

Ecclesiastes (Eccl) 12:13

Now all has been heard;
here is the conclusion of the matter :

**Have reverence for God, and obey his commands,
because this is all that man was created for.**

**Fear God and keep his commandments,
for this is the whole duty of man.**



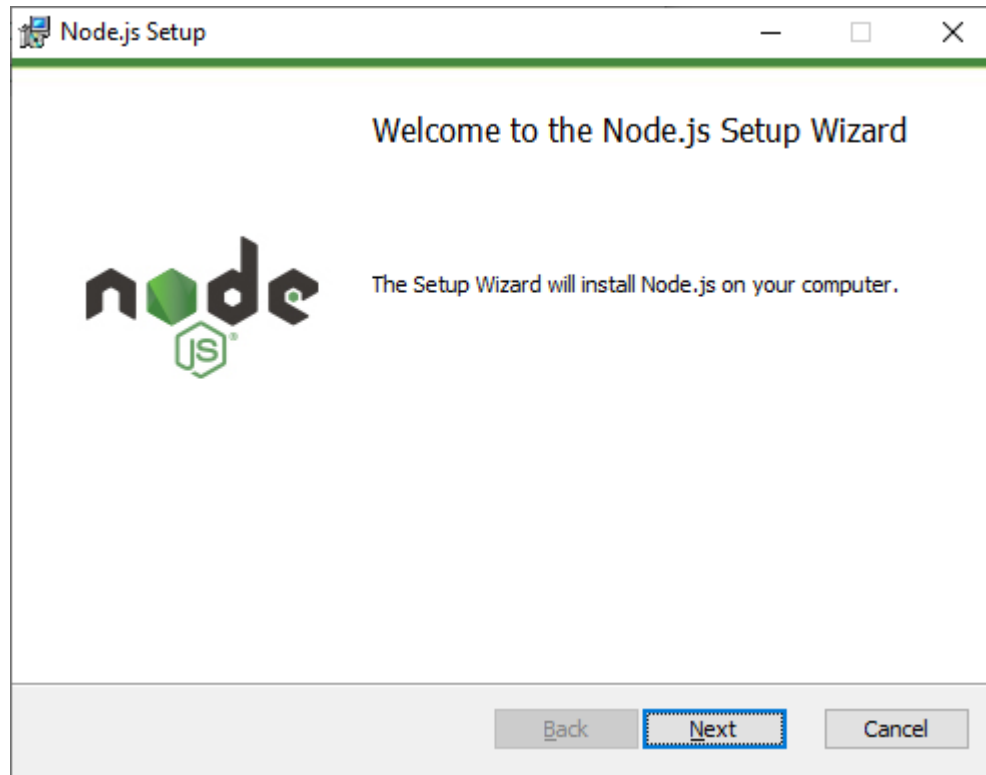
Smart Contract

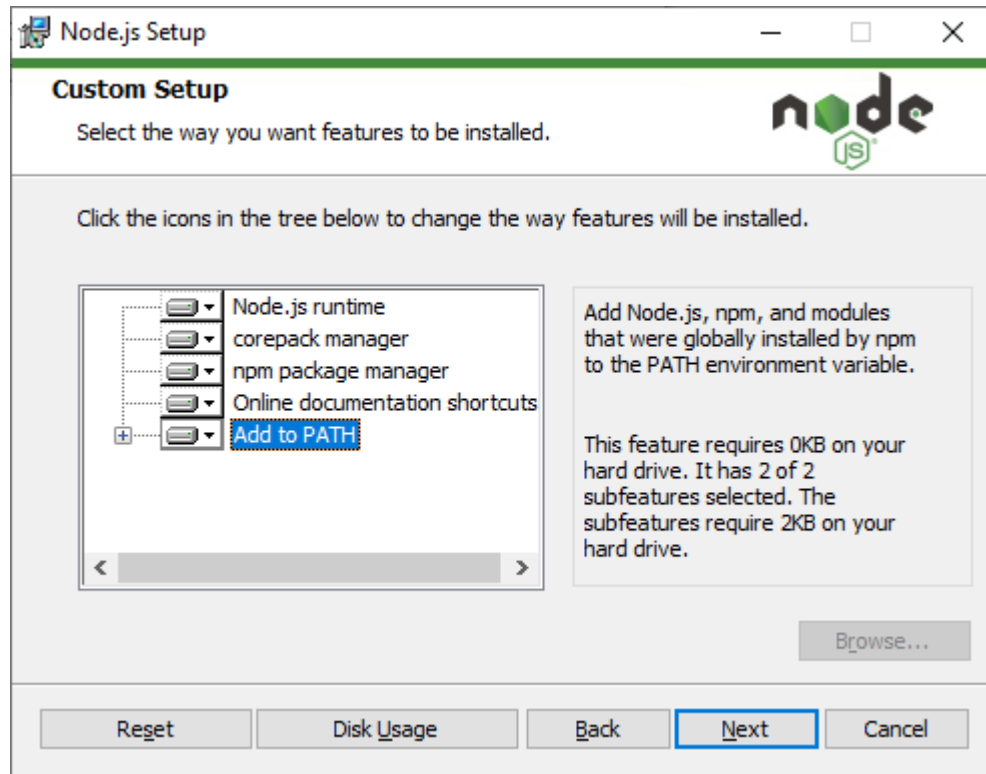
Smart Contract

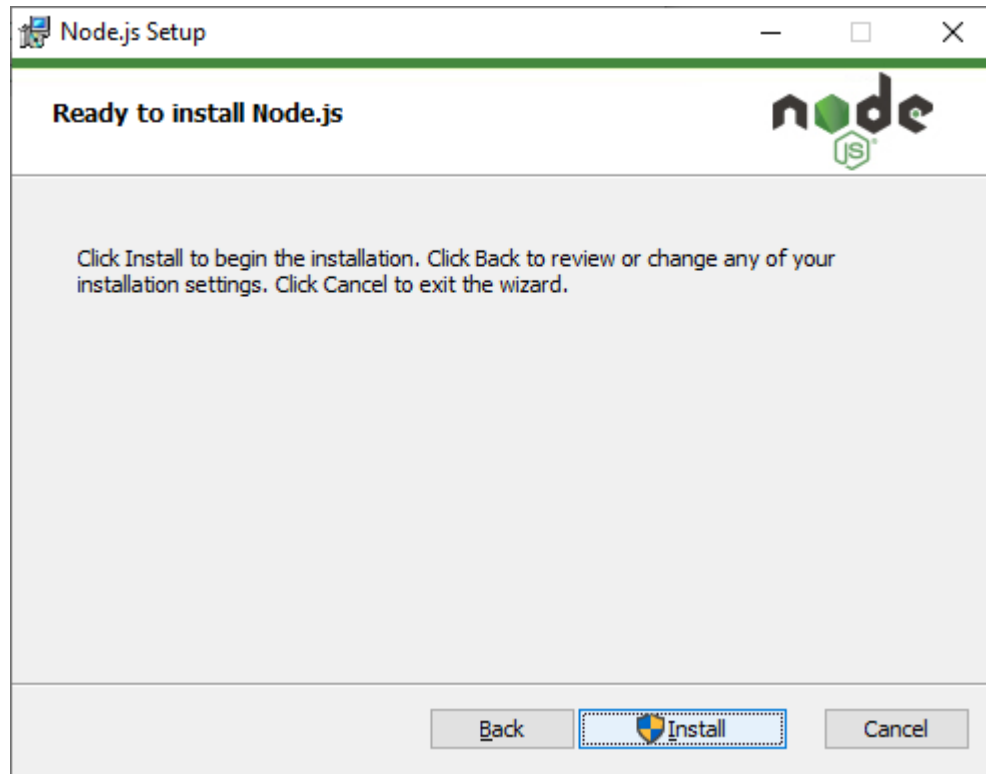
- Blockchain Platform
 - Ganache
 - geth
 - Remix
- Wallet
 - Metamask

	Java Web Dev	Ethereum Smart Contract
Language	Java	Solidity
Framework	Spring	Truffle
Dev Env	Tomcat, Weblogic, ...	Ganache, geth, ...
Operation Env	Centralized - Datacenter Tomcat, Weblogic, ... RDBMS, NOSQL, ...	Decentralized - Distributed ledger Public share

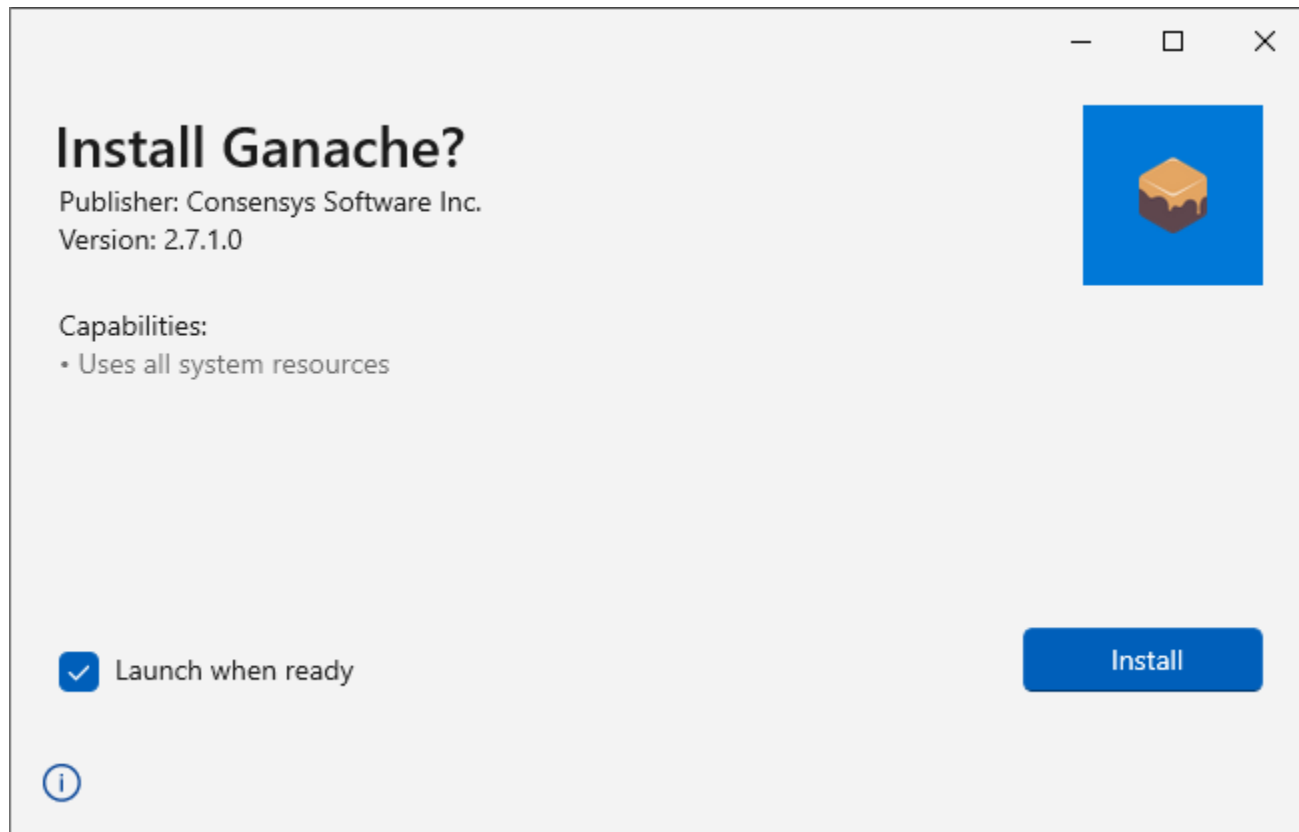
Install Node







Install Ganache



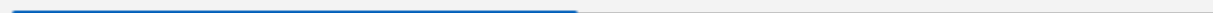
Install Ganache?

Publisher: Consensys Software Inc.
Version: 2.7.1.0

Capabilities:

- Uses all system resources

Installing 47%...



☒ Launch when ready

Cancel





SUPPORT GANACHE

Ganache includes Google Analytics tracking to help us better understand how you use it during your normal development practices. You can opt-out of this tracking by selecting the option below.

By enabling this feature, you provide the Truffle team with valuable metrics, allowing us to better analyze usage patterns and add new features and bug fixes faster.

Thanks for your help, and happy coding!

– The Truffle Team

WHAT WE TRACK

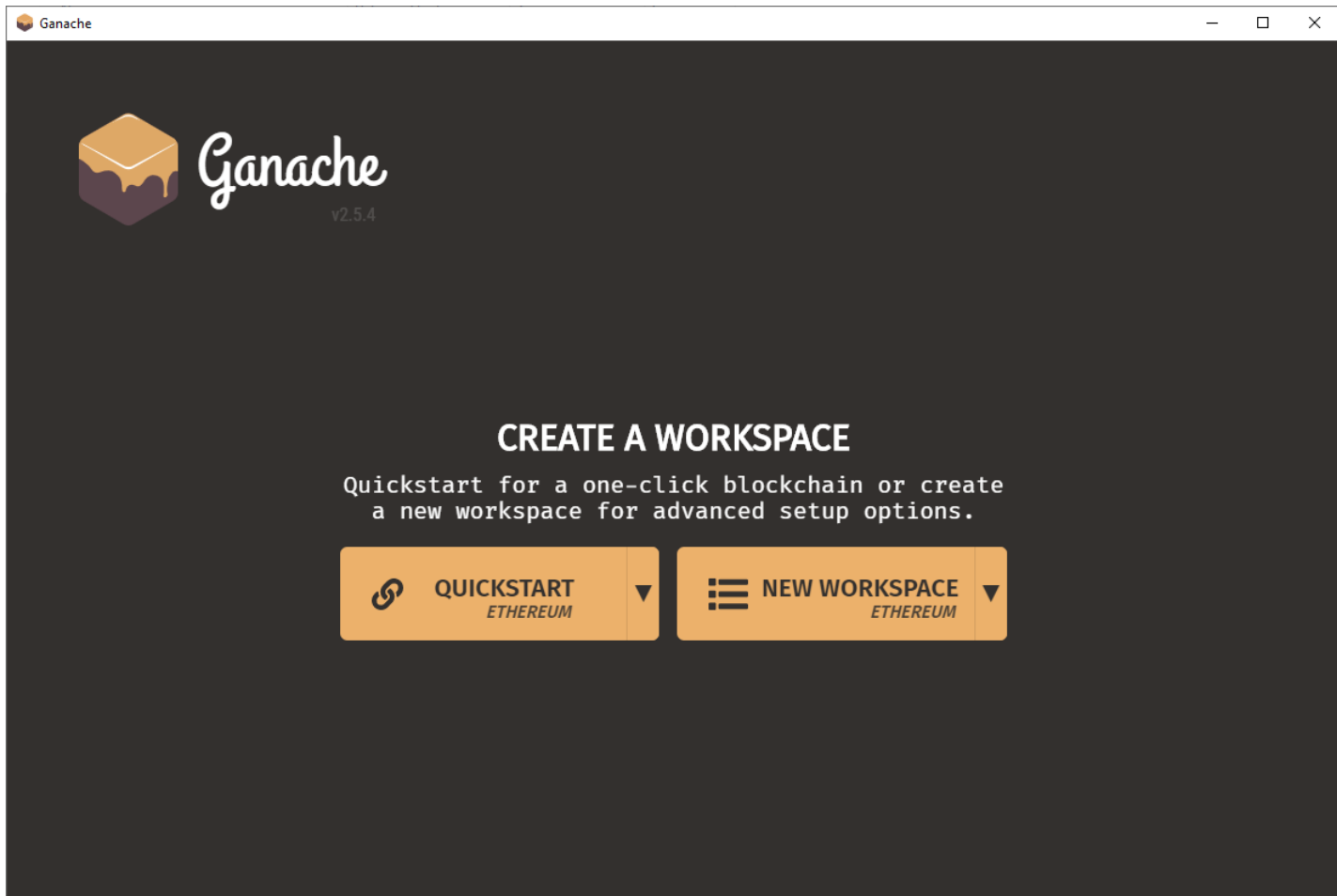
- A unique UUID generated upon first use
- Window width and height
- Ganache version
- Exception messages (without paths)
- Screens viewed during use

We do not collect addresses or private keys.



Analytics enabled. Thanks!

CONTINUE



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Ganache

ACCOUNTS

BLOCKS

TRANSACTIONS

CONTRACTS

EVENTS

LOGS

SEARCH FOR BLOCK NUMBERS OR TX HASHES

CURRENT BLOCK
0

GAS PRICE
20000000000

GAS LIMIT
6721975

HARDFORK
MUIRGLACIER

NETWORK ID
5777

RPC SERVER
HTTP://127.0.0.1:7545

MINING STATUS
AUTOMINING

WORKSPACE
QUICKSTART

SAVE

SWITCH

MNEMONIC

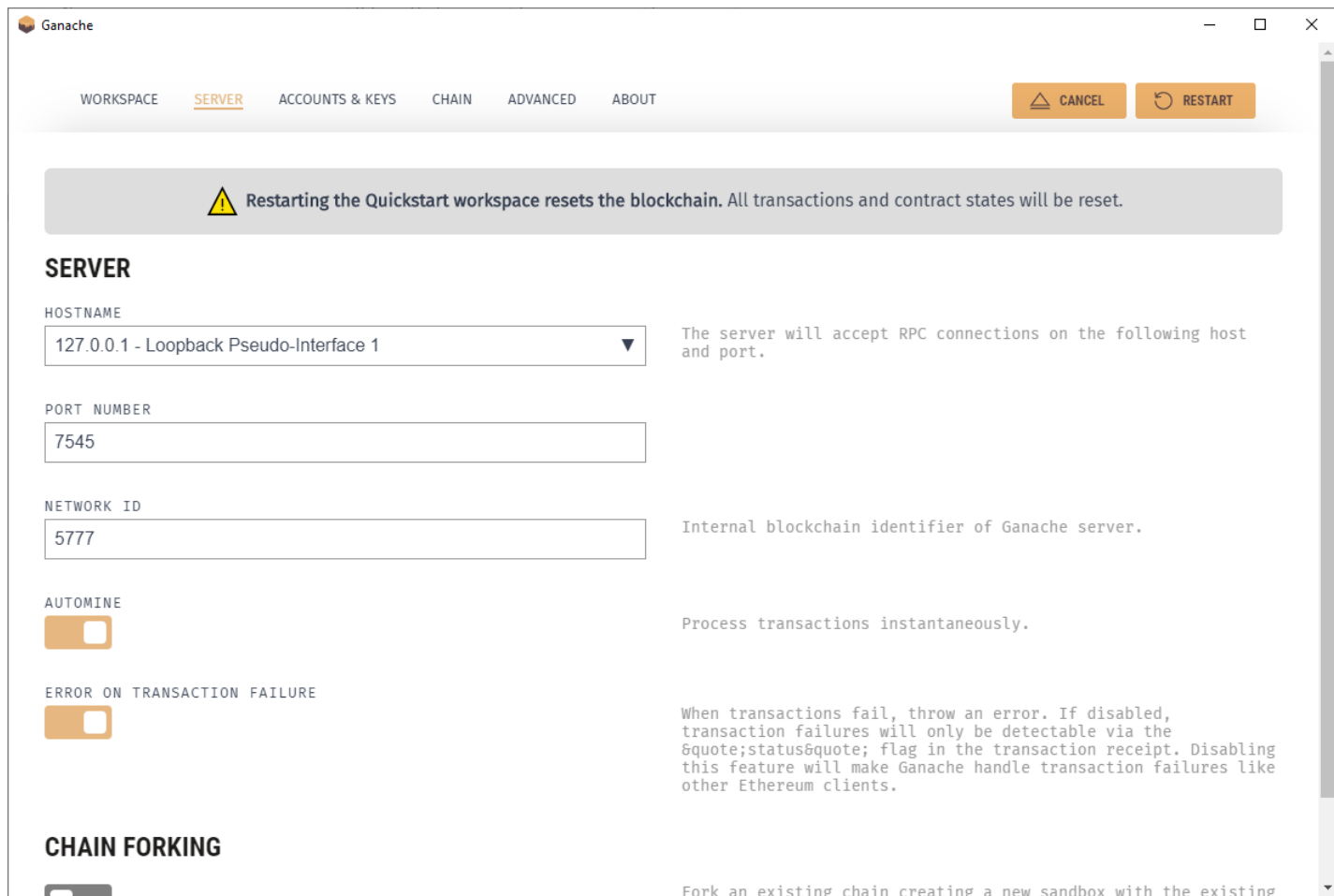
mix fox hill fine quick loyal exact brisk design can summer diary

HD PATH

m/44'/60'/0'/0/account_index

ADDRESS	BALANCE	TX COUNT	INDEX	
0x19C0f9273B163250Ee9d43E5a3A142E56D4a0000	100.00 ETH	0	0	
ADDRESS	BALANCE	TX COUNT	INDEX	
0x909be16682A3D088D5c1E262Ac0669E63cfe43f9	100.00 ETH	0	1	
ADDRESS	BALANCE	TX COUNT	INDEX	
0xEA8Cf300d9dEFBF09303f1d608CbF30F161E01AD	100.00 ETH	0	2	
ADDRESS	BALANCE	TX COUNT	INDEX	
0xc4f472B8F92c1175770B06d745ef9449f5eF7d63	100.00 ETH	0	3	
ADDRESS	BALANCE	TX COUNT	INDEX	
0xeA8200FC765354aa7646fBF3C252bAab76c62a9d	100.00 ETH	0	4	
ADDRESS	BALANCE	TX COUNT	INDEX	
0x5B1d8Ab1BeA91446A5c832EF98270130f758EC3e	100.00 ETH	0	5	
ADDRESS	BALANCE	TX COUNT	INDEX	
0x5355bA545FeBD244EB0901cBBb4b56F612030272	100.00 ETH	0	6	

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Hello.sol

```
// SPDX-License-Identifier: MIT
// solcjs --bin --abi Hello.sol
pragma solidity ^0.8.0;

contract Hello {
    string public greeting;

    constructor(string memory initialGreeting) {
        greeting = initialGreeting;
    }

    function getGreeting() public view returns (string memory) {
        return greeting;
    }

    function setGreeting(string memory newGreeting) public {
        greeting = newGreeting;
    }
}
```

```
c:\...> mkdir lab
```

```
c:\...> cd lab
```

```
c:\...> npm init
```

```
c:\...> npm install web3
```

```
c:\...> npm list web3
```

```
c:\...> npm install -g solc
```

```
c:\...> npm list
```

```
c:\...> solcjs --version
```

```
c:\...> solcjs --bin --abi Hello.sol
```

```
c:\...> node
```

```
> bytecode = '0x' + fs.readFileSync('Hello_sol_Hello.bin').toString()
> abi = JSON.parse(fs.readFileSync('Hello_sol_Hello.abi').toString())
> const Web3 = require('web3')
> const web3 = new Web3("http://127.0.0.1:7545")
> helloContract = new web3.eth.Contract(abi)
> fromAddr = "0x0295F280cabd6AeC119F409EFfD3dd58BD3Cc75C"

> helloContract.deploy({data:bytecode, arguments: [initialGreeting],})
.send({from:fromAddr, gas:1500000, gasPrice:web3.utils.toWei('0.00003', 'ether')})
.then((newContractInstance) =>
    {helloContract.options.address=newContractInstance.options.address});

> helloContract.methods
> helloContract.methods.getGreeting().call().then(console.log)

> helloContract.methods.setGreeting("dkkim ...")
.send({from:'0x909be16682A3D088D5c1E262Ac0669E63cfe43f9'})
.then((f) => console.log(f))

> helloContract.options
> helloContract.options.address
```


Errors ?

- Uncaught TypeError: Web3 is not a constructor
- Uncaught Error: Invalid number of parameters for "undefined"
- Uncaught Error: Returned error: VM Exception while processing transaction: invalid opcode at Object.ErrorResponse
(C:\...\node_modules\web3-core-helpers\lib\errors.js:28:19)

```
c:\...> npm install web3@1.10.3  
c:\...> npm install -g solc@0.8.0
```