

README file

Group members:

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1. 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.

We have used 10 actors in our implementation. We are able to utilize all the cores in my computer (mine has 4 cores) while spawning 12 work units, as I increase or decrease this number, my Real to CPU time ratio drops. This behavior varies for different number of required leading zeroes.

We determined this number by hit and trial method.

2. The result of running your program for input 4

OUTPUT:

```
Real: 00:00:00.423, CPU: 00:00:01.187, GC gen0: 23, gen1: 2, gen2: 0
PS C:\Users\utkar\Downloads> dotnet fsi bitcoin.fsx 4
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0

bitcoin.fsx(70,15): warning FS0064: This construct causes code to be less generic than indicated by the type annotations. The type variable 'a' has been constrained to be type 'Message'.

bitcoin.fsx(69,19): warning FS0025: Incomplete pattern matches on this expression. For example, the value 'Answer (_, _) ' may indicate a case not covered by the pattern(s).

bitcoin.fsx(79,21): warning FS0040: This and other recursive references to the object(s) being defined will be checked for initialization-soundness at runtime through the use of a delayed reference. This is because you are defining one or more recursive objects, rather than recursive functions. This warning may be suppressed by using '#nowarn "40"' or '--nowarn:40'.

bitcoin.fsx(99,14): warning FS0064: This construct causes code to be less generic than indicated by the type annotations. The type variable 'a' has been constrained to be type 'Message'.

shwetatyagiPIQsT% 00001E6F027BEB5BDA00FFDDF4896131E8FA8332EE2A49BA248FAAE6D141473D
Real: 00:00:00.668, CPU: 00:00:02.640, GC gen0: 64, gen1: 2, gen2: 0
PS C:\Users\utkar\Downloads> |
```

3. The running time for the above as 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).

Real Time: 0.668

CPU Time:2.640

Cores used = CPU Time/Real Time = 3.95 (My PC has 4 cores)

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

We are able to find maximum six zeros (we found 7 zeros earlier but it didn't happen again).

```
PS C:\Users\utkar\Downloads> dotnet fsi bitcoin.fsx 6
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0

bitcoin.fsx(70,15): warning FS0064: This construct causes code to be less generic than indicated by the type annotations. The type variable 'a' has been constrained to be type 'Message'.

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shwetatyagi+9m[]tKr 000000E7BAD09466FD302068E18F215CA5A3963F7EA469B29141E7C6794009C2
Real: 00:00:38.960, CPU: 00:02:58.750, GC gen0: 6314, gen1: 7, gen2: 0
```