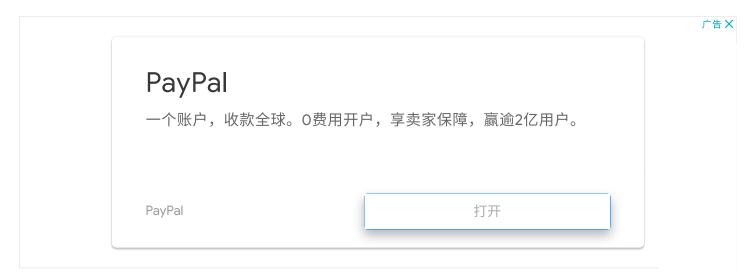


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Using PHP to deploy Ethereum smart contract to develop DAPP

Time: 2021-6-8



explain

Recently, in the development of Ethereum smart contract (https://developpaper.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

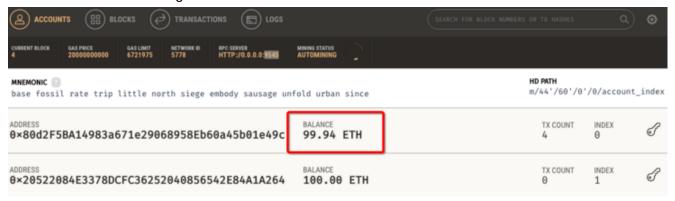
Deploy contracts to Ganache

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

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



Test contract

implement truffle console, open the console

```
truffle(development)> var contract;
undefined
truffle(development)> Hello_falco.deploy (https://developpaper.com/tag/deploy/)ed().th
en(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://developpaper.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://developpaper.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://developpaper.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

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
- 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

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: 0×fb52d21ed1983e2aa8d92e773cb88bf362f12d2dcc0665e33c024faf2f1a3125
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: 0×3dcd2adcfe55cb9e8145937bcddbfe085f1e41c5118148c0481c98c6158a0a71
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://developpaper.com/tag/address/), contract (https://developpaper.com/tag/contract/), deploy (https://developpaper.com/tag/deploy/), Intelligence (https://developpaper.com/tag/intelligence/), method (https://developpaper.com/tag/method/)

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