Blockchain based apps testing

Liudas Jankauskas

Google Search I'm Feeling Lucky

Google offered in: lietuvių

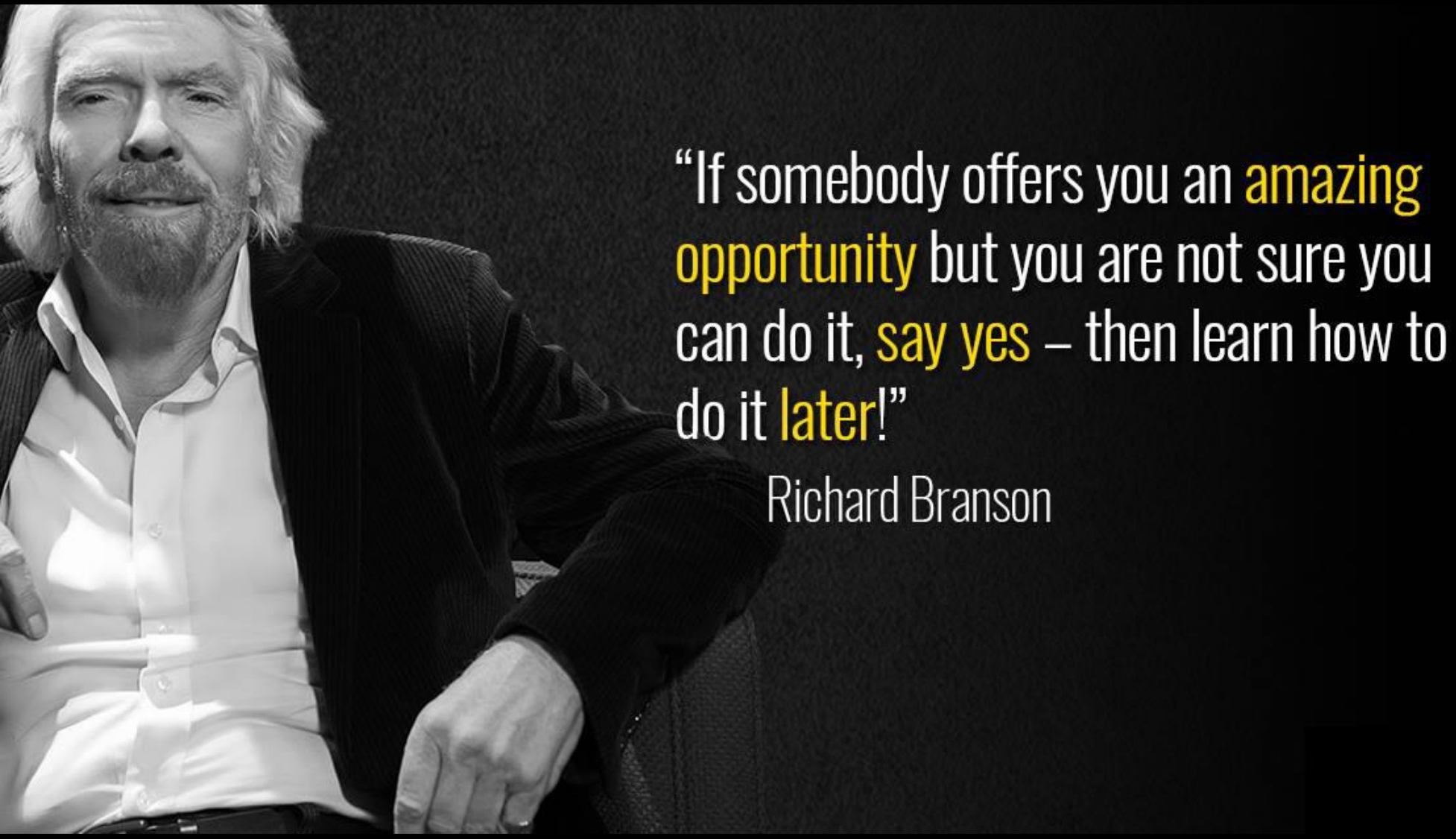
New developer!

monetha

Liudas Jankauskas

QA Engineer with 9 years of experiences testing high load and big data web-based applications and services.

Liudas is a professional QA engineer with a deep understanding of the testing process, techniques, and approaches. He has knowledge of how to ensure correctness, consistency, and completeness of data in the whole data flow pipeline from storage to a user-facing interface. Liudas, has tested high load systems with more than 1 mln request per sec. Main working stack: Performance testing (Load, Capacity, Stress), Integration and system testing including automation in CI environment, Security/penetration testing, big data testing.


“If somebody offers you an amazing opportunity but you are not sure you can do it, say yes – then learn how to do it later!”
Richard Branson

Blockchain

Blockchain

From Wikipedia, the free encyclopedia

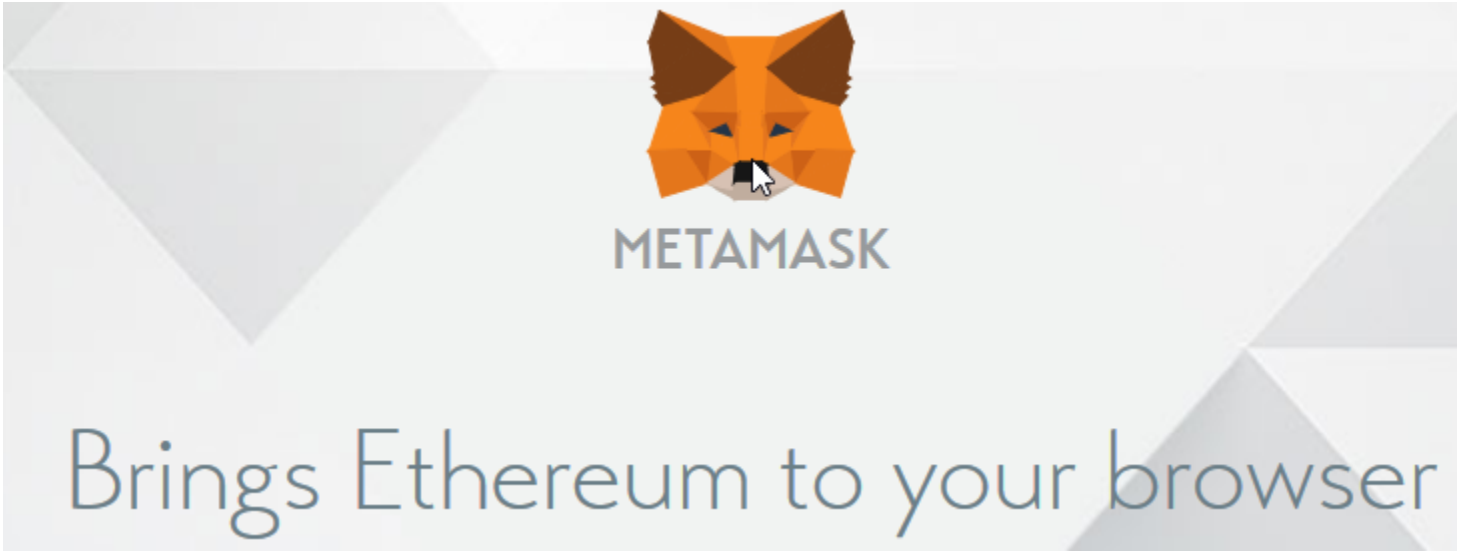
For other uses, see Block chain (disambiguation).

A **blockchain**,[1][2][3] originally **block chain**,[4][5] is a continuously growing list of records, called *blocks*, which are linked and secured using cryptography.[1][6] Each block typically contains a cryptographic hash of the previous block,[6] a timestamp and transaction data.[7] By design, a blockchain is inherently resistant to modification of the data. It is "an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way".[8] For use as a distributed ledger, a blockchain is typically managed by a peer-to-peer network collectively adhering to a protocol for inter-node communication and validating new blocks. Once recorded, the data in any given block cannot be altered retroactively without the alteration of all subsequent blocks, which requires collusion of the network majority.

Blockchains are secure by design and exemplify a distributed computing system with high Byzantine fault tolerance. Decentralized consensus has therefore been achieved with a blockchain.[9] This makes blockchains potentially suitable for the recording of events, medical records,[10][11] and other records management activities, such as identity management,[12][13][14] transaction processing, documenting provenance, food traceability[15] or voting.[16]

Blockchain was invented by Satoshi Nakamoto in 2008 for use in the cryptocurrency bitcoin, as its public transaction ledger.[1] The invention of the blockchain for bitcoin made it the first digital currency to solve the double-spending problem without the need of a trusted authority or central server. The bitcoin design has been the inspiration for other applications.[1][3]

Tools

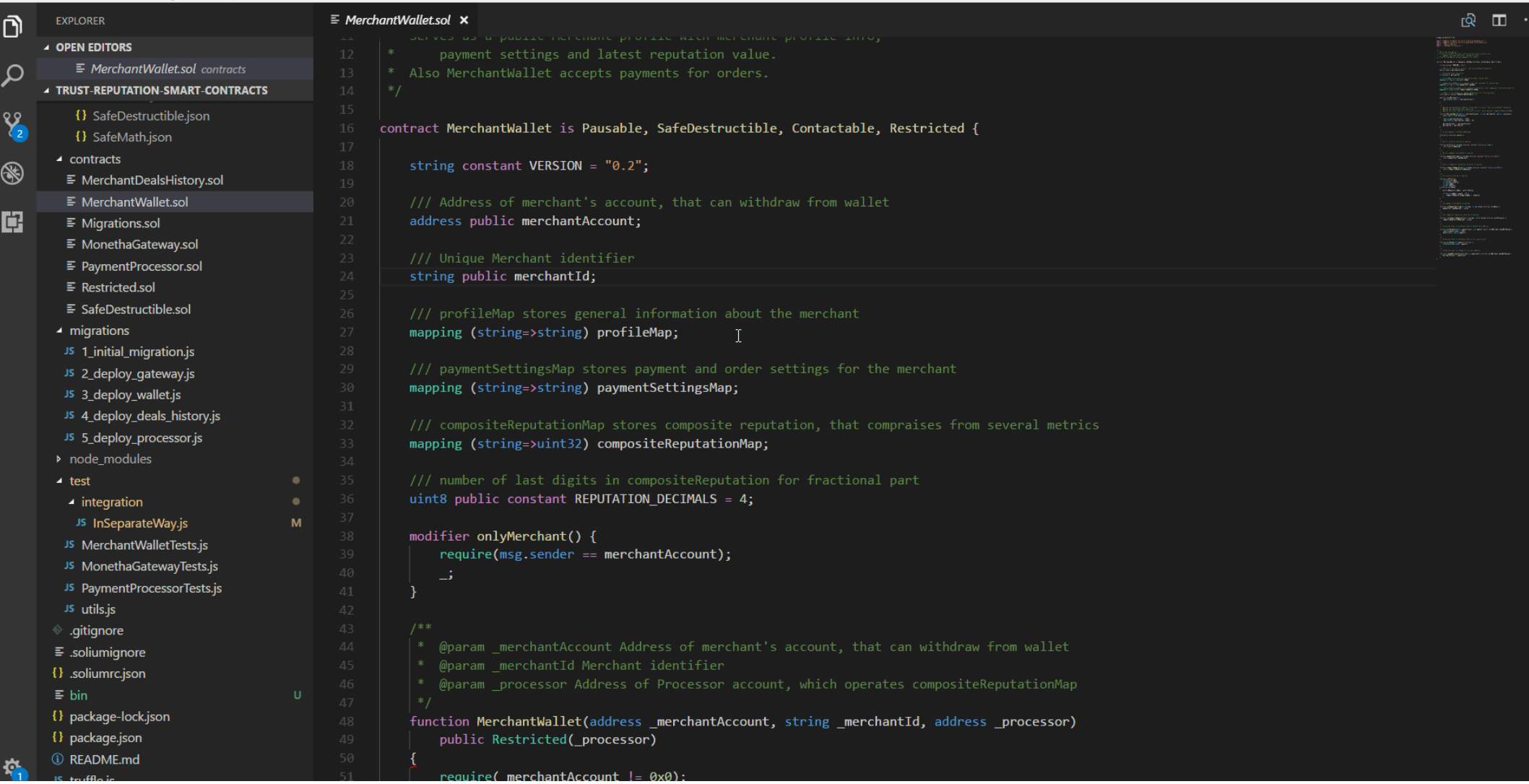


Remix

Remix, previously known as Browser Solidity, is a web browser based IDE that allows you to write Solidity smart contracts, then deploy and run the smart contract.

You can run Remix from your web browser by navigating to https://ethereum.github.io/browser-solidity/, or by installing and running in on your local computer.

Smart contract



Experiment

Structure

Function

Data

Platform

Operations

Time


Tester

So whats different?

Testing enviroment

Error messages

Deploiment and Security

Testing enviroment
Main Net

Upgradeable smart contracts

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If the contract issuer wants to have a way to upgrade the contract code, so that account data and other things carry over, can Ethereum provide for this? Also can this be done without changing the contract address or does one always need to issue a new address?

Do "annex" mechanisms exist to add some new functionality to a contract without a total rewrite?

solidity | contract-development | contract-design | upgrading | design-patterns

85

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edited Oct 1 '17 at 14:58
Tom Hale
887 • 5 • 25

asked Mar 29 '16 at 14:48
Mikko Ohtamaa
5,349 • 2 • 14 • 45

Possible duplicate of What design patterns are appropriate for data structure modification within Ethereum smart contracts? – Muhammad Altabba Dec 17 '17 at 12:03

add a comment

8 Answers

active | oldest | votes

109

Once a contract is in the blockchain, it is final and cannot be changed. Certain parameters, of course, can be changed if they are allowed to change via the original code.

One method of updating contracts is to use a versioning system. For example, you could have an entryway contract that just forwards all calls to the most recent version of the contract, as defined by an updatable address parameter. You could also use a name registry, and update that to point to the most recent contract version.

Another method is to put your logic code in a library, then use the CALLCODE feature, via libraries in Solidity, to call the code located at a specified, updatable, address. This way, user data persists between versions. This has the limitation that the ABI of the logic contract must stay the same over time.

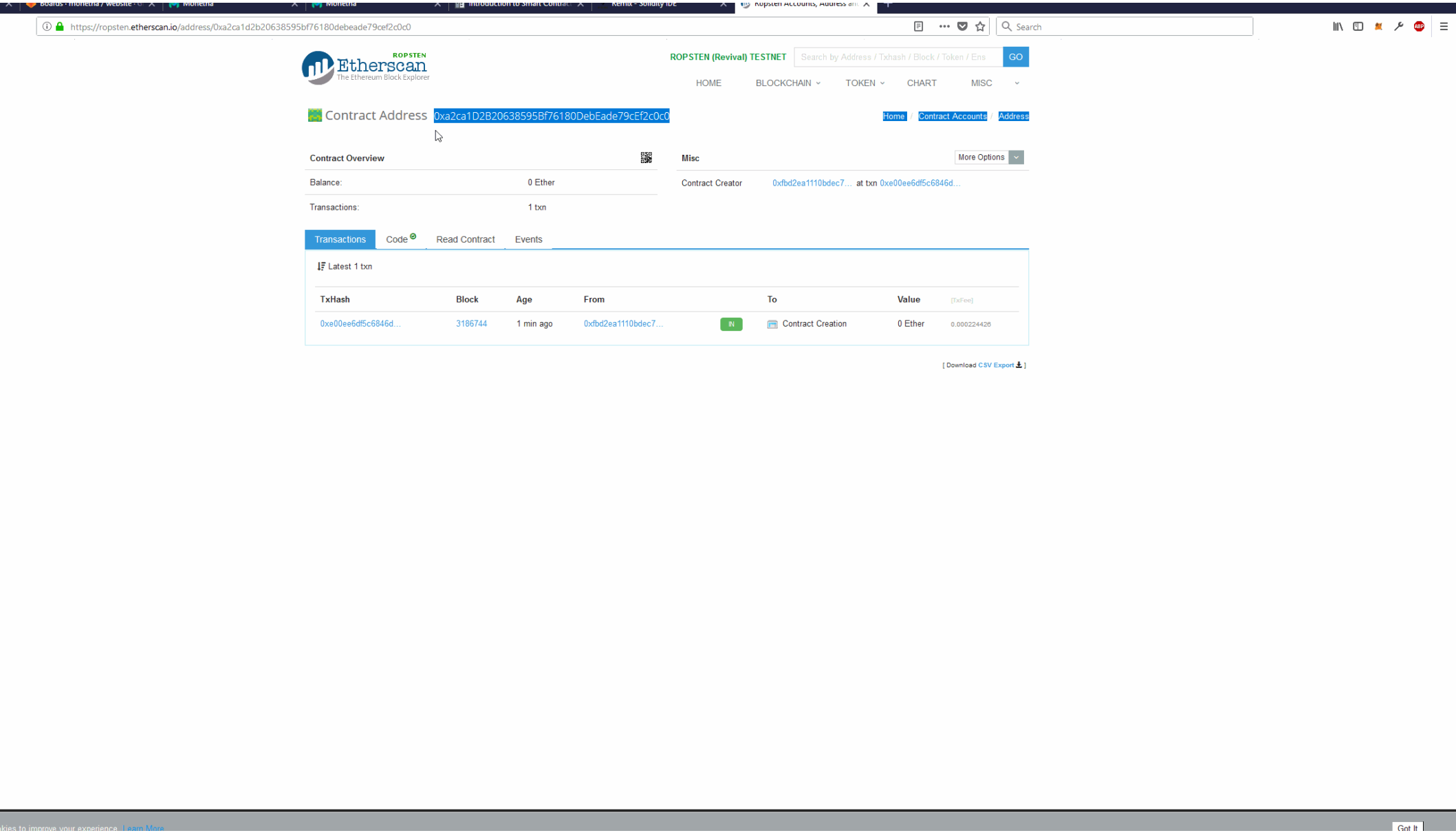
Testing enviroment

Test Net

Please select from one of the available TESTNETS :

1. ROPSTEN (Revived) - Proof Of Work
2. KOVAN - Proof Of Authority (Parity only)
3. RINKEBY - Clique Consensus (Geth only)

Example


https://ropsten.etherscan.io/address/0xa2ca1d2b20638595bf76180debeade79cef2c0c0
Search
ROPSTEN
Etherscan
The Ethereum Block Explorer
ROPSTEN (Revival) TESTNET
Search by Address / Txhash / Block / Token / Ens
GO
HOME
BLOCKCHAIN
TOKEN
CHART
MISC
Contract Address 0xa2ca1D2B20638595Bf76180DebEade79cEf2c0c0
Home / Contract Accounts / Address
Contract Overview
Balance: 0 Ether
Transactions: 1 txn
Misc
More Options
Contract Creator 0xfbd2ea1110bdec7... at txn 0xe00ee6df5c6846d...
Transactions
Code
Read Contract
Events
Latest 1 txn
TxHash
Block
Age
From
To
Value
[TxFee]
0xe00ee6df5c6846d...
3186744
1 min ago
0xfbd2ea1110bdec7...
IN
Contract Creation
0 Ether
0.000224426
[Download CSV Export]
Got It

Testing enviroment

JavaScript VM

Test RPC Configuration and usage

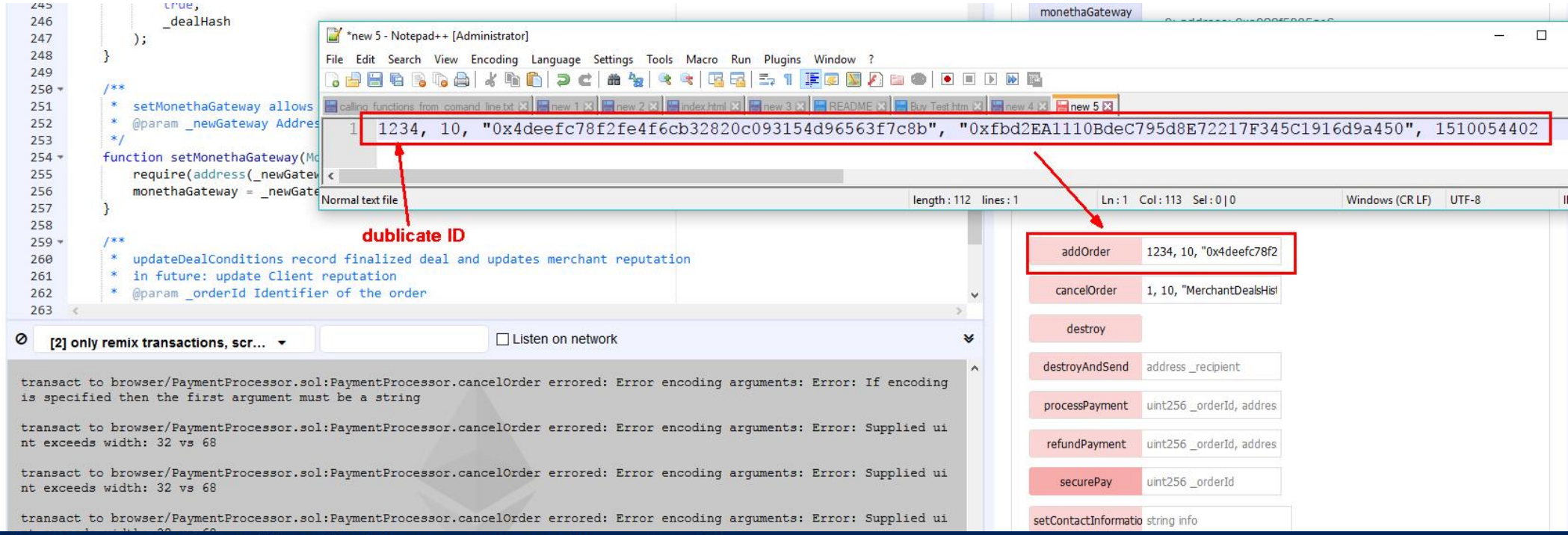
Ethereum TestRPC is a fast and customizable blockchain emulator. It allows making calls to the blockchain without the overheads of running an actual Ethereum node.

- Accounts can be re-cycled, reset and instantiated with a fixed amount of Ether (no need for faucets or mining).
- Gas price and mining speed can be modified.

Example


remix.ethereum.org/#optimize=false&version=soljson-v0.4.23+commit.124ca40d.js
Search
browser/ballot.sol
pragma solidity ^0.4.0;
contract SimpleStorage {
uint storedData;
function set(uint x) public {
storedData = x;
}
function get() public constant returns (uint) {
return storedData;
}
}
Compile
Run
Settings
Analysis
Debugger
Support
Environment
Injected Web3
Ropsten (3)
Account
0xfbd...9a450 (156.559248450096
Gas limit
3000000
Value
0
wei
SimpleStorage
Create
At Address
0 pending transactions
SimpleStorage at 0xa2c...2c0c0 (blockchain)
set
123
get
0: uint256: 123
[2] only remix transactions, script
Search transactions
Listen on network
transact to SimpleStorage.set pending ...
https://ropsten.etherscan.io/tx/0xd1c132f18b914dadefea727e783026f5a658b64ea097fa2dc6d79d676cb46813
[block:3186773 txIndex:5] from:0xfbd...9a450, to:SimpleStorage.set(uint256) 0xa2c...2c0c0, value:0 wei, 0 logs, data:0x60f...0007b, hash:0xd1c...46813
Details
Debug
call to SimpleStorage.get
[call] from:0xfbd2ea1110bdec795d8e72217f345c1916d9a450, to:SimpleStorage.get(), data:6d4ce...ce63c, return:
{
"0": "uint256: 123"
}
Details
Debug
remix

Error messages




```
1) Contract: MerchantWallet should set paymentSettings correctly:
   Error: VM Exception while processing transaction: revert
    at Object.InvalidResponse (C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:43303:16)
    at C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:331156:36
    at C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:314196:9
    at XMLHttpRequest.request.onreadystatechange (C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:315621:13)
    at XMLHttpRequestEventTarget.dispatchEvent (C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:70159:18)
    at XMLHttpRequest._setReadyState (C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:70449:12)
    at XMLHttpRequest._onHttpResponseEnd (C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:70604:12)
    at IncomingMessage.<anonymous> (C:\Users\Liudas\AppData\Roaming\npm\node_modules\truffle\build\cli.bundled.js:70564:24)
```

Deploiment and Security

Contracts deployed on a blockchain are immutable.

Deploiment and Security

- Unit testing
- Integration testing
- System testing

- Auto Regression checks
- Smart contracts audit
- Acceptance testing
- Bug bounty program

Monetha's Bugs Bounty Program https://bounty.monetha.io

Scope

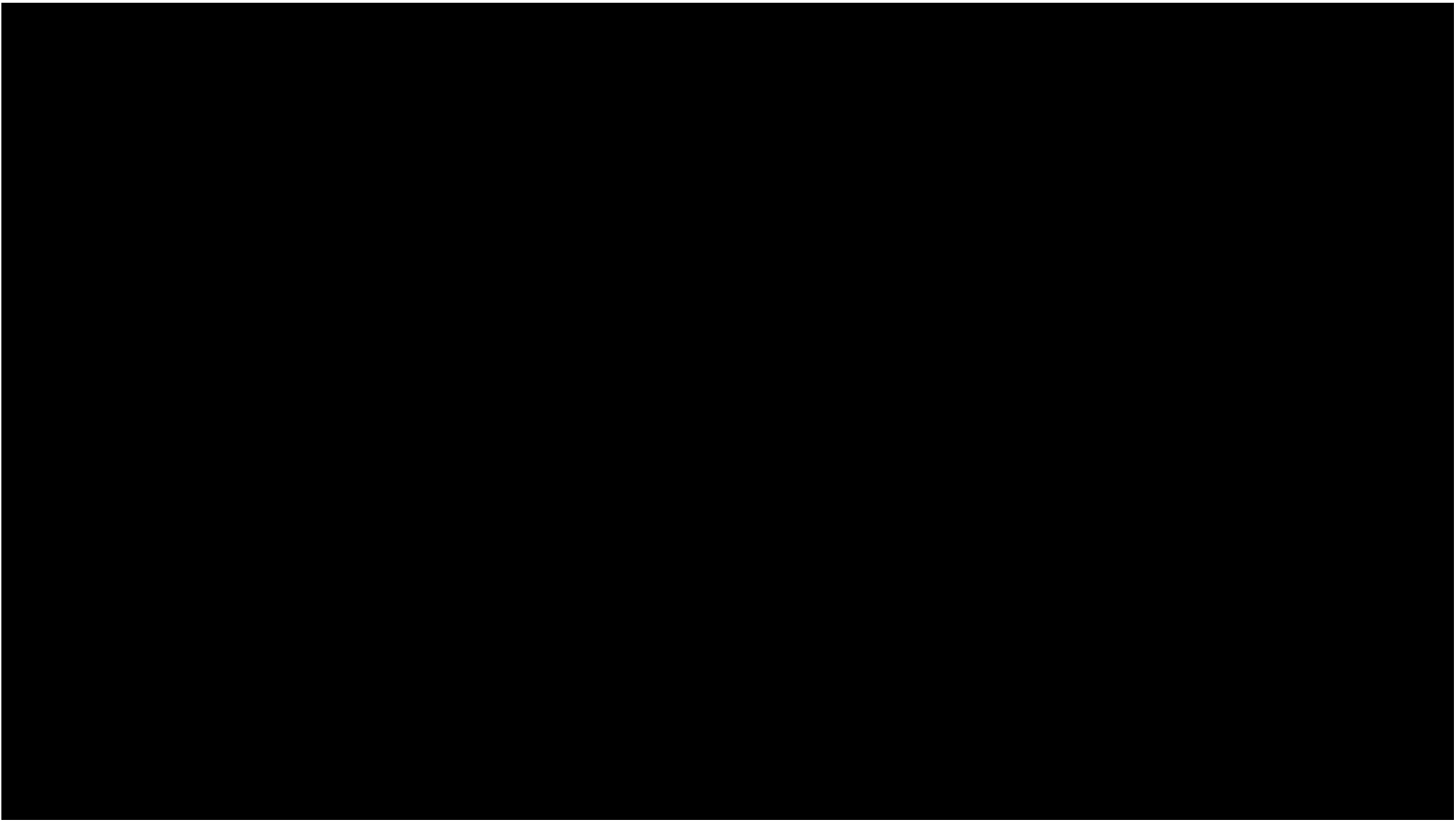
Any design or implementation issue that substantially affects the confidentiality or integrity of user data is likely to be within the scope of the program.

- Smart contracts: TrustReputationSmartContracts
- Payment integrations: magento, woocommerce, buynowbutton
- Monetha Android and iOS app

$2090 bounty so far

Out-Of-Scope

- Phishing monetha workers, users, clients and anyone who is related with Monetha.
- Monetha ico web page: https://ico.monetha.io
- Monetha web page: https://www.monetha.io
- Monetha blog: https://blog.monetha.io
- Monetha demo shop (except payment integration): https://shop-sandbox.monetha.io/
- Any other Monetha static page
- Third party tools
- Known issues list



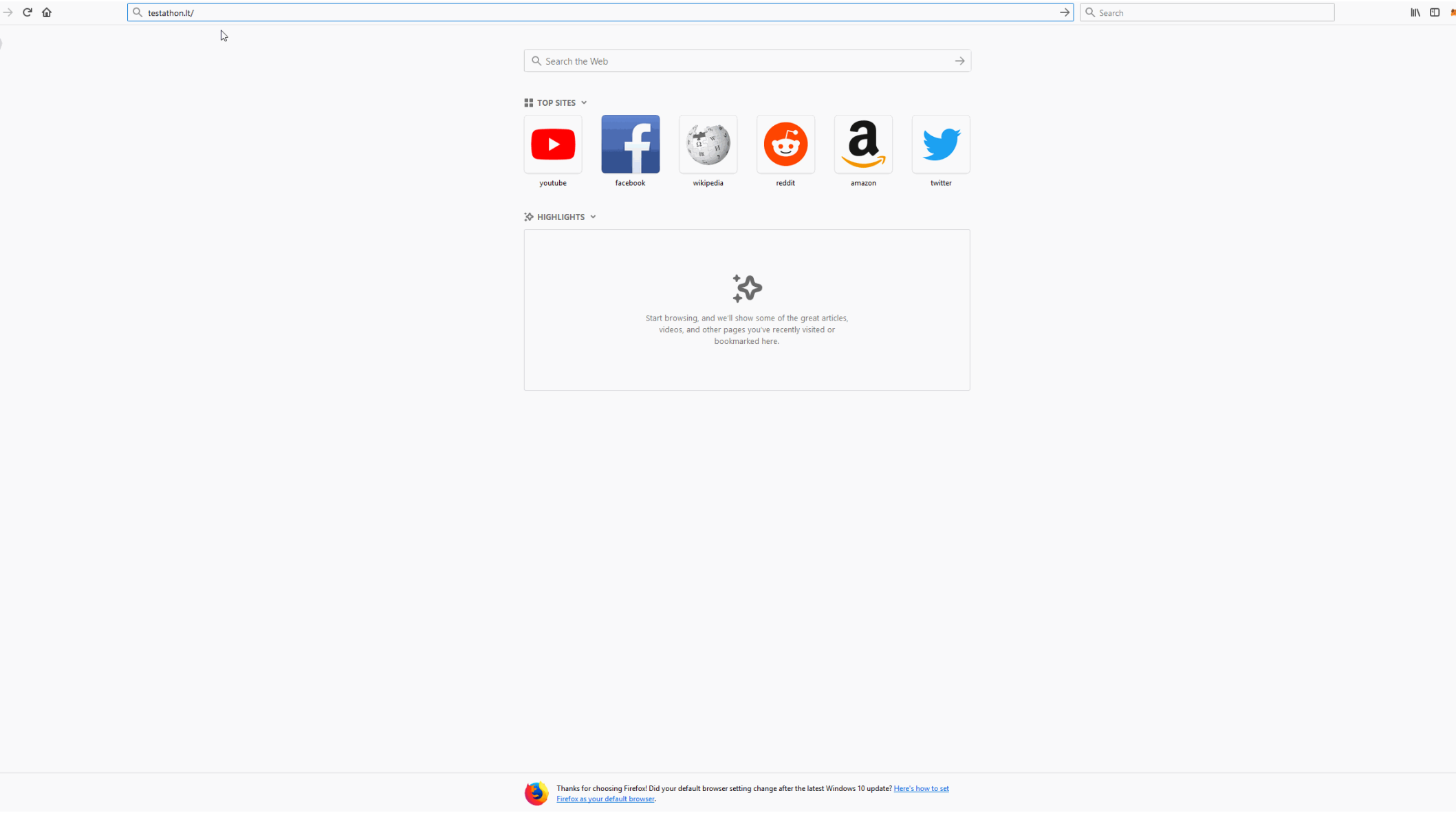
1 Bonus

1. Read up on the basic concepts.
The Ethereum white paper isn't a bad place to start:
https://github.com/ethereum/wiki/wiki/White-Paper.

2. Ethereum Smart Contract Best Practices
https://consensys.github.io/smart-contract-best-practices/known_attacks/

3. Start coding simple Smart Contracts and tests right away
http://truffleframework.com/tutorials

2 Bonus


testathon.lt/
Search
Search the Web
TOP SITES
youtube
facebook
wikipedia
reddit
amazon
twitter
HIGHLIGHTS
Start browsing, and we'll show some of the great articles, videos, and other pages you've recently visited or bookmarked here.
Thanks for choosing Firefox! Did your default browser setting change after the latest Windows 10 update? Here's how to set Firefox as your default browser.

Thank you!

Hope you found some information useful for your own personal development.