Daily Report File for the Semester Project

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First, I forked the repository of tendermint. The forked repository can be found in the link `https://github.com/FurkanKarakas/tendermint`. I followed the documentation on GitHub in order to install the binaries in my local machine. It involved setting up some environment variables such as `$GOPATH`.

Since the master branch is under development, I checked out to the latest version, which is currently 0.33.0. The current version of tendermint can be seen by the command:

```
tendermint version
```

We can run a single node tendermint at the moment but to run local test nets, we can utilize "docker". To start a 4 node test net, run:

```
make localnet-start
```

The nodes bind their Remote Procedure Call (RPC) servers to ports 26657, 26660, 26662, and 26664 on the host. Here is a good website, which explains what RPC is. From the tendermint documentation: *A REST interface for state queries, transaction generation and broadcasting.* The nodes of the network expose their P2P and RPC endpoints to the host machine on ports 26656-26657, 26659-26660, 26661-26662, and 26663-26664 respectively. We can verify these port numbers with the following command:

```
$ sudo netstat -tulpn | grep LISTEN
```

```
tcp      0    0 127.0.0.1:43635     0.0.0.0:*       LISTEN   3298/code
tcp      0    0 127.0.0.53:53       0.0.0.0:*       LISTEN   597/systemd-resolve
tcp      0    0 127.0.0.1:631       0.0.0.0:*       LISTEN   811/cupsd
tcp6     0    0 ::1:631             :::*            LISTEN   811/cupsd
tcp6     0    0 :::26656            :::*            LISTEN   10874/docker-proxy
tcp6     0    0 :::26657            :::*            LISTEN   10859/docker-proxy
tcp6     0    0 :::26659            :::*            LISTEN   11005/docker-proxy
tcp6     0    0 :::26660            :::*            LISTEN   10984/docker-proxy
tcp6     0    0 :::26661            :::*            LISTEN   10832/docker-proxy
tcp6     0    0 :::26662            :::*            LISTEN   10819/docker-proxy
tcp6     0    0 :::26663            :::*            LISTEN   10951/docker-proxy
tcp6     0    0 :::26664            :::*            LISTEN   10918/docker-proxy
```

Note that the program uses TCP in IPv6.

In the command line window, each node is printed with a distinct color. Executed states and committed blocks are printed in the command line window. With each commitment, the height is constantly increasing.

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After executing multiple nodes, a new folder `build` is created. In this folder, each node has a log file, which is called `tendermint.log`. These log files contain the commit and execute steps of the program, written with their corresponding timestamps. We can check which actions are executed in the given order by means of these timestamps.