

Ether(ETH)

- **Ether** having the **ETH** code and the Greek uppercase Xi character (Ξ) is the cryptocurrency used on the Ethereum Platform;
- It is used to **pay for transaction** fees and computational services on the Ethereum network. It's the crypto-fuel for the Ethereum platform.
- ETH is traded on every exchange;
- Ether is the incentive ensuring that **developers write quality applications** (wasteful code costs more), and that the **network remains healthy** (people are compensated for their contributed resources).
- Mistakenly, this currency is also referred to as Ethereum.
- **Wei** is the smallest Ether denomination, like cents to Dollars or pennies to Pounds. **1ETH = 10^{18} weis**

Gas

- **Gas** measures how much work our code does
- Any transaction that modifies the blockchain in any way costs gas. Any basic operation or data storage costs gas.
- The person that modifies the blockchain pays for the gas.
- **gasPrice**: amount of wei the transaction sender wants to pay per unit gas to get the transaction mined (processed)
- **startGas/gasLimit**: units of gas this transaction can consume. This avoids DoS attacks by setting the maximum no. of computation steps of code execution. It's hard to estimate in advance how much gas a transaction will consume
- Any transaction has these 2 parameters attached: **gasPrice & gasLimit**
- An **OPCODE** is a basic operation executed by the EVM such as addition, multiplication etc
- There is a **fixed gas value** for every OPCODE. **1 byte costs 5 gas.**
- The gas from all transactions in a block will be received by the miner that validates the block;

Gas

Example:

- Multiplication operation (MUL): 5 gas
- Addition operation (ADD): 3 gas
- Equality comparison (EQ): 3 gas

Total gas: 11

gasLimit is 10000

gasPrice is 50Gwei (50,000,000,000 wei)

Transaction fee: $50,000,000,000 * 11 = 550,000,000,000$ wei