

Ethereum Accounts

1. Externally Owned Account (EOA)

- Controlled by a private key and identified by a unique address;
- It has no associated code and someone can generate and send a transaction if he/she possesses the private key;
- Used sending/receiving ETH and for interacting with smart contracts (deployment, calling functions etc);

2. Contract account

- Controlled by the contract code
- It's an autonomous agent and its code execution is triggered by receiving a transaction or a message (call) from another contract or EOA. Has control of its own Ether balance and state variables;
- Can hold an Ether balance like an EOA. There must be a payable function defined;
- Doesn't have a public or a private key;

Ethereum Accounts

An Ethereum Account has:

1. **Nonce** - a sequential number tied to every transaction that represents the number of transactions the sender account has made on the network. It's a mechanism used to ensure that the same transaction isn't submitted twice.

2. **Ether balance in wei**

3. **Account address**

4. **Account private & public key** (just for EOA)

5. **Code** (just for the contract account). This is the **immutable EVM bytecode**

6. **Storage** (empty by default, just for the contract account)

Account state contains: nonce, balance, storage root and code hash (Keccak-256 hash of the EVM account code).

Ethereum Address

- An EOA address is derived from the last 20 bytes (160 bits) of the public key that are Keccak-256 hashed. It's represented in a hexadecimal format, which is often indicated explicitly by appending 0x to the address;
- The address for an Ethereum Contract is deterministically computed from the address of its creator (sender) and how many transactions the creator has sent (nonce).
- There is a **lower-case** address version and **partial upper-case** version that also contains a **checksum**.