Web3 development:

how NFT marketplaces, DeFi and GameFi are changing the frontend world

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- IT and electronics divulger

My experience

Single page apps

Social apps

E-commerce apps

Enterprise web apps

Travel apps

CRM PWA

How I got into web3

2021

SCALING PARROTS

How to start with web3

Web 1.0

read-only
static

Web 2.0

read-write
interactive

Web 3.0

read-write-trust
verifiable

How to *really* start with web3

Blockchain

Wallet

Smart contract

Blockchain

A transaction is requested and authenticated
A block representing that transaction is created
The block is sent to every node (i.e. participant) in the network
Nodes validates the transaction
Nodes receive a reward for Proof of Work, typically in cryptocurrency
The block is added to the existing blockchain
The update is distributed across the network
The transaction is complete

Wallet

Wallet

Provide interface to the blockchain network

Sign a transaction

Format and submit blockchain transactions

Wallet

Trust Wallet

METAMASK

WalletConnect

BINANCE
SMART CHAIN

Smart contracts

Web 3 application

Use cases

GAMEFI

MARKETPLACE
NFT

DEFI

Which library/framework do we use?

VS

npm

npm

web3 react

770 packages found

npm
web3 angular
37 packages found

web3-react

A simple, maximally extensible, dependency minimized framework for building modern Ethere

maintained with lerna | code style prettier

CI passing

Introducing

useDApp

Ethereum 🤝 React

web3-react

5.0.5 • Public Published 3 years ago

Readme Code

web3-react

npm tag not found | build passing | coverage unknown

web3-react (beta)

CI passing

Looking for the prior version of this library? It's available on the v6 branch.

Example

This is a hosted version of packages/example-next.

Packages

Package	Version	Size	Link
@web3-react/types	npm@beta v8.0.20-beta.0	minzipped size 235 B	
@web3-react/store	npm@beta v8.0.25-beta.0	minzipped size 23.6 kB	
@web3-react/core	npm@beta v8.0.35-beta.0	minzipped size 23.8 kB	
Connectors			
@web3-react/eip1193	npm@beta v8.0.26-beta.0	minzipped size 739 B	EIP-1193
@web3-react/empty	npm@beta v8.0.20-beta.0	minzipped size 290 B	
@web3-react/gnosis-safe	npm@beta v8.0.7-beta.0	minzipped size 146 kB	Gnosis Safe
@web3-react/metamask	npm@beta v8.0.28-beta.0	minzipped size 1.87 kB	MetaMask
@web3-react/network	npm@beta v8.0.27-beta.0	minzipped size 71.9 kB	
@web3-react/url	npm@beta v8.0.25-beta.0	minzipped size 71.5 kB	
@web3-react/walletconnect	npm@beta v8.0.36-beta.0	minzipped size 3.03 kB	WalletConnect
@web3-react/coinbase-wallet	npm@beta v8.0.34-beta.0	minzipped size 1.7 kB	Coinbase Wallet

@scalingparrots/dapp-angular-lib TS

0.1.0 • Public • Published 9 days ago

Readme | Code Beta | 1 Dependency | 0 Dependents | 17 Versions | Settings

Dapp Angular Lib

About

This library is supposed to help the integration of web3 "standard" services.

Features 🚀

Install

```
> npm i @scalingparrots/dapp-angular-lib
```

Repository

github.com/scalingparrots/dapp-angula...

How can I do it without a library?

HARD STUFF

TAP
TAP
TAP

Where do we start?

WEB2

Browser
Internet
Web server
Front-end
JavaScript, HTML, CSS
Back-end
Node.js, Python, Java, Go, etc
Database

WEB3

Browser
Internet
Web server
Front-end
JavaScript, HTML, CSS
Smart contracts
Smart contracts
Smart contracts
Smart contracts
Ethereum Virtual Machine
Block
Block
Block
Block
Block
Ethereum blockchain

WEB3

Browser
Internet
Signer
METAMASK
IPFS/SWARM
Front-end
JavaScript, HTML, CSS
JSON RPC
alchemy
Provider
INFURA
METAMASK
QuikNode
the graph
Smart contracts
Smart contracts
Smart contracts
Smart contracts
Ethereum Virtual Machine
Block
Block
Block
Block
Block
Ethereum blockchain
IPFS/ SWARM

WEB2

WEB3

ABI

The Contract Application Binary Interface (ABI) is the standard way to interact with contracts in the Ethereum ecosystem, both from outside the blockchain and for contract-to-contract interaction

ABI

```
1   pragma solidity >=0.5.0;
2
3   contract Rent {
4       // define events notifying rent is paid
5       event RentPaid(
6           address indexed _from,
7           string indexed _tenant,
8           uint _rent
9       );
10
11      function deposit(string memory _tenant) public payable {
12          //emit event notifying rent is paid
13          emit RentPaid(msg.sender, _tenant, msg.value);
14      }
15  }
```


```
"abi": [
    {
        "constant": false,
        "inputs": [
            {
                "name": "_tenant",
                "type": "string"
            }
        ],
        "name": "deposit",
        "outputs": [],
        "payable": true,
        "stateMutability": "payable",
        "type": "function"
    },
    {
        "anonymous": false,
        "inputs": [
            {
                "indexed": true,
                "name": "_from",
                "type": "address"
            },
            {
                "indexed": true,
                "name": "_tenant",
                "type": "string"
            },
            {
                "indexed": false,
                "name": "_rent",
                "type": "uint256"
            }
        ],
        "name": "RentPaid",
        "type": "event"
    }
]
```

WEB2

Swagger on ASP.NET Core 1.0.0 OAS3

/swagger/CoreSwagger/swagger.json

VBT Web Api

Terms of service

Authorize

Abone

GET	/api/Abone
POST	/api/Abone
GET	/api/Abone/GetAboneByRawSql
GET	/api/Abone/GetView
PUT	/api/Abone/{id}
DELETE	/api/Abone/{id}

WEB3

Etherscan
Rinkeby Testnet Network
All Filters
Search by Address / Txn Hash / Block / Token / Ens
Home
Blockchain
Tokens
Misc
Rinkeby
Contract 0xBc84F3bf7Dd607a37F9e5848a6333e6c188d926c
Contract Overview
Balance:
0 Ether
More Info
More
My Name Tag:
Not Available
Contract Creator:
0xc31eb6e317054a79bb… at txn 0x66c6c946e53be3f544…
Token Tracker:
FundRequest (FND)
Transactions
Internal Txns
Erc20 Token Txns
Contract
Events
Code
Read Contract
Write Contract
Read Contract Information
[Expand all] [Reset]
1. name
2. creationBlock
3. totalSupply
4. decimals
5. balanceOfAt
6. version

WEB2

WEB3

ethers.js

Operations in web3

Wallet interaction

Provider

Wallet address

Network Wallet address

Wallet - provider

```
const metaMaskExtProvider = this.win.ethereum;
```

Wallet - connect

```
web3provider = new ethers.providers.Web3Provider(metaMaskExtProvider);
```

```
▼Web3Provider {_isProvider: true, _events: Array(0), _emitted: {…}, disableCcipRead: false, formatter: Formatter, …}
  anyNetwork: false
  ▶connection: {url: 'metamask'}
  disableCcipRead: false
  ▶formatter: Formatter {formats: {…}}
  ▶jsonRpcFetchFunc: ƒ (method, params)
  ▶provider: Proxy {_events: {…}, _eventsCount: 0, _maxListeners: 100, _log: u, _state: {…}, …}
  ▶_emitted: {block: -2}
  ▶_eventLoopCache: {detectNetwork: null}
  ▶_events: []
  _fastQueryDate: 0
  _isProvider: true
  _lastBlockNumber: -2
  _maxFilterBlockRange: 10
  _maxInternalBlockNumber: -1024
  ▶_network: {name: 'bnb', chainId: 56, ensAddress: null, _defaultProvider: null}
  ▶_networkPromise: ZoneAwarePromise {__zone_symbol__state: true, __zone_symbol__value: {…}}
  _nextId: 42
  _pollingInterval: 4000
  blockNumber: (...)
  network: (...)
  polling: (...)
  pollingInterval: (...)
  ready: (...)
  _cache: (...)
  ▶[[Prototype]]: JsonRpcProvider
```

Wallet - address

```
addresses = await web3provider.send("eth_requestAccounts", []);
```

```
▼ ['0x2060266ba136dc0b2f4d5cebd147209f0954c756']
    0: "0x2060266ba136dc0b2f4d5cebd147209f0954c756"
    length: 1
  ▶ [[Prototype]]: Array(0)
```

Wallet - network

```
network = await web3provider.getNetwork();
```

```
▼ {name: 'bnb', chainId: 56, ensAddress: null, _defaultProvider: null}
    chainId: 56
    ensAddress: null
    name: "bnb"
    _defaultProvider: null
  ▶ [[Prototype]]: Object
```

Smart contract interaction

Read

Write

Read

```
import { ethers, providers } from "ethers";

readContract(
  contractAddress: string,
  rpcProvider: string,
  abi: any,
  methodName: string,
  args?: any[]
  ): Promise<any> {
  const provider = new providers.JsonRpcProvider(rpcProvider);

  const contractManager = new ethers.Contract(
    contractAddress,
    abi,
    provider
  );

  if (args?.length) {
    return contractManager[methodName](...args);
  } else {
    return contractManager[methodName]();
  }
}
```

Read example

```
// read BUSD balance on BNB Chain
async getBalance(account: string) {
  try {
    const balance = await this.readContract(
      '0xe9e7CEA3DedcA5984780Bafc599bD69ADd087D56',
      'https://bsc-dataseed.binance.org',
      ERC20abi,
      'balanceOf',
      [account]
    );

    console.log('Balance in BigNumber: ', balance);
    console.log('Balance as number: ', Number(balance));
  } catch (error: any) {
    console.log(error.message);
  }
}
```

Read example ABI

```
},
{
  "constant": true,
  "inputs": [
    {
      "name": "_owner",
      "type": "address"
    }
  ],
  "name": "balanceOf",
  "outputs": [
    {
      "name": "balance",
      "type": "uint256"
    }
  ],
  "payable": false,
  "stateMutability": "view",
  "type": "function"
},
{
```

Read logs

```
Balance in BigNumber:  ▶BigNumber {_hex: '0x056ce503487ecea7', _isBigNumber: true}
Balance as number:  390939069938323140
```

BscScan

4. allowance

5. balanceOf

account (address)

0x2060266bA136DC0b2f4D5Cebd147209F0954C756

Query

uint256

[**balanceOf** method Response]

uint256 : 390939069938323111

6. decimals

Write

```
writeContract(
  contractAddress: string,
  abi: any,
  methodName: string,
  args?: any[]
  ): Promise<any> {

  const contract = new ethers.Contract(
    contractAddress,
    abi,
    provider // wallet provider
  );

  if (args?.length) {
    return contract[methodName](...args);
  } else {
    return contract[methodName]();
  }
}
```

Write example

```
// example of write contract
async approve(spender: string, amount: number) {
  const decimals = 18;
  const amountBignumber = BigNumber.from(amount).mul(BigNumber.from(10).pow(decimals));

  try {
    const tx = await this.writeContract(
      '0xe9e7CEA3DedcA5984780Bafc599bD69ADd087D56',
      ERC20abi,
      'approve',
      [spender, amountBignumber]
    );

    console.log('Success ', tx);
  } catch (error: any) {
    console.log(error.message);
  }
}
```

Write example ABI

```
},
{
  "constant": false,
  "inputs": [
    {
      "name": "_spender",
      "type": "address"
    },
    {
      "name": "_value",
      "type": "uint256"
    }
  ],
  "name": "approve",
  "outputs": [
    {
      "name": "",
      "type": "bool"
    }
  ],
  "payable": false,
  "stateMutability": "nonpayable",
  "type": "function"
},
{
```

Give permission to access your BUSD?

By granting permission, you are allowing the following account to access your funds

0x2060...c756

Edit permission

Transaction fee Edit

A fee is associated with this request.

$0.07
0.00022 BNB

Hide full transaction details

Permission request Edit

http://localhost:64818 may access and spend up to this max amount

Approved amount: 10 BUSD

Granted to: 0x2060266b...C756

Data

Function: Approve

0x095ea7b3000000000000000000000000206026
6ba136dc0b2f4d5cebd147209f0954c756000000000
000000000000000000000000000000000000000000
8ac7230489e80000

Reject Confirm

Demo

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Overview | Repositories 35 | Projects | Packages | Stars 3

Find a repository... | Type | Language | Sort | New

web3-angular-demo Public — Star

TypeScript — Updated now

ngrome-dapp Public — Star

TypeScript — 4 — Updated last month

Thank you!

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