Smart contracts are used to build interesting applications on the Ethereum network:  
Smart contract: An account controlled by code authored by me (the developer).

|  |  |
| --- | --- |
| Field | Description |
| Balance | Amount ether in account |
| Storage | Data stored for application we’re building relevant for the contract |
| Code | Raw machine level code for the co tract |

External account: Our account on Metamask. These accounts are decoupled from an individual network

Contract source code can be deployed to contract instances on a specific network.

Solidity:

Written in .sol files

Strongly typed:

How solidity works:

Contract definition 🡪 Solidity compiler 🡪 This gives us an ABI (Application Binary Interface) and byte code- ready for deployment

**External acc. To create contract transaction contains the following:**

**Nonce**: The number of times a sender sent a transaction

When “**to**” field is left empty, instead of sending money to a particular address, we’re creating a transaction

**data:** compiled bytecode of the contract

**v, r, s** properties are derived from sender’s private address.

**More on running functions:**

Whenever you make any changes on the blockchain, each and every transaction needs to be submitted, approved and mined.

There are 2 ways in which functions that belong to our contracts are invoked:

1. **Calling a function**: Contract’s data is unmodified, it returns data, runs instantly and is free
2. **Sending a transaction to a function:** Can modify contract’s data. Time to execute, costs ETH and returns transaction hash

NB:

Transaction times are made to look instantaneous on test networks which are usually local. Where in the real world transactions take TIME

Wei vs Ether:

Wei is a unit of measurement for ether

1 Ether = 1quintillion wei

What is gas?