

# Vindiata Consulting Private Limited Assignment

Github Code Link: [GitHub - MANAS8991/calculation.github.io](https://github.com/MANAS8991/calculation)

Deployed App Link: <https://calculationappio-subkiplvp4cyhkylmr9zdk.streamlit.app/>

## Part A: Understanding Player Loyalty

### Breaking Down the Points System

The loyalty formula evaluates four key activities on the platform:

1. **For Deposits:**  $1\% \times \text{amount deposited}$
2. **For Withdrawals:**  $0.5\% \times \text{amount withdrawn}$
3. **For Net deposit vs withdrawals:**  $0.1\% \times \max(\# \text{Deposits} - \# \text{Withdrawals}, 0)$
4. **Games played:**  $0.2 \times \# \text{Games Played}$

### Example Calculation:

For the specific slot analysis you asked about (2nd Oct S1, 16th Oct S2, 18th Oct S1, and 26th Oct S2), we'd need the raw player data to calculate exact numbers. However, here's a practical example of how it works:

If a player in one slot:

- Deposited ₹1000 (10 points)
- Withdrew ₹500 (2.5 points)
- Made 3 deposits and 1 withdrawal (0.002 points)
- Played 20 games (4 points)

Their total would be:

$$10 + 2.5 + 0.002 + 4 = 16.502 \text{ points.}$$

### Monthly Average Calculations:

- **Average deposit:**  $\text{Total deposits} \div \text{Number of deposits}$
- **Monthly deposit per user:**  $\text{Total deposits} \div \text{Unique users}$
- **Games per user:**  $\text{Total games played} \div \text{Active users}$

## Part B: Bonus Distribution Plan (₹50,000₹50,000₹50,000 Pool)

To ensure fairness and recognize both loyalty points and gameplay activity, a tier-based hybrid approach is recommended:

### 1. Tier 1 (Top 10):

- 40% of the pool = ₹20,000.
- Distribution: 70% based on loyalty points, 30% based on games played.

### 2. Tier 2 (Rank 11-30):

- 35% of the pool = ₹17,500.
- Distribution: 60% based on loyalty points, 40% based on games played.

### 3. Tier 3 (Rank 31-50):

- 25% of the pool = ₹12,500.
- Equal distribution among players in the tier.

**This approach ensures:**

- Top performers are rewarded significantly.
- Active players are recognized fairly.
- All players in the top 50 receive meaningful rewards.

## Part C: Formula Evaluation & Suggested Improvements

**Strengths of the Current Formula:**

- **Balanced approach:** Considers monetary transactions and gameplay.
- **Simplicity:** Easy to calculate and understand.
- **Engagement-focused:** Encourages both deposits and active gaming.

**Suggested Enhancements:**

To make the system more robust and engaging:

### 1: Add Consistency Bonuses:

- Daily login streak multiplier (e.g.,  $\times 1.5$  for consecutive daily activity).
- Weekend activity bonus (e.g., additional  $0.1\times$  points for playing during weekends).

- Monthly streak bonuses

## 2: Incorporate Skill-Based Components:

- Win rate multiplier (e.g.,  $\times 1.2$  for players with a high win percentage).
- Tournament participation bonus (e.g., extra points for competing in special events).

## 3: Introduce Dynamic Weighting:

Adjust base points using skill and consistency multipliers. For example:

- **Bronze Tier (0-50 games):** Base multiplier.
- **Silver Tier (51-100 games):**  $1.2 \times$  base points.
- **Gold Tier (101+ games):**  $1.5 \times$  base points.

## Example Formula with Enhancements:

Final Points = Base Points  $\times$  (1+Consistency Multiplier) $\times$ Skill Multiplier.

## Benefits of Enhanced Formula:

- Rewards **consistent platform usage**.
- Recognizes **skillful and committed gameplay**.
- Creates a balanced system, rewarding both monetary and gameplay contributions while ensuring long-term engagement.

**Manas Kumar Giri**

**9178572597**

**girimanaskumar1998@gmail.com**