

Lab: Using Web3.js to Query the Balance

Prerequisites

1. NodeJS and the Node Package Manager (npm) installed
2. Open Terminal (PowerShell on Windows)
3. Empty Directory
4. Ganache Installed (or any other blockchain node)

Step by Step Instruction

Initialize a new Directory

Type in “`npm init -y`” and generate the package.json to initialize the current empty directory as node project.

```
web3_l01> npm init
This utility will walk you through creating a package.json file.
It only covers the most common items, and tries to guess sensible defaults.

See `npm help json` for definitive documentation on these fields
and exactly what they do.

Use `npm install <pkg>` afterwards to install a package and
save it as a dependency in the package.json file.

Press ^C at any time to quit.
package name: (web3_l01)
version: (1.0.0)
description:
entry point: (index.js)
test command:
git repository:
keywords:
author:
license: (ISC)
About to write to C:\101Tmp\ebd\web3_l01\package.json:

{
  "name": "web3_l01",
  "version": "1.0.0",
  "description": "",
  "main": "index.js",
  "scripts": {
    "test": "echo \"Error: no test specified\" && exit 1"
  },
  "author": "",
  "license": "ISC"
}

Is this OK? (yes)
web3_l01> 
```

Install Web3.js

Type in “`npm install --save web3`” to install web3.js in the current directory

```

C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(34): error C2661: 'NaN::Set': no overloaded function takes 2 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(50): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(57): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(68): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(70): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(89): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(90): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(92): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(93): error C2660: 'v8::Value::Int32Value': function does not take 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
c:\Users\thoma\appdata\local\node-gyp\cache\12.13.1\include\node\v8.h(2613): note: see declaration of 'v8::Value::Int32Value' (compiling source file ..\src\bufferutil.cc)
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\bufferutil.cc(94): error C2660: 'v8::Value::Int32Value': function does not take 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\bufferutil.vcxproj]
c:\Users\thoma\appdata\local\node-gyp\cache\12.13.1\include\node\v8.h(2613): note: see declaration of 'v8::Value::Int32Value' (compiling source file ..\src\bufferutil.cc)
validation.cc
win_delay_load_hook.cc
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\validation.cc(114): error C2660: 'v8::FunctionTemplate::GetFunction': function does not take 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\validation.vcxproj]
c:\Users\thoma\appdata\local\node-gyp\cache\12.13.1\include\node\v8.h(5995): note: see declaration of 'v8::FunctionTemplate::GetFunction' (compiling source file ..\src\validation.cc)
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\validation.cc(114): error C2661: 'NaN::Set': no overloaded function takes 2 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\validation.vcxproj]
C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\src\validation.cc(133): error C2661: 'v8::Value::ToObject': no overloaded function takes 0 arguments [C:\101tmp\ebd\web3_101\node_modules\@web3-js\websocket\build\validation.vcxproj]

> @web3-js\script-shim@0.1.0 postinstall C:\101tmp\ebd\web3_101\node_modules\@web3-js\script-shim
> node ./scripts/postinstall.js

> web3@1.2.4 postinstall C:\101tmp\ebd\web3_101\node_modules\web3
> node angular-patch.js

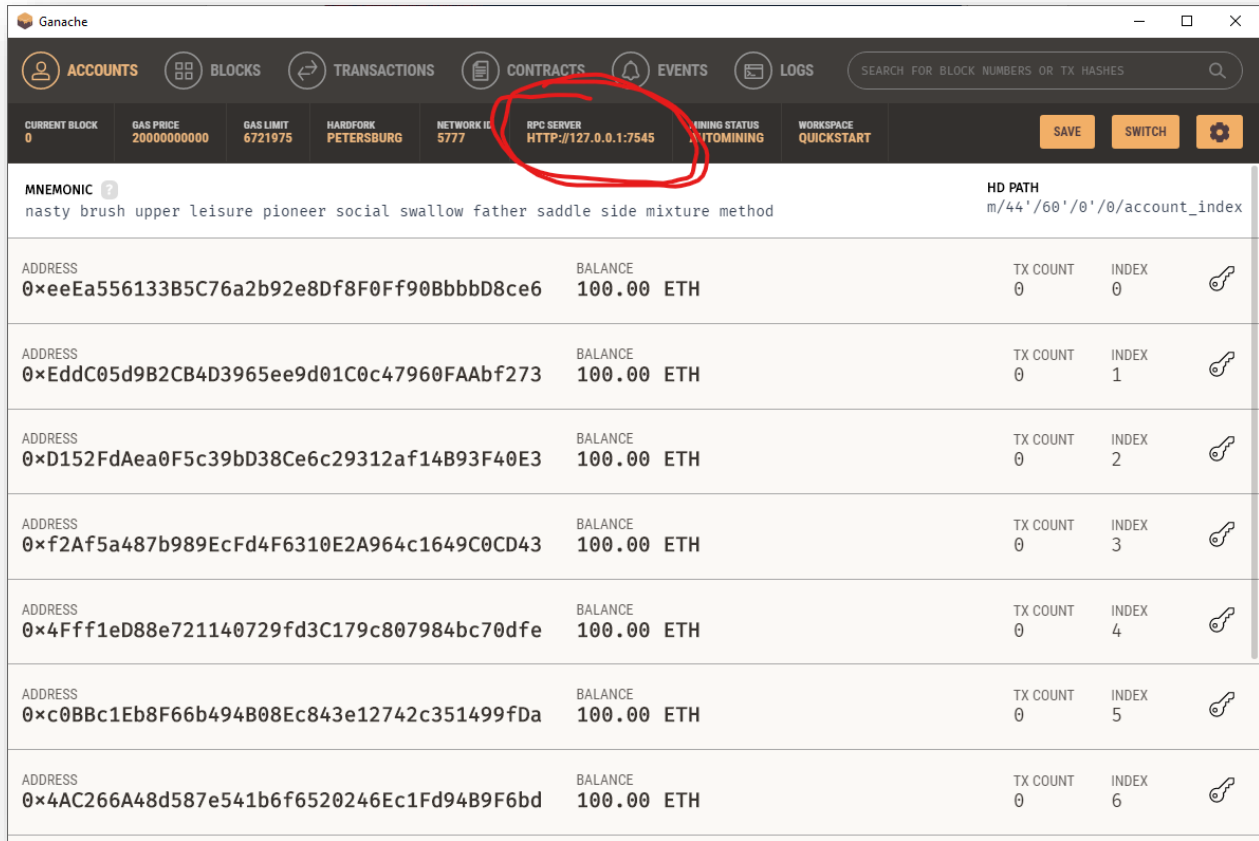
npm WARN created a lockfile as package-lock.json. You should commit this file.
npm WARN web3_101@1.0.0 No description
npm WARN web3_101@1.0.0 No repository field.

+ web3@1.2.4
added 341 packages from 246 contributors and audited 21839 packages in 41.858s
found 1 low severity vulnerability
  run 'npm audit fix' to fix them, or 'npm audit' for details
web3_101>
  
```

Start Ganache

To interact with a blockchain node you need to start a blockchain node. In this example I will run Ganache – but you can start any other blockchain node you want (geth, pantheon, parity). They all provide an RPC interface to interact with the node.

Just be careful about the PORT! This might be different with different blockchain nodes:



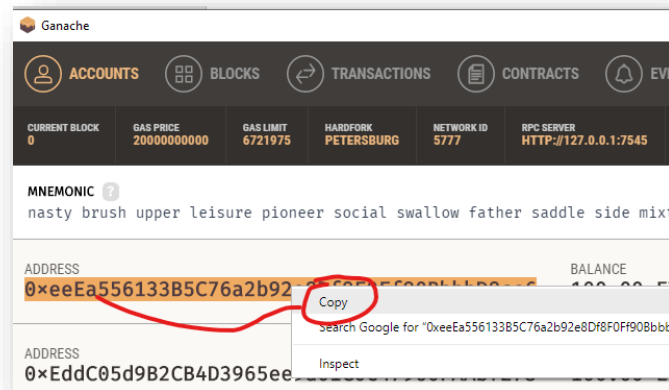
Start NodeJS Environment

Start the NodeJS environment by typing in “node” in your terminal or command line

```
web3_101> node
Welcome to Node.js v12.13.1.
Type ".help" for more information.
>
```

Use web3.js to query the balance of one of your accounts

First copy your Account Address:



In the command line with node import web3:

```
let Web3 = require('web3'); //attention CAPITAL Web3
let web3 = new Web3(new Web3.providers.HttpProvider('http://localhost:7545'));

web3.eth.getBalance("YOUR METAMASK ACCOUNT").then(console.log);
```

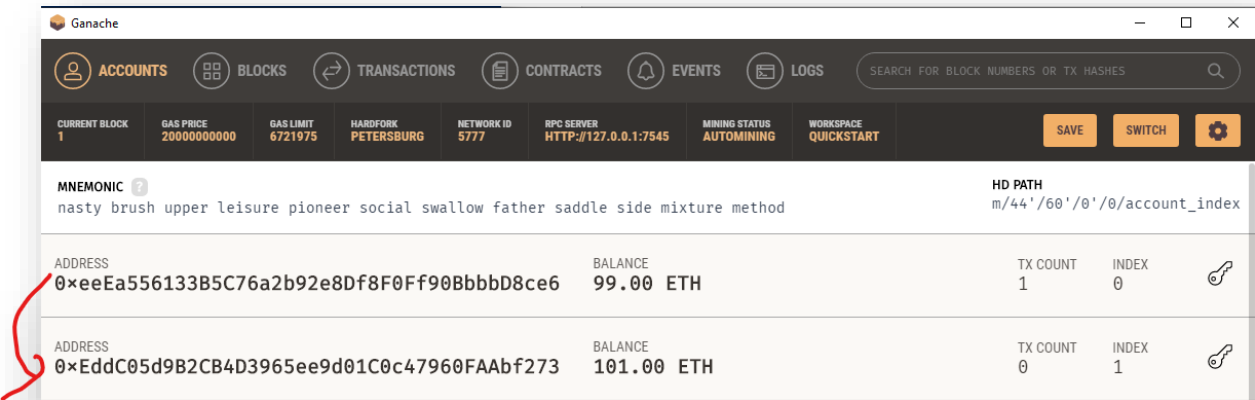
Like so:

```
web3_101> node
Welcome to Node.js v12.13.1.
Type ".help" for more information.
> let Web3 = require('web3'); //attention CAPITAL Web3
undefined
> let web3 = new Web3(new Web3.providers.HttpProvider('http://localhost:7545'));
undefined
> web3.eth.getBalance("0xeeEa556133B5C76a2b92e8Df8F0F90BbbD8ce6").then(console.log);
Promise { <pending> }
> 1000000000000000000
```

It should output the amount in Wei from the Account on that Blockchain you are connected to.

Send 1 Ether from Account 1 to Account 2

```
web3.eth.sendTransaction({from: "ACCOUNT_ADDRESS_1", to: "ACCOUNT_ADDRESS_2",  
value: web3.utils.toWei("1","ether")});
```



```
> web3.eth.sendTransaction({from: "0xeeEa556133B5C76a2b92e8Df8F0Ff90BbbB08ce6", to: "0xEddC05d9B2CB4D3965ee9d01C0c47960FAAbf273", value: web3.utils.toWei("1","ether")});  
Promise {  
  <pending>,  
  _events: Events <[Object: null prototype] {}> {},  
  emit: [Function: emit],  
  on: [Function: on],  
  once: [Function: once],  
  off: [Function: removeListener],  
  listeners: [Function: listeners],  
  addListener: [Function: on],  
  removeListener: [Function: removeListener],  
  removeAllListeners: [Function: removeAllListeners]  
}
```

If you followed along then you should have 1 ETH less in Account #1 and 1 ETH more in Account#2 (99 vs 101 ETH).

Congratulations, LAB is completed



From the Course “Ethereum Blockchain Developer – Build Projects in Solidity”



FULL COURSE:

<https://www.udemy.com/course/blockchain-developer/?referralCode=E8611DF99D7E491DFD96>