

# STEP-BY-STEP FLOW

## Step 1: Load and Clean Transaction Data

- **Tasks:**
  - Connect to the MongoDB database.
  - Retrieve relevant transaction records (buy/sell events, timestamps, wallet addresses, gas fees, amounts, etc.).
  - Clean the data by removing any invalid or incomplete entries, and standardize field names/formats for analysis.

## Step 2: Identify Sniper/Bot Wallets

- **Detection Criteria (a wallet is labeled "sniper" if it meets all the following criteria):**
  - Uses **high gas fees**  $> 0.000002$  ETH) to prioritize transaction confirmation.
  - Makes **large trades** ( transaction value  $> 100K$  tokens).
  - **Sells quickly** after buying (within 20 minutes).
  - **Trades frequently** within a short time window.
  - Executes a **buy transaction within seconds** of a token launch or **within the next 100 blocks** after a token launch.

## Step 3: Calculate Profit & Loss for Identified Wallets

What We're Doing:

- Calculating **profit/loss** for crypto traders who pay **1.01% tax** on both buy and sell transactions.

Step-by-Step Process:

### 1. Data Collection

- Get all buy/sell transactions for each trader
- Sort by time (oldest first)

### 2. FIFO Matching

- **FIFO = First In, First Out** (like a queue)

- Match each **SELL** against the **oldest unmatched BUY**
- This is standard accounting practice

### 3. PnL Calculation

- For each matched pair:

$$\text{PnL} = \text{Amount} \times (\text{Sell Price} - \text{Buy Price})$$

### 4. Tax Adjustment

- User pays 1.01% tax on **both** buy and sell
- Convert tax from tokens to USD: Tax in USD = Tax tokens  $\times$  Price
- Subtract total taxes from gross PnL

Example:

- Buy: 1,214,388 TIAN at \$0.00020305 (Tax: \$2.47)
- Sell: 1,202,244 TIAN at \$0.00022597 (Tax: \$2.72)
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- Gross PnL =  $1,202,244 \times (\$0.00022597 - \$0.00020305) = \$27.56$

$$\text{Net PnL} = \$27.56 - \$2.47 - \$2.72 = \$22.37$$

Key Points:

- Uses **before-tax amounts** for matching (actual tokens owned/sold)
- Taxes are calculated in **USD** and subtracted from profit
- Any **unsold tokens** remain as inventory
- **Real profit** = Gross profit - All taxes paid

This gives traders their **actual take-home profit** after all fees.

## Step 4: Display Transactions and Metrics in an Interactive Table

- **Recommended Tool:** Streamlit
  - Use a scrollable, searchable table to display wallet addresses, trade details, P&L, and sniper flag.