Lineup Generator Documentation

Code: Jupyter Code

Overview

The system generates balanced squads with varying power levels based on league divisions, game modes, and player characteristics, creating engaging and varied match scenarios.

League Structure

The simulation features a hierarchical league structure with six tiers:

1. **Bronze League**
2. **Silver League**
3. **Gold League**
4. **Platinum League**
5. **Master League**
6. **HPL**

Player Classification System

Player Tiers

Players are categorized into four distinct tiers that represent their inherent skill level:

- **C Tier**
- **B Tier**
- **A Tier**
- **S Tier**

Player Rarity

Players are further classified by rarity, which impacts their power level:

- **Common**: (Power range: 10-25)
- **Reliable**: (Power range: 25-35)
- **Brilliant**: (Power range: 40-55)
- **Worldclass**: (Power range: 60-75)

Team Composition Rules

Each generated squad follows these composition rules:

1. Every team consists of 11 players:
    - 6 batsmen
    - 5 bowlers
2. Player distribution by rarity depends on league and division:
    - Lower leagues feature more common and reliable players
    - Higher leagues feature more brilliant and worldclass players
3. Composition of Players in Each League

League	Division	Common	Reliable	Brilliant	Worldclass	Total Players
Bronze	3	9	2	0	0	11
	2	6	5	0	0	11
	1	4	7	0	0	11
Silver	3	0	11	0	0	11
	2	0	9	2	0	11
	1	0	7	4	0	11
Gold	3	0	4	7	0	11
	2	0	3	6	2	11
	1	0	0	7	4	11
Platinum	3	0	0	5	6	11
	2	0	0	4	7	11
	1	0	0	3	8	11
Master	3	0	0	2	9	11
	2	0	0	0	11	11
	1	0	0	0	11	11

HPL	1	0	0	0	11	11

Game Modes

The simulation features four distinct game modes that affect player selection and match difficulty:

1. **Easy Mode**:
    - Features lower targets (55-85 runs)
    - Favors C and B tier players (easier opposition)
    - Batsmen receive 60% of total team power
2. **Survival Mode**:
    - Features moderate targets (75-105 runs)
    - Strongly favors S tier players (difficult opposition)
    - Bowlers receive 70% of total team power (defensive focus)
3. **Tough Mode**:
    - Features high targets (100-140 runs)
    - Favors A and S tier players (skilled opposition)
    - Bowlers receive 60% of total team power
4. **Highscoring Mode**:
    - Features very high targets (110-170 runs)
    - Favors C and B tier players (weaker bowling)
    - Batsmen receive 60% of total team power (offensive focus)

Squad Generation Process

1. League and Division Power Determination

Each league/division combination has predetermined:

- **Base Team Power**: Raw numerical strength (increases with higher leagues)
- **Team OVR (Overall Rating)**: General team quality on a 0-100 scale

For example:

- Bronze Division 3: Base Power 3,900, OVR 20
- Platinum Division 1: Base Power 54,450, OVR 77

2. Player Selection Process

1. **Role-Based Selection**:
    - The system maintains separate pools for batsmen and bowlers
    - 6 batsmen and 5 bowlers are selected for each squad
2. **Tier-Weighted Selection**:
    - Players are selected using weighted random sampling
    - The game mode influences which tiers are prioritized
    - For example, Survival mode heavily favors S-tier players
    - Highscoring mode favors C-tier players
3. **Rarity Assignment**:
    - Each player is assigned a rarity level based on:
        - Their tier
        - Available rarity slots in the league/division
    - The system tries to match optimal rarities for each tier:
        - C-tier: Common or Reliable
        - B-tier: Reliable or Brilliant
        - A-tier: Brilliant or Worldclass
        - S-tier: Worldclass

3. Power Calculation and Distribution

1. **Mode-Specific Power Ratio**:
    - The system applies a power ratio to the base team power
    - Easy mode: 0.8-0.9x (weaker than base)
    - Survival mode: 1.4-1.8x (much stronger than base)
    - Tough mode: 1.0-1.3x (slightly stronger than base)
    - Highscoring mode: 0.9-1.1x (close to base)
2. **Role Power Distribution**:
    - Total power is split between batsmen and bowlers
    - Distribution varies based on game mode:
        - Survival mode: 30% to batsmen, 70% to bowlers
        - Easy mode : 70% to batsmen, 30% to bowlers
        - Highscoring modes: 60% to batsmen, 40% to bowlers
        - Tough mode: 40% to batsmen, 60% to bowlers
3. **Individual Player Power**:
    - Each player gets a base power within their rarity range
    - Tier modifiers are applied:

        - C-tier: +0 bonus
        - B-tier: +3 bonus
        - A-tier: +6 bonus
        - S-tier: +10 bonus
    - Power is then normalized so players' power values sum to 100 within their role

4. Target Score Determination

Based on the selected game mode, the system sets a target score:

- Easy: 55-85 runs
- Survival: 75-105 runs
- Tough: 100-140 runs
- Highscoring: 110-170 runs

Match Narratives

For enhanced engagement, the system can generate close match scenarios (60% probability) with specific narratives:

1. **Comeback Narrative**: A team overcomes a difficult start to achieve victory
2. **Tug of War Narrative**: The match features constant lead changes
3. **Last Ball Thriller**: The outcome is determined on the final delivery
4. **Overconfidence Trap Narrative**: A team in a comfortable position loses focus and the match

The system avoids using the same narrative in consecutive close matches to ensure variety.

Output Information

For each generated match, the system provides:

1. **Match Configuration**:
    - League and division
    - Game mode
    - Target score
    - Close match status and narrative (if applicable)
2. **Team Statistics**:
    - Base team power
    - Power ratio applied
    - Total team power after adjustments
    - Role-specific power distribution

    - Team overall rating (OVR)
3. **Player Information**:

    - Complete roster of batsmen and bowlers
    - Each player's tier, rarity, and normalized power value