Project 1 Bitcoin Mining

Os: Mac OS

File

In the Project1 file, there is a `bitcoin.erl` where is the code I wrote.

Usage

Get into the shell

`cd` to the directory `~/project1/`

In the terminal 1

```
erl -sname boss
```

In Mac, you will get the `User Name` after the name

```
(boss@ICEJJ)1>
```

In another terminal terminal 2

```
erl -sname worker
(worker@ICEJJ)1>
```

Start the process

In terminal 1

```
bitcoin:start(6).
boss assign worker <0.89.0>
```

Boss will assign a worker after the server start.

In terminal 2

```
bitcoin:connect(boss@ICEJJ).
{worker,<0.88.0>}
```

In the client, connect the worker to the boss.

In terminal 1 boss will assign the connected worker.

```
boss assign worker <10071.88.0>
```

End the process

When one the worker finds the bitcoin.

In the terminal 1

```
Worker <0.89.0> finished mining
Worker <0.89.0>:
Hash: 000000cf83ddfcea70b97b632d529be78bc2c3261244debc945af8d1c91bbc1b
My string is: pliang3qcsau=6vg=wc0d4d7w
Worker <0.89.0> stop
```

In the terminal 2

```
Worker <0.88.0> stop
```

All the worker included server will stop after find a bitcoin.

Material

- Size of the work unit that you determined results in the best performance for your implementation and an explanation of how you determined it. The size of the work unit refers to the number of sub-problems that a worker gets in a single request from the boss.

The more Unit I use, the more Ratio I get.
For the workers, they get a random string from server and then hash the string, after getting the hash string,
it will compare the first K element to K 0s. If it match , boss will stop all the workers.

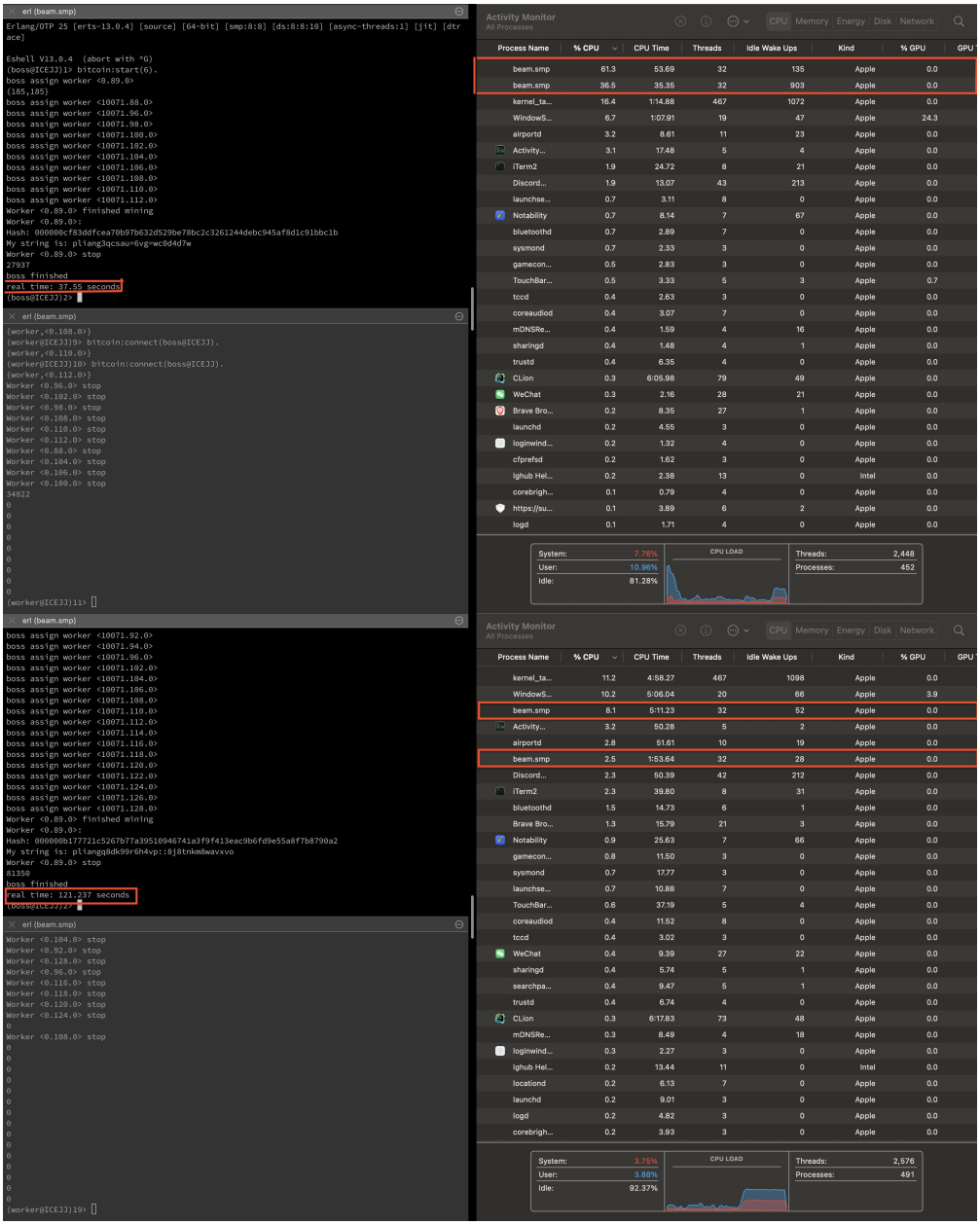
UNIT\TIME	CPU_Time	Real_Time	Ratio
8	201.86	96.32	2.09
10	89.04	37.55	2.371
14	181.22	62.191	2.91
18	424.87	121.23	3.5

- The result of running your program for input 4

```
pliangbu3
00004b67c569c1eedd6871f7ffb8425edb40a578cbcce03a626e000996c4ad6d
```

- The running time for the above is reported by time for the above and report the time. The ratio of CPU time to REAL TIME tells you how many cores were effectively used in the computation. If you are close to 1 you have almost no parallelism (points will be subtracted).

The time is show on the first material.



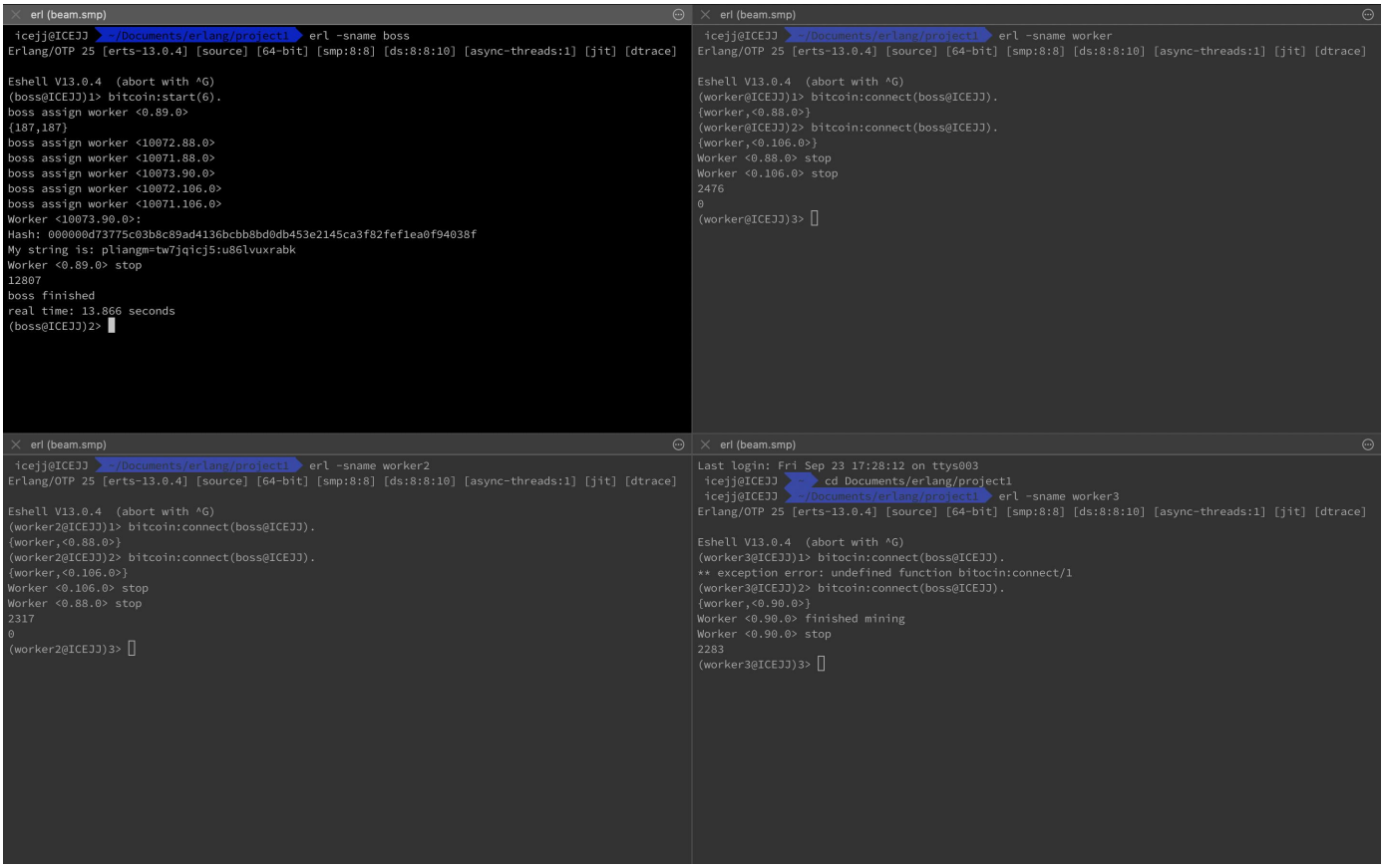
- The coin with the most 0s you managed to find.

The most 0s I find is 6.

```
pliangw2eco;=vbbdtwngqoc
000000cf1b2c9803748063cf751d39b914f191334f399a5a8bc2c6e05e2726b3
```

- The largest number of working machines you were able to run your code with.

I can run on at least four terminal.



It can be more terminal added.