Ether (ETH) Ξ

- 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, pennies to Pounds or Satoshi to Bitcoin. 1ETH = 10 to the power of 18 wei (1 ETH = 10 ^ 18 wei)

Gas

- **Gas** measures how much work a transaction's code does;
- **Any transaction that modifies the blockchain in any way costs gas.** Any basic operation or data storage costs gas;
- The user that generates the transaction pays for the gas;
- **gasPrice** is the amount of wei the transaction sender wants to pay per unit of gas to get the transaction mined (processed). gasPrice is set by the user;
- An **OPCODE** is a basic operation executed by the EVM such as addition (+), multiplication (*), division (/), etc;
- The gas from all the transactions in a block will be received by the miner that validates the block;
- The higher the gasPrice, the faster the transaction will be mined;

Gas

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

Total gas: 11

gasLimit = 21,000

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

Transaction fee: 50,000,000,000 * 11 = 50,000,000,000 wei = 55 Gwei = 0.000000055 ETH

Gas Limit

- For any transaction there are 2 variables: **gasPrice and gasLimit**
- gasLimit (startGas) is the maximum gas the transaction can consume. This avoids DoS attacks by setting the maximum no. of computation steps of code execution.
- Gas from all transactions in a block will be received by the miner that validates the block;
- Ethereum has a block gas limit rather than a block size;