

## Blockchain Lab\_7

### 1. Truffle Installation

```
Microsoft Windows [Version 10.0.19042.804]
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C:\Users\Acer>npm install -g truffle
npm WARN deprecated mkdirp-promise@5.0.1: This package is broken and no longer maintained. 'mkdirp' itself supports promises now, please switch to that.
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request/issues/3142
npm WARN deprecated har-validator@5.1.5: this library is no longer supported
npm WARN deprecated multicodec@0.5.7: stable api reached
npm WARN deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
npm WARN deprecated mkdirp@0.5.1: Legacy versions of mkdirp are no longer supported. Please update to mkdirp 1.x. (Note that the API surface has changed to use Promises in 1.x.)
npm WARN deprecated node-pre-gyp@0.11.0: Please upgrade to @mapbox/node-pre-gyp: the non-scoped node-pre-gyp package is deprecated and only the @mapbox/scoped package will receive updates in the future
npm WARN deprecated redux-devtools-core@0.2.1: Package moved to @redux-devtools/app.
npm WARN deprecated redux-devtools-instrument@1.10.0: Package moved to @redux-devtools/instrument.
npm WARN deprecated remotedev-serialize@0.1.9: Package moved to @redux-devtools/serialize.
npm WARN deprecated core-js@2.6.12: core-js@<3 is no longer maintained and not recommended for usage due to the number of issues. Please, upgrade your dependencies to the actual version of core-js@3.
npm WARN deprecated debug@4.1.1: Debug versions >=3.2.0 <3.2.7 || >=4 <4.3.1 have a low-severity ReDos regression when used in a Node.js environment. It is recommended you upgrade to 3.2.7 or 4.3.1. (https://github.com/visionmedia/debug/issues/797)
npm WARN deprecated fsevents@2.1.3: "Please update to latest v2.3 or v2.2"
C:\Program Files\nodejs>truffle -v
C:\Program Files\nodejs>truffle build
> bufferutil@4.0.3 install C:\Program Files\nodejs\node_modules\truffle\node_modules\bufferutil
> node-gyp-build

> keccak@3.0.1 install C:\Program Files\nodejs\node_modules\truffle\node_modules\keccak
> node-gyp-build || exit 0

> secp256k1@4.0.2 install C:\Program Files\nodejs\node_modules\truffle\node_modules\secp256k1
> node-gyp-build || exit 0

> utf-8-validate@5.0.4 install C:\Program Files\nodejs\node_modules\truffle\node_modules\utf-8-validate
> node-gyp-build

> leveldown@5.0.2 install C:\Program Files\nodejs\node_modules\truffle\node_modules\leveldown
> node-gyp-build

> sqlite3@4.2.0 install C:\Program Files\nodejs\node_modules\truffle\node_modules\sqlite3
```

### 2. Creating Directory and initializing truffle

```
C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography>mkdir blockchain-toolkit
C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography>cd blockchain-toolkit
C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit>truffle init
Starting init...
=====
> Copying project files to C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit
Init successful, sweet!
```

### 3. Creating package.json and npm-install

```
C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit>touch package.json
touching package.json

C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit>npm install
npm WARN deprecated truffle-contract@3.0.6: WARNING: This package has been renamed to @truffle/contract.
npm WARN deprecated chokidar@2.1.8: chokidar 2 will break on node v14+. Upgrade to chokidar 3 with 15x less dependencies.
npm WARN deprecated istanbul@0.4.5: This module is no longer maintained, try this instead:
npm WARN deprecated   npm i nyc
npm WARN deprecated   Visit https://istanbul.js.org/integrations for other alternatives.
npm WARN deprecated truffle-hdwallet-provider@1.0.17: WARNING: This package has been renamed to @truffle/hdwallet-provider.
npm WARN deprecated fsevents@1.2.13: fsevents 1 will break on node v14+ and could be using insecure binaries. Upgrade to fsevents 2.
npm WARN deprecated truffle-error@0.0.3: WARNING: This package has been renamed to @truffle/error.
npm WARN deprecated truffle-blockchain-utils@0.0.5: WARNING: This package has been renamed to @truffle/blockchain-utils.
npm WARN deprecated truffle-contract-schema@2.0.3: WARNING: This package has been renamed to @truffle/contract-schema.
npm WARN deprecated debug@4.1.1: Debug versions >=3.2.0 <3.2.7 || >=4 <4.3.1 have a low-severity ReDos regression when used in a Node.js environment. It is recommended you upgrade to 3.2.7 or 4.3.1. (https://github.com/visionmedia/debug/issues/797)
npm WARN deprecated mkdirp@0.5.1: Legacy versions of mkdirp are no longer supported. Please update to mkdirp 1.x. (Note that the API surface has changed to use Promises in 1.x.)
npm WARN deprecated to-iso-string@0.0.2: to-iso-string has been deprecated, use @segment/to-iso-string instead.
npm WARN deprecated jade@0.26.3: Jade has been renamed to pug, please install the latest version of pug instead of jade
npm WARN deprecated minimatch@0.3.0: Please update to minimatch 3.0.2 or higher to avoid a RegExp DOS issue
npm WARN deprecated mkdirp@0.3.0: Legacy versions of mkdirp are no longer supported. Please update to mkdirp 1.x. (Note that the API surface has changed to use Promises in 1.x.)
npm WARN deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
npm WARN deprecated urix@0.1.0: Please see https://github.com/lydell/urix#deprecated
npm WARN deprecated mkdirp-promise@5.0.1: This package is broken and no longer maintained. 'mkdirp' itself supports promises now, please switch to that.
npm WARN deprecated nomnom@1.8.1: Package no longer supported. Contact support@npmjs.com for more info.
npm WARN deprecated babel-preset-es2015@6.24.1: Thanks for using Babel: we recommend using babel-preset-env now: please read https://babeljs.io/env to update!
npm WARN deprecated core-js@2.6.12: core-js@<3 is no longer maintained and not recommended for usage due to the number of issues. Please, upgrade your dependencies to the actual version of core-js@3.
npm WARN deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request/issues/3142
npm WARN deprecated har-validator@5.1.5: this library is no longer supported
```

#### 4. Creating a smart contract and compiling it further deploying it

```
C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit>touch ./contracts/MyContract.sol
touching ./contracts/MyContract.sol

C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit>truffle compile

compiling your contracts...
> Compiling .\contracts\Migrations.sol
> Compiling .\contracts\MyContract.sol
> Artifacts written to C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit\build\contracts
> Compiled successfully using:
  - solc: 0.5.16+commit.9c3226ce.Emscripten.clang

C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit>touch migrations/2_deploy_contracts.js
touching migrations/2_deploy_contracts.js

C:\Users\Acer\Desktop\Semester 6\Blockchain and Cryptography\blockchain-toolkit>truffle migrate

compiling your contracts...
> Everything is up to date, there is nothing to compile.

Starting migrations...
> Network name: 'development'
> Network id: 5777
> Block gas limit: 6721975 (0x6691b7)

1_initial_migration.js
=====
Deploying 'Migrations'
> transaction hash: 0xbbe0a35186514aa7a25b7a92dfd4f0b4ea8b3e92a1cdf523b8f9f5ee867cdae1
> Blocks: 0 Seconds: 0
> contract address: 0xED93b8548Df354045ce30ba1dF26D471eE91cb39

2_deploy_contracts.js
=====
Deploying 'MyContract'
> transaction hash: 0x4e8d4ec52eed6a6e333dd3ca6f357d738b3fa8e91612f56a15fa414a669920d
> Blocks: 0 Seconds: 0
> contract address: 0x364aad3fbdFF1507E8Cbee7c1E504b5d37Cc55f5
> block number: 3
> block timestamp: 1615482812
> account: 0x7f0eDf79E37632849Ca0dCA0a6bfe671E83cBC5
> balance: 99.9903763
> gas used: 246904 (0x3c478)
> gas price: 20 gwei
> value sent: 0 ETH
> total cost: 0.00493808 ETH

> Saving migration to chain.
> Saving artifacts
> Total cost: 0.00493808 ETH

Summary
> Total deployments: 2
> Final cost: 0.00877694 ETH

truffle(development)> MyContract.deployed().then((instance) => { app = instance } )
undefined
truffle(development)> app.set('New Value')
{ tx: '0xfde5dac3f72a0973e4728d3406282fa101f798e22badd6552a7574be494f9cdc',
  receipt: { transactionHash: '0xfde5dac3f72a0973e4728d3406282fa101f798e22badd6552a7574be494f9cdc',
    transactionIndex: 0,
    blockHash: '0xd9d5080e878246e717a24673182d1916e1eb9418a6642743086de30f36d0dfd' }
```

#### 5. Creating instance of the deployed contract

```
2_deploy_contracts.js
=====
Deploying 'MyContract'
> transaction hash: 0x4e8d4ec52eed6a6e333dd3ca6f357d738b3fa8e91612f56a15fa414a669920d
> Blocks: 0 Seconds: 0
> contract address: 0x364aad3fbdFF1507E8Cbee7c1E504b5d37Cc55f5
> block number: 3
> block timestamp: 1615482812
> account: 0x7f0eDf79E37632849Ca0dCA0a6bfe671E83cBC5
> balance: 99.9903763
> gas used: 246904 (0x3c478)
> gas price: 20 gwei
> value sent: 0 ETH
> total cost: 0.00493808 ETH

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truffle(development)> MyContract.deployed().then((instance) => { app = instance } )
undefined
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{ tx: '0xfde5dac3f72a0973e4728d3406282fa101f798e22badd6552a7574be494f9cdc',
  receipt: { transactionHash: '0xfde5dac3f72a0973e4728d3406282fa101f798e22badd6552a7574be494f9cdc',
    transactionIndex: 0,
    blockHash: '0xd9d5080e878246e717a24673182d1916e1eb9418a6642743086de30f36d0dfd' }
```

Ganache									
<div> <div>ACCOUNTS</div> <div>BLOCKS</div> <div>TRANSACTIONS</div> <div>CONTRACTS</div> <div>EVENTS</div> <div>LOGS</div> <div>SEARCH FOR BLOCK NUMBERS OR TX HASHES</div> </div>									
CURRENT BLOCK	GAS PRICE	GAS LIMIT	HARDFORK	NETWORK ID	RPC SERVER	MINING STATUS	WORKSPACE	SAVE	SWITCH
5	20000000000	6721975	MUIRGLACIER	5777	HTTP://127.0.0.1:7545	AUTOMINING	QUICKSTART		
BLOCK 5	MINED ON 2021-03-11 22:48:22				GAS USED 29121		1 TRANSACTION		
BLOCK 4	MINED ON 2021-03-11 22:43:32				GAS USED 27338		1 TRANSACTION		
BLOCK 3	MINED ON 2021-03-11 22:43:32				GAS USED 246904		1 TRANSACTION		
BLOCK 2	MINED ON 2021-03-11 22:43:31				GAS USED 42338		1 TRANSACTION		
BLOCK 1	MINED ON 2021-03-11 22:43:31				GAS USED 191943		1 TRANSACTION		
BLOCK 0	MINED ON 2021-03-11 22:40:08				GAS USED 0		NO TRANSACTIONS		

Ganache									
<div> <div>ACCOUNTS</div> <div>BLOCKS</div> <div>TRANSACTIONS</div> <div>CONTRACTS</div> <div>EVENTS</div> <div>LOGS</div> <div>SEARCH FOR BLOCK NUMBERS OR TX HASHES</div> </div>									
CURRENT BLOCK	GAS PRICE	GAS LIMIT	HARDFORK	NETWORK ID	RPC SERVER	MINING STATUS	WORKSPACE	SAVE	SWITCH
5	20000000000	6721975	MUIRGLACIER	5777	HTTP://127.0.0.1:7545	AUTOMINING	QUICKSTART		
ADDRESS	BALANCE				TX COUNT	INDEX			
0x7f0eDf79E37632849Ca0dCA0a6bfe671E83CeBC5	99.99 ETH				5	0			
ADDRESS	BALANCE				TX COUNT	INDEX			
0x18A0B8778F8318f17581B034DeD08b74367c7141	100.00 ETH				0	1			
ADDRESS	BALANCE				TX COUNT	INDEX			
0x6dD0BC38fD522fb0d6BEB448b764e4EA46Bd761E	100.00 ETH				0	2			
ADDRESS	BALANCE				TX COUNT	INDEX			
0x63eFf82b3afB7293a323A5183Cd16e1aa6b018a6	100.00 ETH				0	3			
ADDRESS	BALANCE				TX COUNT	INDEX			
0x7EC802a50Df75ad09E38bc0e66E86059E1E6B3bb	100.00 ETH				0	4			
ADDRESS	BALANCE				TX COUNT	INDEX			
0xc69672F2504A31Ec9b491cc52d8D664F3a5D8254	100.00 ETH				0	5			
ADDRESS	BALANCE				TX COUNT	INDEX			

## 6. Communicating with the instance

[illegible]