

# Blockchain and Cryptocurrency

## Assignment 9: Simple Ethereum Wallet

The 9<sup>th</sup> assignment is about a blockchain application. This assignment will help you understand how front-end and back-end work together using Web3. Through this assignment, you can lay the groundwork for developing a DApp:

- This assignment includes creating a simple Ethereum application. (Simple Ethereum Wallet)
  - You must submit a report containing the results obtained as you go through **<Step. 1>** and your code (files).
- ⇒ **Submit a report containing all results obtained from all steps and your codes.**

### **<Step. 0> Create a private network**

※ You can create your own private network by using Geth (Go-Ethereum).

### **<Step. 1> Create a Simple Ethereum Wallet**

Simple Ethereum Wallet is a simple web-based blockchain application that uses data in Ethereum blockchain. This app has to show a list of accounts, the balance per each account and the sum of balances. Also, it contains the function to transmit ETH to other accounts (Both your accounts and other user's accounts). To transfer ETH, this app has to be able to select your account to be a transmitter, obtain recipient's account (address) and the amount of ETH you want to send. In addition to this, you need to input the passphrase for unlocking the account.

The following is an example of Simple Ethereum Wallet.

## Simple Ethereum Wallet

0x8b0f06bf3060c370c50ed9a97bf333ab3486b0d3	574.375 ETH
0xfa20ec148217d1091194adae3c9f90558ca471c4	1587.2000000001235 ETH
0xa25f145b7d9367939e17b3b6c8effda07b838e35	100 ETH
0xe129d9134a2197c303d7b208177ac58ff621d93b	50 ETH
0x87f5ac4742ca97fab9c0aab50aec11beceaff24d	0 ETH
<b>Total</b>	<b>2311.5750000001235 ETH</b>

  

Transmitter	<input type="text" value="0x8b0f06bf3060c370c50ed9a97bf333ab3486b0d3"/>
Recipient	<input type="text"/>
Value	<input type="text"/> ETH
Password	<input type="text"/> <input type="button" value="Send"/>

I recommend that you use node.js to run a simple web and web3.js to connect Ethereum network.

※ These are URLs for node.js and web3.js.

- Node.js : <https://nodejs.org/>
- web3.js: <https://github.com/ethereum/web3.js/>

※ You must include these functions in front-end.

- **currentBalance:** This is to refresh (update) current balances for each account.
- **selectTransmitter:** This is to be able to select one of accounts in your list.
- **sendETH:** This is to send ETH to other accounts

※ The quality of UI is not important. Please focus on implementing the functionality mentioned above.

- 1) Show your code of Simple Ethereum Wallet and briefly describe it
- 2) Show your Simple Ethereum Wallet's web page  
(More than two accounts have to be listed)
- 3) Select one of your accounts and then send 10 ETH to another one  
(You must mine some blocks to get ETH)
- 4) Check a transaction for sending 10 ETH
- 5) Check a block that includes the transaction