**Wallet Risk Scoring - Analysis Report**

**🔍 Objective**

Given a list of wallet addresses, the task is to calculate a **risk score between 0 and 1000** for each wallet by analyzing their **on-chain transaction behavior**, particularly their interactions with DeFi lending protocols such as **Compound V2 or V3**.

🧬 **1.** **Data Collection Method**

* We used the **Covalent API** to fetch **historical transaction data** for each wallet address.
* The API endpoint used was:

[**https://api.covalenthq.com/v1/1/address/{wallet}/transactions\_v2/**](https://api.covalenthq.com/v1/1/address/%7Bwallet%7D/transactions_v2/)

For each wallet, we pulled transaction history and filtered the **relevant protocol interactions**, especially:

* **Borrow transactions**
* **Repayments**
* **Liquidations**
* We also handled API limits and connection failures using:
* Request throttling
* Exception handling and skipping on errors

🧠 **2. Feature Selection Rationale**

We extracted the following transaction-based features for scoring:

|  |  |
| --- | --- |
| **Feature** | **Reason for Inclusion** |
| num\_borrows | High borrow activity can indicate higher risk |
| num\_repays | Indicates responsible repayment behavior |
| num\_liquidations | Strong signal of poor financial management |
| txn\_count | Overall activity helps evaluate usage and engagement |

⚙️ **3. Scoring Method**

We used a **rule-based scoring logic**, assigning higher scores for:

* Responsible behavior (e.g., more repayments)
* Low borrow frequency
* Zero or minimal liquidations

Sample Scoring Formula:

score **=** (num\_repays **-** num\_borrows **-** 2 **\*** num\_liquidations **+** 1) **\*** 100

score **=** max(0, min(1000, score))

The final score is clamped between 0 and 1000 to avoid negative or excessive values.

This logic rewards good on-chain behavior and penalizes risky users.

✅ **4. Justification of Risk Indicators**

* Borrow-heavy wallets without repayments are considered risky.
* Liquidated users are flagged with stronger penalties.
* Active but balanced users are rewarded with better scores.
* This system is extendable and can be enhanced with:
  + On-chain credit reputation
  + Asset value
  + Collateral ratios, etc.

📦 **Output**

The final output is a .csv file with two columns:

|  |  |
| --- | --- |
| **wallet\_id** | **score** |
| 0xabc... | 720 |