README file

In the README file, you have to include the following 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 size of the worker unit that serves the best performance is with 10 actors.

  If I code the maximum actor that can be spawned to be 3, the ratio between CPU time to real time is core usage increases to 1 core to 2 core to 3 cores. The core utilization increases with the increase in actors spawned. For 3 actors, the core utilization is 3.36 cores. But it decreases with the increase in actors uptil 10 actors.

  FOR 3 ACTORS ------->

```
C:\Users\shrut\Desktop>dotnet fsi ProjectDOS.fsx 4
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0


ProjectDOS.fsx(73,15): warning FS0064: This construct causes code to be less generic than indicated by th
ons. The type variable 'a has been constrained to be type 'Message'.


ProjectDOS.fsx(72,19): warning FS0025: Incomplete pattern matches on this expression. For example, the va
 _)' may indicate a case not covered by the pattern(s).


ProjectDOS.fsx(82,21): warning FS0040: This and other recursive references to the object(s) being defined
d for initialization-soundness at runtime through the use of a delayed reference. This is because you are
r more recursive objects, rather than recursive functions. This warning may be suppressed by using '#nowa
nowarn:40'.


ProjectDOS.fsx(107,14): warning FS0064: This construct causes code to be less generic than indicated by t
ions. The type variable 'a has been constrained to be type 'Message'.

shruti.pariharkW"1R@;F#lsu        0000CEECD5A28B78723D98C702DA65EBF5856BAD250EB0D218F4160A7C071AE5
Real: 00:00:00.816, CPU: 00:00:02.734, GC gen0: 27, gen1: 1, gen2: 0
```

  For 4 actors - 2.23
  For 5 actors - 2.23
  For 8 actors - 1.92
  For 10 actors - 3.61

  FOR 10 ACTORS -------->

```
Command Prompt                                              —    □    X

^C
C:\Users\adity\Desktop>dotnet fsi ProjectDOS.fsx 4
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0


ProjectDOS.fsx(73,15): warning FS0064: This construct causes code to be less generic than indicated by the type annotati
ons. The type variable 'a has been constrained to be type 'Message'.


ProjectDOS.fsx(72,19): warning FS0025: Incomplete pattern matches on this expression. For example, the value 'Revert (_,
 _)' may indicate a case not covered by the pattern(s).


ProjectDOS.fsx(82,21): warning FS0040: This and other recursive references to the object(s) being defined will be checke
d for initialization-soundness at runtime through the use of a delayed reference. This is because you are defining one o
r more recursive objects, rather than recursive functions. This warning may be suppressed by using '#nowarn "40"' or '--
nowarn:40'.


ProjectDOS.fsx(107,14): warning FS0064: This construct causes code to be less generic than indicated by the type annotat
ions. The type variable 'a has been constrained to be type 'Message'.

shruti.pariharvK]R+Zxdc1&E        00003EE36427D55BAF1A6B04EA076259C8D586A71B182E5C9981374D377EA074
shruti.parihar&UtOOL.qC";:        00007F5C0768359A0BD30CEFA6144245E69F9B71F118690B16372321AE7812A3
Real: 00:00:00.302, CPU: 00:00:01.093, GC gen0: 14, gen1: 3, gen2: 1
```

If we manage to spawn 10 actors, the core utilization is 3.61 cores. After that the utilization decreases again.

For 12 actors - 2.01
For 13 actors - 2.71
For 100 actors - 2.48
FOR 100 actors -------->


```
C:\Users\shrut>cd desktop

C:\Users\shrut\Desktop>dotnet fsi main.fsx 4
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0


main.fsx(73,15): warning FS0064: This construct causes code to be less generic than indicated by the
he type variable 'a has been constrained to be type 'Message'.


main.fsx(72,19): warning FS0025: Incomplete pattern matches on this expression. For example, the val
ay indicate a case not covered by the pattern(s).


main.fsx(82,21): warning FS0040: This and other recursive references to the object(s) being defined
initialization-soundness at runtime through the use of a delayed reference. This is because you are
 recursive objects, rather than recursive functions. This warning may be suppressed by using '#nowar
:40'.


main.fsx(107,14): warning FS0064: This construct causes code to be less generic than indicated by th
The type variable 'a has been constrained to be type 'Message'.

shruti.pariharP!e@h$(8-           00002F8C33755426D45D25CB0E1410E42F0CAAAE519F739615F8CD9A3F4C0BB1
Real: 00:00:00.597, CPU: 00:00:01.484, GC gen0: 31, gen1: 1, gen2: 0
```

- The result of running your program for input 4

  After we passes the value of k as 4, the program only gave 1 output.
  Output for String - shruti.pariharQCXRDU})=W\
  Hash for the String -
  000019DD571E67BD5A5C317374D600AE7C68C9217906DE69A30F3D39B87FFDC6

```
C:\Users\shrut\Desktop>dotnet fsi ProjectDOS.fsx 4
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0


ProjectDOS.fsx(73,15): warning FS0064: This construct causes code to be less generic than indicated
ons. The type variable 'a has been constrained to be type 'Message'.


ProjectDOS.fsx(72,19): warning FS0025: Incomplete pattern matches on this expression. For example, t
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ProjectDOS.fsx(82,21): warning FS0040: This and other recursive references to the object(s) being de
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r more recursive objects, rather than recursive functions. This warning may be suppressed by using '
nowarn:40'.


ProjectDOS.fsx(107,14): warning FS0064: This construct causes code to be less generic than indicated
ions. The type variable 'a has been constrained to be type 'Message'.

shruti.pariharQCXRDU})=W\        000019DD571E67BD5A5C317374D600AE7C68C9217906DE69A30F3D39B87FFDC6
Real: 00:00:00.427, CPU: 00:00:00.953, GC gen0: 14, gen1: 1, gen2: 0
```

- 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).

  The Realtime was 0.427s and the CPU time was 0.953s. The ratio of CPU/Real time gives no of cores utilized-
  No of cores = ceil(CPU/Real time) = ceil(2.23) = 3 cores.

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

  I managed to find the coin with 6 zeroes for String - shruti.parihar;%u"x%WCy6
  Hash for the String -
  000000D50D6A96427F79609E8A96F610AFD7074C5D77EFE1BEDC5745A0737995