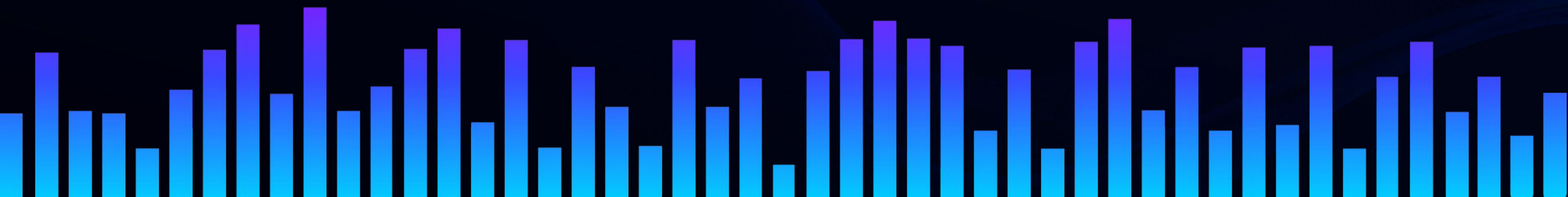
equalizer

Equalizer Academy
Lecture 3

February 2022



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Introduction

- Equalizer - The first dedicated platform that equalizes the decentralized markets
- Equalizer platform
  - Equalizer flash loans
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- Participant introduction

What we learned so far?

- Smart contracts
- Software development and Solidity
- What are Flash Loans
- Why they are risk- and collateral-free
- Example flash loans (block explorers)
- Example flash loan Smart Contract

What we’ll learn today?

- Loans, Flash loans and collaterals
- Flash loan use cases
  - Arbitrage
  - Collateral Swap
  - Liquidations and Self-liquidations

Collateralized loans (banks)

- Collateral refers to an asset that a lender accepts as security for a loan
- Visit a bank and ask for a loan
- For large loans, the bank will ask for a collateral (house, car, etc.)
- If you repay the loan, the collateral is returned
- If you don’t repay the loan, the collateral is kept by the bank
- Bank have information about your income, so loans are usually undercollateralized

Collateralized loans (DeFi)

- Collateral refers to an asset that a lender accepts as security for a loan
- Present a collateral to the DeFi (e.g., WETH)
- Borrow another asset (e.g., USDT)
- As long as the value of the collateral > loan, you keep the loan
- If the value of the collateral < loan, your position is liquidated (DeFi protocol terminates the loan and keeps the collateral)
- When you repay the loan, you receive the collateral back
- DeFi doesn’t have information about your income, so loans are usually overcollateralized; collateral are other tokens (not other assets)

Issues with DeFi loans

- Overcollateralized - value of the collateral is always greater than the borrowed asset
- Volatility risk - positions are liquidated in cases the value of the collateral falls below the borrowed value
- Loan and transaction fees

Flash loans are

- non-collateralized
- almost free (low fees)
- risk-free

type of DeFi loans.

Types of exchanges

- “Centralised” or classical exchanges
  - Traditional exchanges (stocks, derivatives, currencies, other)
  - Cryptocurrency exchanges (cryptocurrencies, NFTs, tokens)
  - Ask/bid price and order books
  - Run in on-site or cloud environments

- Decentralised exchanges
  - Cryptocurrency exchanges (cryptocurrencies, NFTs, tokens)
  - Price is based on the volume ratios
  - Smart contracts that run on blockchains

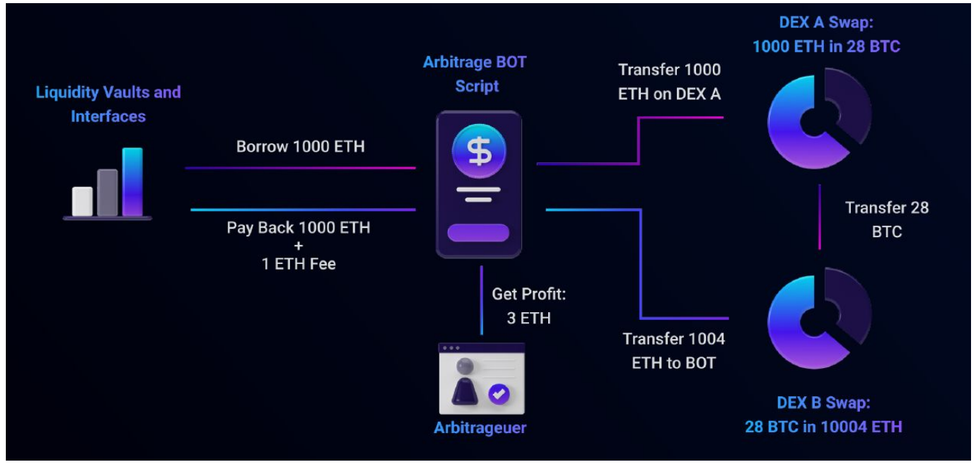
- Price feeds
  - Yahoo Finance
  - Coingecko

Trading and investing

- Classical exchanges
  - Trading accounts (buy/sell)
  - Investment accounts
  - Margin accounts (long/short, leveraged trading)
  - Arbitrage
- Decentralised exchanges
  - Trading (buy/sell)
  - Investments
  - Arbitrage
  - Flash loans
- Bots: automated strategy execution

Flash loan use cases - Arbitrage

- Definition: Arbitrage is the simultaneous purchase and sale of the same asset in different markets in order to profit from tiny differences in the asset's listed price.
- Example: ETH on exchange A costs $3000 and on exchange B $3100
  - Buy 1 ETH on exchange A for $3000
  - Sell 1 ETH on exchange B for $3100
  - Take a profit of $100 (minus the trading fee)
- Can I buy 100 ETH instead of 1 ETH and make $10 000?
- Yes, if
  - you have $300 000 at your disposal
  - you borrow a flash loan



Flash loan use cases - Arbitrage with flash loans

- How to maximise the arbitrage profit with minimal investment?
- Borrow a flash loan, e.g., 300 000 USDT
- Buy 100 ETH at a price 3000 USDT on exchange A
  - (you have 100 ETH, 0 USDT)
- Sell 100 ETH at a price 3100 USDT on exchange B
  - (you have 0 ETH, 310 000 USDT)
- Return 300 000 USDT, pay 0.05% borrowing fee (155 USDT)
  - (you have 0 ETH, 9845 USDT)
- Pay for the gas fee (~ few 100 USD)
- We pay only for the gas fee, borrowing fee is paid from the profit

Arbitrage strategies

- Same currency different DEX-es
  - On DEX A buy ETH for price P1
  - On DEX B sell ETH for price P2
  - Profit if P2 > P1 - fee
- Different currency same DEX
  - On DEX A buy ETH/USDT for price P1 (USDT -> ETH)
  - On DEX A buy <token>/ETH for price P2 (ETH -> <token>)
  - On DEX A sell <token>/USDT for price P3 (<token> -> USDT)
- Different currency different DEX
  - On DEX A buy ETH/USDT for price P1 (USDT -> ETH)
  - On DEX B buy <token>/ETH for price P2 (ETH -> <token>)
  - On DEX C sell <token>/USDT for price P3 (<token> -> USDT)
  - P1*P2*P3 > 1 (ETH/USDT * <token>/ETH * USDT/<token>)

Challenges

- Finding profitable opportunities
- Computing the optimal gas price
  - If the gas price is too high, the transaction might not be profitable
  - If the gas price is too low, we risk that someone outruns us
- Executing transactions fast (before the next block)
- Using advanced tools, like flashbot (to skip the mining pools)
- Price slippage (low-volume tokens)
- The more people know about your strategy, less efficient it becomes

Collateral swap

- Lending in DeFi is over-collateralised
- Large price fluctuations can lead to position liquidation (losing of your collateral)
- Example: Lend WETH by providing a collateral in USDT
- To release the collateral or swap it, you must return the borrowed asset
  - Borrow a flash loan (WETH)
  - Use that loan to release your collateral (return WETH, receive the collateral USDT)
  - Swap (USDT) it with another asset (WBTC)
  - Provide WBTC as a collateral
  - Lend WETH
  - Repay the flash loan (WETH)

Liquidation and self-liquidation

- Prevent automatic liquidation using flash loans
- Example: I borrowed WETH and provided DAI as a collateral
  - Borrow a flash loan (WETH)
  - Return the borrowed money funds (WETH)
  - Receive the collateral (DAI)
  - Swap DAI for WETH
  - Return the WETH

What’s next?

- We learned
  - Loans, Flash loans, collateral
  - Flash loan use cases
  - How to deploy and interact with a smart contract
- Homework
  - Deploy your first smart contract
  - Check out the Solidity development tutorials
  - Exchange your knowledge with others
- Next lecture
  - how to compile and deploy Smart Contracts using REMIX IDE
  - how to interact with smart contracts via Etherscan
  - how to borrow and return a Flash Loan

DeFi Flash Loans made easy

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