**First Lab Assignment Report: Building Bitcoin Applications**

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1. **Setting up and running Bitcoin Core**

The task was done on Ubuntu version 20.04.3 via Oracle VMBox solution. All the log files and outputs are saved and stored in the Tutorial\_outputs folder of the assignment as *bitcoin\_core\_install\_log.txt*. All executions are rerunnable and the configured environment ISO remained available for later clarifications.

1. **Testing Bitcoin Core in RegTest Mode**

All testing scripts ran without error, all terminal log and output in the *bitcoin\_core\_testing.txt* file under the Tutorial\_outputs folder of the assignment.

1. **Developing Bitcoin Shell Script, Exercise 1 & Exercise 2**

**Exercise 1.**

The solution can be found as *exe1.sh* under the Scripts folder in the solution. The scripts includes comments in the code as well as short descriptions in the log output for the steps taken through the execution. The extra solution for separating balances of A and B addresses are done by the *listaddressgroupings* function of Bitcoin Core.

**Exercise 2.**

The solution can be found as *exe2.sh* under the Scripts folder in the solution. The scripts includes comments in the code as well as short descriptions in the log output for the steps taken through the execution. I was unable to successfully create the scriptSig.

1. **Developing Bitcoin Application, Freezing fund transaction**

Beforehands all required libraries were installed on the VM and all the log and output is saved under Tutorial\_outputs as *bitcoin\_nodejs\_install\_log.txt.* For the freezing fund transaction, as also commented in the code, an open demonstratory source was used found at [*https://github.com/mruddy/bip65-demos/blob/master/freeze.js*](https://github.com/mruddy/bip65-demos/blob/master/freeze.js)*.* This code was then refactored and each step got discussed by comments in the code.