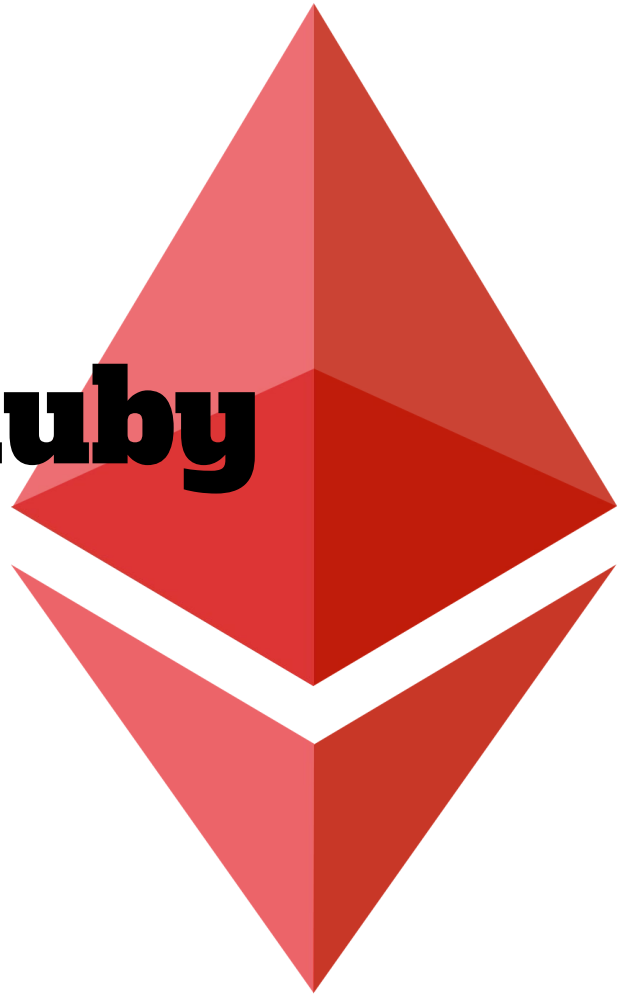
Ethereum On Ruby

jan@cryptape.com



Me

Jan Xie 谢晗剑

janx@github

Hangzhou

ruby-ethereum / pyethereum

Cryptape, a blockchain technology startup

Ruby

Yukihiro Matsumoto

Ruby

Readability
“Optimized for Programmer Happiness”

Flexibility
Internal DSL

Testing & Deployment Framework for Smart Contract

```
$ teth n bigthing
```

```
bigthing
├── ...
├── contracts
└── tests
```

```
$ teth g token
```

```
//Token.sol

pragma solidity ^0.4.0;

contract Token {

}
```

```
# Token_test.rb

require 'teth/minitest'

class TokenTest < Teth::Minitest

  def test_something
    assert_equal !contract.address.nil?
  end

end
```

Context

state
head
contract

Actions

transfer
deploy
contract.func

Accounts

privkey
pubkey
address

privkeys
pubkeys
addresses

Wellknowns

alice
bob
carol
chuck
dave
eve
mallet
oscar
sybil

```
function Token() {
    issuer = msg.sender;
}

function issue(address account, uint amount) {
    if (msg.sender != issuer) throw;
    balances[account] += amount;
}

function transfer(address to, uint amount) {
    if (balances[msg.sender] < amount) throw;

    balances[msg.sender] -= amount;
    balances[to] += amount;
}

function getBalance(address account) constant returns
(uint) {
    return balances[account];
}
```

```
# I'm Alice
def test_token_transfer
  contract.issue bob, 100
  contract.transfer carol, 90, sender: bob_privkey
  assert_equal 90, contract.getBalance(carol)

  assert_raises(TransactionFailed) {
    contract.transfer carol, 90, sender: bob_privkey
  }
end
```

```
# I'm Alice
def test_token_transfer
  contract.issue bob, 100
  contract.transfer carol, 90, sender: bob_privkey
  assert_equal 90, contract.getBalance(carol)

  assert_raises(TransactionFailed) {
    contract.transfer carol, 90, sender: bob_privkey
  }
end
```

```
Console Output:

  1) Error:
TokenTest#test_token_transfer:
Ethereum::TransactionFailed: Ethereum::TransactionFailed

ruby-ethereum-0.9.5/lib/ethereum/tester/state.rb:114:in `_send_tx'
    (eval):8:in `transfer'
    tests/token_test.rb:19:in `test_token_transfer'
```

logger the ultimate debugger

```
function transfer(address to, uint amount) {
    log1(bytes32(balances[msg.sender]), bytes32("balance"));

    if (balances[msg.sender] < amount) throw;

    balances[msg.sender] -= amount;
    balances[to] += amount;
}
```

```
Console Output:

[Log] 13f9894478e765fa8a28c8a08804ff22b2486e3c >>> topics=["balance"] data=""

  1) Error:
TokenTest#test_token_transfer:
Ethereum::TransactionFailed: Ethereum::TransactionFailed

ruby-ethereum-0.9.5/lib/ethereum/tester/state.rb:114:in `_send_tx'
    (eval):8:in `transfer'
    tests/token_test.rb:19:in `test_token_transfer'
```

```
print_events false
print_logs   true
```

```
function issue(address account, uint amount) {
    //...
    Issue(account, amount);
}

function transfer(address to, uint amount) {
    //...
    Transfer(msg.sender, to, amount);
}
```

Console Output:

```
[Event] 08a1194c786a665f44950087537a1506c21e3f29 Issue >>>
account=8cea46877f7a04ab87ee3ee64bc81a6d9533d4e3 amount=100

[Event] 08a1194c786a665f44950087537a1506c21e3f29 Issue >>>
account=8cea46877f7a04ab87ee3ee64bc81a6d9533d4e3 amount=100

[Event] 08a1194c786a665f44950087537a1506c21e3f29 Transfer >>>
from=8cea46877f7a04ab87ee3ee64bc81a6d9533d4e3 to=f91a65134a43c78359a62486f864b798fa2e6480 amount=90
```

```
# add.se
def add(a, b):
    return a+b

# add_test.rb
def test_add
  assert_equal 3, contract.add(1, 2)
end
```

ruby-ethereum

Data	EVM	Misc	Dependencies
Block	VM	EthashRuby	ruby-rlp
Transaction	Opcodes		ruby-ethash
Account	ExterncalCall	Address	ruby-serpent
Receipt		PublicKey	ruby-bitcoin-secp256k1
	ABI	PrivateKey	
Trie			
DB		Utils	

Dependents	Extractions
reth	ruby-ethereum-base
teth	ruby-ethereum-abi
ruby-eth	ruby-devp2p
eth_json_rpc	

Thank You

jan@cryptape.com