Loyalty points were calculated for the following slots:

- 2nd October Slot S1
- 16th October Slot S2
- 18th October Slot S1

- 26th October Slot S2

Q2: Players were ranked for the month of October based on loyalty points, with games played used to break ties.

Q3: Average deposit amount was computed from all deposit records.

Q4: Average deposit amount per user in the month was calculated.

Q5: Average number of games played per user was computed.

5. Part B – Bonus Distribution Strategy

The company allocated Rs. 50,000 to be distributed to the top 50 loyal players.

Bonus distribution strategy used: Proportional to loyalty points earned among top 50 users.

This method ensures fairness by rewarding top contributors relative to their point share.

Each user's bonus = $(\text{user_points} / \text{total_top50_points}) * 50,000$

6. Part C – Fairness of Loyalty Point Formula

Pros:

- Rewards active players and depositors.
- Encourages gameplay.
- Includes transaction-based engagement.

Cons:

- Heavily favors high depositors.
- Rewards withdrawals, which could be exploited.
- Does not consider skill or win rate.
- Encourages repetitive transactions.

Suggested Improvements:

1. Cap deposits considered per day.
2. Use Net Deposit (Deposit - Withdrawal) instead of adding both.
3. Reward consistent daily/weekly activity.
4. Penalize exploitative behavior.
5. Incorporate win/loss ratio or retention duration.

7. Conclusion

This project implemented a complete loyalty point system, performed player-wise analysis, and suggested improvements for better fairness and robustness. The solution includes a Jupyter notebook and this written report as deliverables.