Trading Bot Documentation for Herenya API Integration

Table of Contents

1. System Overview

The trading bot is an automated system that executes trades based on TradingView signals. It receives webhook notifications from TradingView, processes them according to predefined strategies, and executes trades through the Herenya trading platform.

Key features:

- RSI-based trading strategy with pyramiding support
- Webhook integration with TradingView
- Position management with stop-loss and take-profit
- Real-time monitoring and notifications
- Web dashboard for tracking performance
- Docker-based deployment

2. Core Components

1. **TradingView Integration**
   - TradingView runs strategy scripts (RSI-based)
   - Generates alerts with webhook notifications
2. **API Server (FastAPI)**
   - Receives and validates webhooks
   - Routes requests to appropriate handlers
   - Provides endpoints for dashboard and monitoring
3. **Trading Core**
   - Strategy implementation (RSI strategy)
   - Position management
   - Trade execution
4. **Broker Interface**
   - Abstract interface for broker integrations
   - Herenya-specific implementation
   - Mock broker for testing
5. **Database (PostgreSQL)**
   - Stores configurations, positions, trades
   - Tracks webhook logs

6. **Notification System**
    - Telegram notifications for trades and alerts
7. **Dashboard**
    - Real-time visualization of positions and performance

3. Bot Configuration

Bots are configured through the database with the following hierarchy:

1. **Trading Bot**
    - Represents a bot instance
    - Linked to a broker account (Herenya)
2. **Instruments**
    - Trading instruments (e.g., SA40)
    - Contains symbol, exchange, and instrument details
3. **Strategy Configs**
    - RSI parameters (length, overbought/oversold levels)
    - Position sizing and pyramiding settings
    - Risk management (stop-loss, take-profit)
    - Webhook key for identification

Example Configuration


```
{
  "bot_name": "SA40_RSI_Bot",
  "platform": "TradingView",
  "broker_account": "Herenya",
  "is_active": true,
  "strategy_type": "RSI",
  "timeframe": "4h",
  "rsi_length": 6,
  "rsi_overbought": 80,
  "rsi_oversold": 25,
  "base_position_size": 1,
  "max_positions": 3,
  "allow_pyramiding": true,
  "exit_on_opposite_signal": true,
  "webhook_key": "sa40_rsi_50849a3c"
}
```

4. Webhook Integration

Webhook Structure

TradingView sends webhooks with the following JSON structure:

```
{
  "action": "RSI_LONG_ENTRY",
  "price": 53210.5,
  "time": "2023-01-01T12:34:56Z"
}
```

Supported Actions

- `RSI_LONG_ENTRY`: Signal to enter a long position
- `RSI_SHORT_ENTRY`: Signal to enter a short position
- `RSI_CLOSE_LONG`: Signal to close long positions
- `RSI_CLOSE_SHORT`: Signal to close short positions

Webhook Security

1. **Webhook Authentication**
    - Each webhook has a unique key (e.g., `sa40_rsi_50849a3c`)
    - Signature validation
    - Rate limiting to prevent abuse

5. Trade Execution Process

The trade execution process follows these steps:

1. **Webhook Reception**
    - API server receives webhook from TradingView
    - Validates webhook key and signature
    - Logs the webhook request
2. **Strategy Processing**
    - Looks up the strategy configuration for the webhook key
    - Checks current positions for the instrument
    - Determines action based on strategy rules
3. **Position Management**
    - For new positions: Creates position in database
    - For pyramiding: Adds to existing position
    - For closing: Calculates P&L and records trade history
4. **Broker Execution**
    - Connects to Herenya API
    - Places order (market order)
    - Confirms execution

Position Actions

The bot supports various position actions:

- **New Position**: Opens a new position when none exists
- **Add to Position**: Pyramiding strategy adds to existing positions
- **Close Position**: Closes on exit signal or opposite signal
- **Position Reversal**: Closes current position and opens in opposite direction

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Herenya Integration Details

Broker Interface

The system connects to Herenya's trading platform through a broker interface. This implementation:

1. Connects to Herenya API
2. Authenticates with API key and secret
3. Places orders (market/limit)
4. Retrieves position information
5. Gets account balance and market data

API Authentication

Authentication uses HMAC signatures with:

- API Key from Herenya
- API Secret for signing requests
- Timestamp for preventing replay attacks

Order Execution

The system places orders with these parameters:

- Symbol (e.g., SA40)
- Order type (MARKET by default)
- Side (BUY/SELL)
- Quantity
- Price (for limit orders)

Order Limits

- 4H charts so weekly/monthly execution
- Minimum lot size: 1 contract
- Maximum of 12 contracts
- Frequency: 4 – 10 trades per month

Error Handling

The broker implementation includes:

- Retry logic for temporary failures – limit set for max retries (Default is 3 – easily configurable)
- Error classification for different failure types
- Proper error reporting and notifications

Configuration

To configure Herenya we set these variables in a config file.

```
HERENYA_API_KEY=your_api_key_here
HERENYA_API_SECRET=your_api_secret_here
HERENYA_BASE_URL=herenya_base_url
HERENYA_ACCOUNT_ID=your_account_id
HERENYA_TIMEOUT=30
HERENYA_RETRY_ATTEMPTS=3
```