**Financial Metrics Analysis and Ranking of Binance Accounts**

**Introduction**

This report presents the methodology, findings, and insights from the analysis of historical trade data from various Binance accounts over a 90-day period. The objective was to calculate financial metrics for each account, rank them based on performance, and provide a list of the top 20 accounts.

**Methodology**

**Data Exploration and Cleaning**

1. **Data Loading and Inspection:**
   * The dataset was loaded using pandas.
   * Inspections were carried out to understand the structure and contents of the data.
   * Missing values were identified and handled by removing rows with missing data to ensure the quality and consistency of the dataset.

**Feature Engineering**

1. **Metrics Calculation:**
   * **ROI (Return on Investment):** Calculated as the ratio of final value to initial investment.
   * **PnL (Profit and Loss):** Summed the realizedProfit for each account.
   * **Sharpe Ratio:** Calculated using the formula (Rp−Rf)σp\frac{(R\_p - R\_f)}{\sigma\_p}σp​(Rp​−Rf​)​, where RpR\_pRp​ is the average return, RfR\_fRf​ is the risk-free rate (assumed to be 0), and σp\sigma\_pσp​ is the standard deviation of returns.
   * **MDD (Maximum Drawdown):** Determined the largest drop from peak to trough in the cumulative returns.
   * **Win Rate:** Percentage of profitable positions.
   * **Win Positions:** Count of profitable positions.
   * **Total Positions:** Count of all positions.
2. **Trade Classification:**
   * Trades were classified into categories such as long\_open, long\_close, etc., using the side and positionSide columns.

**Ranking Algorithm**

1. **Feature Importance and Scoring System:**
   * Determined the importance of each metric and created a scoring system with weighted scores.
   * Metrics were weighted equally for simplicity, but weights can be adjusted based on specific criteria.
2. **Ranking:**
   * Developed an algorithm to rank accounts based on their weighted scores.
   * The top 20 accounts were identified based on their overall scores.

**Findings**

**Key Metrics**

* **ROI:** Accounts showed a wide range of ROIs, indicating varied performance.
* **PnL:** Summed profits and losses varied significantly, reflecting different trading strategies.
* **Sharpe Ratio:** Highlighted the risk-adjusted returns, with some accounts exhibiting higher stability.
* **MDD:** Demonstrated the risk exposure, with some accounts experiencing significant drawdowns.
* **Win Rate:** Revealed the proportion of profitable trades, with top accounts maintaining higher win rates.
* **Win Positions:** Indicated the count of profitable trades, correlating with overall success.
* **Total Positions:** Showed the trading activity levels, providing context to other metrics.

**Top 20 Accounts**

The top 20 accounts were ranked based on their scores, considering all the calculated metrics. This ranking provides insights into the best-performing accounts over the 90-day period.

**Assumptions**

* The risk-free rate for Sharpe Ratio calculation was assumed to be zero.
* Missing values were removed, assuming their impact on the overall analysis would be minimal.
* Equal weights were assigned to each metric for the initial scoring system.

**Conclusion**

This analysis provided a comprehensive evaluation of the trading performance of various Binance accounts. The calculated metrics and the ranking algorithm enabled the identification of the top-performing accounts, offering valuable insights for further decision-making and strategy optimization.