# Loyalty Program Analysis Report

## 1. Introduction

This report analyzes the effectiveness of a loyalty points system for an online gaming company. The goal is to assess player engagement, identify top performers, and recommend a fair and balanced bonus allocation strategy.

## 2. Data Summary and Preprocessing

The analysis was conducted using four key data sheets:  
- User Gameplay Data: Records gameplay activity per user.  
- Deposit Data: Tracks user deposits with timestamps.  
- Withdrawal Data: Tracks user withdrawals with timestamps.  
- Question Sheet: Provided specific requirements and tasks for analysis.

## 3. Calculations and Methodology

### 3.1 Loyalty Points Calculation

A formula was applied to calculate loyalty points based on deposits, withdrawals, and games played. The formula is as follows:  
  
Loyalty Points = (0.01 \* Deposit Amount) + (0.005 \* Withdrawal Amount) + (0.001 \* max(#Deposits - #Withdrawals, 0)) + (0.2 \* Number of Games Played)  
  
Loyalty points were calculated for each day and aggregated monthly.

### 3.2 October Leaderboard and Ranking

Loyalty points were summed for each player for all days in October. Players were ranked based on total loyalty points, with games played used as a tiebreaker. The top 50 players were selected for the leaderboard.

### 3.3 Bonus Allocation Strategy

A Rs 50,000 bonus pool was allocated among the top 50 players using the following weighted formula:  
  
Bonus = ((Player's Loyalty Points / Total Loyalty Points of Top 50) \* 0.8 + (Player's Games Played / Total Games Played of Top 50) \* 0.2) \* 50000  
  
This method balanced the reward between loyalty points (80%) and gameplay activity (20%).

## 4. Insights and Recommendations

### 4.1 Insights

1. Players with higher deposits generally scored higher in loyalty points, but including gameplay ensured frequent engagement was also rewarded.  
2. The balanced bonus allocation promoted both spending and engagement without heavily favoring one metric.

### 4.2 Recommendations

1. Consistency Bonus: Implement a monthly streak bonus for consecutive activity.  
2. Diverse Engagement: Reward players who participate in multiple activities like deposits, withdrawals, and gameplay.  
3. Time-Based Multipliers: Offer higher points for gameplay during off-peak hours or events to incentivize balanced engagement.  
4. Referral-Based Rewards: Encourage community growth by rewarding players for referrals.

## 5. Conclusion

The current loyalty formula is fair but can be enhanced to balance spending, gameplay, and consistency. Implementing additional multipliers, bonuses, and tiered rewards can make the loyalty system more inclusive and motivating for a broader range of players.