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Using PHP to deploy Ethereum smart contract to develop DAPP

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广告 X

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打开

explain

Recently, in the development of Ethereum smart contract (https://develloppaper.com/tag/contract/) DAPP, we encountered many problems when using PHP as the interface, which can be recorded as a reference. The operating environment of this article is Mac, which has been installed truffle / ganache And other development tools

Writing smart contracts

- New truffle project

```
mkdir test_truffle
cd test_truffle
truffle init
```

- Create a new hello_ Falco contract and compile
Enter the contracts directory and create a new hello_ falco.sol

```
pragma solidity ^0.4.17;

contract Hello_falco {

    function say() public pure returns (string) {
        return "Hello falco";
    }

    function print(string name) public pure returns (string) {
        return name;
    }
}
```

implement truffle compile command

```
wutianzhideMac-mini:test_truffle wutianzhi$ truffle compile
Compiling ./contracts/Hello_falco.sol...
Compiling ./contracts/Migrations.sol...
Compiling ./contracts/Ownable.sol...
Writing artifacts to ./build/contracts
```

You can see hello_Falco. Sol the contract has been compiled

All the compiled contracts will generate a JSON file under build / contracts and open the generated hello_Falco. JSON file, you can see the abi , bytecode And other information, which will be used in the future

Deploy contracts to Ganache

to configure truffle.js

```
module.exports = {
  networks: {
    development: {
      host: "127.0.0.1",
      Port: 9545, // my local Ganache port
      network_id: "*"
    }
  }
};
```

implement truffle migrate --reset command

```
wutianzhideMac-mini:test_truffle wutianzhi$ truffle migrate --reset
Using network 'development'.

Running migration: 1_initial_migration.js
Deploying Migrations...
... 0x68b0845d8f883c1d3da8c9f4a1a7a756cd0b9453a74c7c1fead414817d6b30d9
Migrations: 0xcc352839a9713d699f3491f374dd29b89c3571c4
Deploying Hello_falco...
... 0x89f0beb3e1e797449864b7e8ea5414b72bc8ea6363f1c2d77b0d5ebb0210d5fc
Hello_falco: 0x236cf7947aa8c7cca299a7dc353f3e70e3f358cc
Deploying Ownable...
... 0x0b74fd6d40b21d1d263febacabfa1687d962f660cbc4f9934e5056c690ce0ed4
Ownable: 0xca51b6835ef26aecee7bdd73b7bcfc18372e0853
Saving successful migration to network...
... 0x9be7c07bd0a5fb2c4829fd1943ea197740cb64378f929f621f3a70f9cf79c732
Saving artifacts...
```

The contract has been migrated. It will consume part of eth in the main account. You can see that the account balance has changed

ACCOUNTS

BLOCKS

TRANSACTIONS

LOGS

SEARCH FOR BLOCK NUMBERS OR TX HASHES

CURRENT BLOCK

4

GAS PRICE

20000000000

GAS LIMIT

6721975

NETWORK ID

5778

RPC SERVER

HTTP://0.0.0.0:8544

MINING STATUS

AUTOMINING

MNEMONIC

base fossil rate trip little north siege embody sausage unfold urban since

HD PATH

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

ADDRESS

0x80d2F5BA14983a671e29068958Eb60a45b01e49c

BALANCE

99.94 ETH

TX COUNT

4

INDEX

0

ADDRESS

0x20522084E3378DCFC36252040856542E84A1A264

BALANCE

100.00 ETH

TX COUNT

0

INDEX

1

Test contract

implement truffle console , open the console

```
truffle(development)> var contract;
undefined
truffle(development)> Hello_falco.deploy (https://develloppaper.com/tag/deploy/)ed().then(function(instance){contract= instance;});
undefined
truffle(development)> contract.say();
'Hello falco'
```

Using PHP + laravel to deploy contracts

The above is to deploy and test the contract using truffle. Next, we will deploy it again using PHP to operate Web3

Install composer package

```
composer require jcsofts/laravel-ethereum
```

Detailed installation instructionsLaravel ethereum (<https://develloppaper.com/go.php?go=aHR0cHM6Ly9wYWNRyWdpc3Qub3JnL3BhY2thZ2VzL2pjc29mdHMvbGFyYXZlbC1ldGhlcmV1bQ==>)

to configure .env file

```
ETH_HOST=http://127.0.0.1
ETH_PORT=9545
```

Write PHP deployment contract method (<https://develloppaper.com/tag/method/>)

```

use Jcsofts\LaravelEthereum\Facade\Ethereum;
use Jcsofts\LaravelEthereum\Lib\EthereumTransaction;

private $mainAddress = "0x80d2F5BA14983a671e29068958Eb60a45b01e49c";

public function deploy(){
    $byteCode = "xxx";
    $ethereumTransaction = new EthereumTransaction(
        $this->mainAddress,null,null,'0x47b760',null,$byteCode);
    $response = Ethereum::eth_sendTransaction($ethereumTransaction);
    dd($response);
}

```

The main account address (<https://develloppaper.com/tag/address/>) is Ganache's first account address

Bytecode of smart contract uses compiled hello_ Bytecode section in falco.json

0x47b760 For gas, I set a fixed value for testing

After the deploy method is executed, we print out the response

```
0x0ca011fd3856b34ee5169ec0c0ddad465f5e6bec1795751b41bbab9e295ac0a0
```

This is a transactionhash. Later, we will use it to get the deployed contract address

```

public function receipt(){
    $hash = "0x0ca011fd3856b34ee5169ec0c0ddad465f5e6bec1795751b41bbab9e295ac0a0";
    $response = Ethereum::eth_getTransactionReceipt($hash);
    dd($response);
}

```

```

{#573 ▼
  + "transactionHash": "0x0ca011fd3856b34ee5169ec0c0ddad465f5e6bec1795751b41bbab9e295ac0a0"
  + "transactionIndex": "0x0"
  + "blockHash": "0x0978b246c08e99a7235c6adc50ab708c8a79f24f5e982c00b416d1b7c07ed790"
  + "blockNumber": "0x5"
  + "gasUsed": "0x316ef"
  + "cumulativeGasUsed": "0x316ef"
  + "contractAddress": "0x00a800ff57861294dd3db449dbe0367ae66d9e86"
  + "logs": []
  + "status": "0x1"
  + "logsBloom": "0x0000000000000000000000000000000000000000000000000000000000000000000000000000000000000"
}

```

As shown in the figure, after we get the contract address, we can execute the method body defined in the smart contract through the contract address above

PHP calls say method in smart contract

To access a method in a contract, we first need to obtain the function signature of the method, so how to obtain the method signature?

1. Enter truffle console Console
2. Through the Sha3 method of Web3

```
truffle(development)> web3.sha3("say()")
'0x954ab4b21481711a1e363afa5d2b9003ed2702949b83f2d36d03d3b90ebb0f26'
truffle(development)> web3.sha3("say()").substr(2,8)
'954ab4b2'
```

You just need to get to the top eight

Continue to write the say method PHP function

```
public function say(){
    $contractAddress = "0x00a800ff57861294dd3db449dbe0367ae66d9e86";
    $ethereumTransaction = new EthereumTransaction(
        $this->mainAddress,$contractAddress,null,'0x47b760',null,'0x954ab4b2');
    $response = Ethereum::eth_sendTransaction($ethereumTransaction);
    dd($response);
}
```

After execution, we get a list of transactionhashes

If everything is normal, a new block will appear in our Ganache log, and the transactionhash returned by PHP is the hash of this block

```
eth_sendTransaction
Transaction: 0xfb52d21ed1983e2aa8d92e773cb88bf362f12d2dcc0665e33c024faf2f1a3125
Gas usage: 21899
Block Number: 6
Block Time: Thu Aug 09 2018 14:35:32 GMT+0800 (CST)
```

If there is an error or the method does not exist, the following will happen

```
eth_sendTransaction
Transaction: 0x3dcd2adcfe55cb9e8145937bcd8bfe085f1e41c5118148c0481c98c6158a0a71
Gas usage: 21385
Block Number: 8
Block Time: Thu Aug 09 2018 14:51:17 GMT+0800 (CST)
Runtime Error: revert
```

summary

The above is a simple hello world. We can write more complex contracts, such as smart contracts for auction and guessing.

Let's talk about the idea of auction smart contract

- User registration (new users automatically register an account address personal_ importRawKey)
- Launch an auction (the highest one is in the smart contract)
- The auction ends to get the highest one in the contract
- Close the contract

Tags: address (<https://develloppaper.com/tag/address/>), contract (<https://develloppaper.com/tag/contract/>), deploy (<https://develloppaper.com/tag/deploy/>), Intelligence (<https://develloppaper.com/tag/intelligence/>), method (<https://develloppaper.com/tag/method/>)

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