

## **DOSP**

### **Project-1**

**(To work on Remote Machines)**

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#### **Steps to run:**

Name of the project: Remote

To run the server file: `dotnet fsi --langversion:preview server.fsx`

To run the client file: `dotnet fsi --langversion:preview client.fsx <input> <portNo>`

Design:

Server:

1. We created an actor 'server' which waits for the input value (i.e. the number of leading zeroes) from the client.
2. Once the server receives work from the client, it is kept in its localBoss mailbox.
3. The localBoss then distributes the work among 30 workers and they start mining coins.

Client:

1. The client will send work to its local actors. It will also send work to the remote actors through the server.
2. It will print the coins mined and then when the work is finished, it will terminate the program.

With this code, we are facing an issue. We were able to send work to the 'server' actor from the 'client' actor. The server is also computing work locally. But when we run the file, the server is working sequentially with the client. It is not working in parallel. Because of this the performance of the system is not good.

We can run our program locally and are able to produce good results as mentioned in the other readme file. But we are not able to do this remotely.

Screenshots of Server terminal:

```
server.fsx > {} Server > bitCoinMiners
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PROBLEMS 4 OUTPUT TERMINAL DEBUG CONSOLE

Try the new cross-platform PowerShell https://aka.ms/powershell

PS C:\Fall 2021\DOSP\Project1\Remote> dotnet fsi --langversion:preview server.fsx
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Debug
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Info
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Warning
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Error
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream] StandardOutLogger started
[DEBUG][9/25/2021 2:35:09 AM][Thread 0011][akka://RemoteFSharp/] Started (Akka.Actor.GuardianActor)
[DEBUG][9/25/2021 2:35:09 AM][Thread 0016][akka://RemoteFSharp/system] Started (Akka.Actor.SystemGuardianActor)
[DEBUG][9/25/2021 2:35:09 AM][Thread 0018][akka://RemoteFSharp/user] Started (Akka.Actor.GuardianActor)
[DEBUG][9/25/2021 2:35:09 AM][Thread 0011][akka://RemoteFSharp/] now supervising akka://RemoteFSharp/user
[DEBUG][9/25/2021 2:35:09 AM][Thread 0011][akka://RemoteFSharp/] now supervising akka://RemoteFSharp/system
[DEBUG][9/25/2021 2:35:09 AM][Thread 0018][akka://RemoteFSharp/user] now watched by [akka://RemoteFSharp/system]
[DEBUG][9/25/2021 2:35:09 AM][Thread 0016][akka://RemoteFSharp/system] now watched by [akka://RemoteFSharp/]
[DEBUG][9/25/2021 2:35:09 AM][Thread 0004][akka://RemoteFSharp/system/log1-DefaultLogger] Started (Akka.Event.DefaultLogger)
[DEBUG][9/25/2021 2:35:09 AM][Thread 0014][akka://RemoteFSharp/system] now supervising akka://RemoteFSharp/system/log1-DefaultLogger
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream] subscribing [akka://RemoteFSharp/system/log1-DefaultLogger#1298878154] to channel Akka.Event.Error
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream(RemoteFSharp)] Logger log1-DefaultLogger [DefaultLogger] started
[DEBUG][9/25/2021 2:35:09 AM][Thread 0001][EventStream] subscribing [akka://RemoteFSharp/system/UnhandledMessageForwarder#1079691439] to channel Akka.Event.UnhandledMessage
[DEBUG][9/25/2021 2:35:09 AM][Thread 0015][akka://RemoteFSharp/system] now supervising akka://RemoteFSharp/system

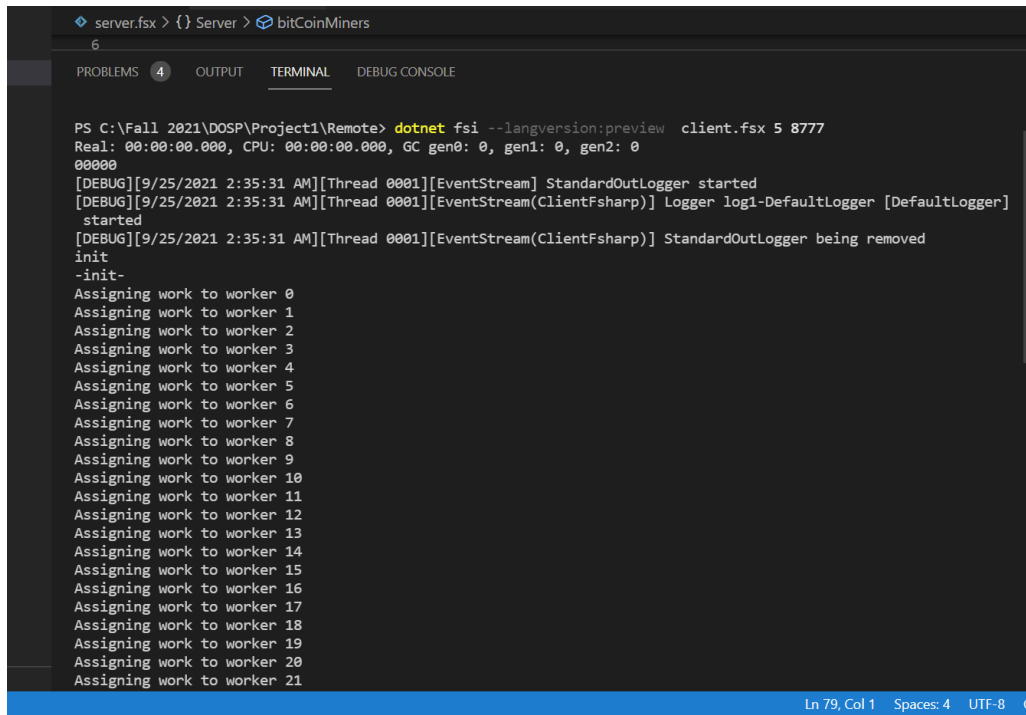
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```

```
server.fsx x client.fsx
server.fsx > {} Server > bitCoinMiners
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PROBLEMS 4 OUTPUT TERMINAL DEBUG CONSOLE

Assigning work to worker 27
Assigning work to worker 28
Assigning work to worker 29
Bitcoin found String= itrivediT9E7R87JRCLQDCRK Hash= 00000b85defc4884dceea13ccb0b543cde78080d293a2a846a750fe25f28be07
Bitcoin found String= itrivediXSQNA4DUJON Hash= 000006ee309f731084c388ee44e4c6632b7827851d456986232a4cc25ec5d4ec
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Debug
[DEBUG][9/25/2021 2:36:07 AM][Thread 0019][akka://RemoteFSharp/system/remoting-terminator] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Info
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Warning
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][EventStream] subscribing [akka://all-systems/] to channel Akka.Event
.Error
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][EventStream] Shutting down: StandardOutLogger started
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][EventStream] unsubscribing [akka://RemoteFSharp/system/log1-DefaultLogger#1298878154] from all channels
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][EventStream] All default loggers stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0039][akka://RemoteFSharp/system/transport] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0043][akka://RemoteFSharp/system/log1-DefaultLogger] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0023][akka://RemoteFSharp/system/remote-deployment-watcher] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0018][akka://RemoteFSharp/system/EventStreamUnsubscriber-1] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][akka://RemoteFSharp/system] Stopping
[DEBUG][9/25/2021 2:36:07 AM][Thread 0022][akka://RemoteFSharp/system/remote-watcher] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0044][akka://RemoteFSharp/system/UnhandledMessageForwarder] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0026][akka://RemoteFSharp/system/endpointManager] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0017][akka://RemoteFSharp/system] Stopped
[DEBUG][9/25/2021 2:36:07 AM][Thread 0016][akka://RemoteFSharp/] received AutoReceiveMessage <Terminated>: [akka://RemoteFSharp/system] - ExistenceConfirmed=True
[DEBUG][9/25/2021 2:36:07 AM][Thread 0016][akka://RemoteFSharp/] Stopped

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```

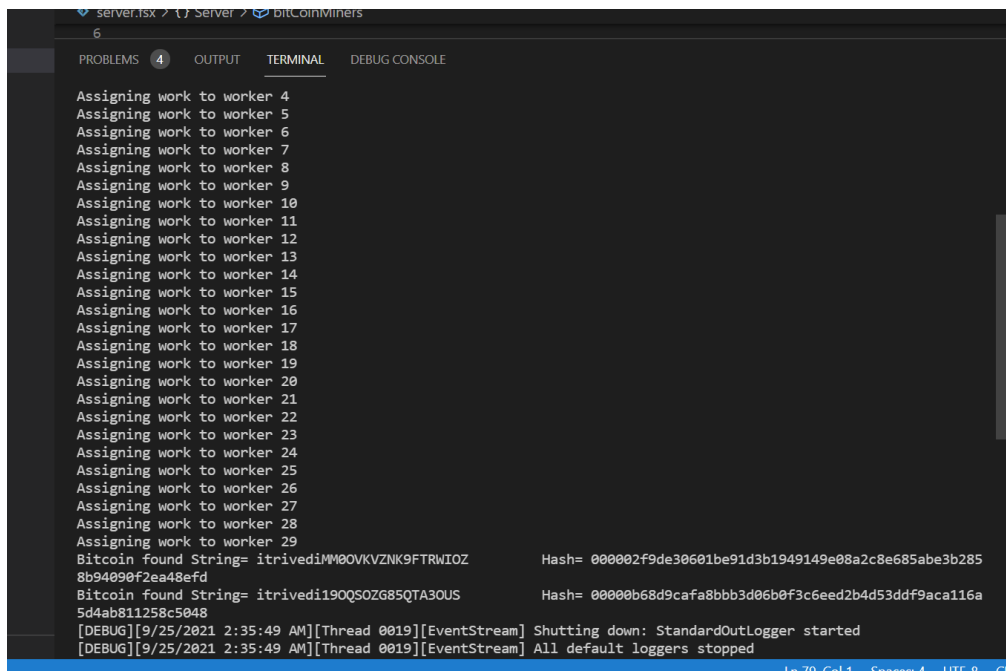
## Screenshots of Client Terminal:



```
server.fsx > {} Server > bitCoinMiners
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PROBLEMS 4 OUTPUT TERMINAL DEBUG CONSOLE

PS C:\Fall 2021\DOSP\Project1\Remote> dotnet fsi --langversion:preview client.fsx 5 8777
Real: 00:00:00.000, CPU: 00:00:00.000, GC gen0: 0, gen1: 0, gen2: 0
00000
[DEBUG][9/25/2021 2:35:31 AM][Thread 0001][EventStream] StandardOutLogger started
[DEBUG][9/25/2021 2:35:31 AM][Thread 0001][EventStream(ClientFsharp)] Logger log1-DefaultLogger [DefaultLogger]
started
[DEBUG][9/25/2021 2:35:31 AM][Thread 0001][EventStream(ClientFsharp)] StandardOutLogger being removed
init
-init-
Assigning work to worker 0
Assigning work to worker 1
Assigning work to worker 2
Assigning work to worker 3
Assigning work to worker 4
Assigning work to worker 5
Assigning work to worker 6
Assigning work to worker 7
Assigning work to worker 8
Assigning work to worker 9
Assigning work to worker 10
Assigning work to worker 11
Assigning work to worker 12
Assigning work to worker 13
Assigning work to worker 14
Assigning work to worker 15
Assigning work to worker 16
Assigning work to worker 17
Assigning work to worker 18
Assigning work to worker 19
Assigning work to worker 20
Assigning work to worker 21
```

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```
server.fsx > {} Server > bitCoinMiners
6
PROBLEMS 4 OUTPUT TERMINAL DEBUG CONSOLE

Assigning work to worker 4
Assigning work to worker 5
Assigning work to worker 6
Assigning work to worker 7
Assigning work to worker 8
Assigning work to worker 9
Assigning work to worker 10
Assigning work to worker 11
Assigning work to worker 12
Assigning work to worker 13
Assigning work to worker 14
Assigning work to worker 15
Assigning work to worker 16
Assigning work to worker 17
Assigning work to worker 18
Assigning work to worker 19
Assigning work to worker 20
Assigning work to worker 21
Assigning work to worker 22
Assigning work to worker 23
Assigning work to worker 24
Assigning work to worker 25
Assigning work to worker 26
Assigning work to worker 27
Assigning work to worker 28
Assigning work to worker 29
Bitcoin found String= itrivediMM0OVKVZNK9FTRWIOZ Hash= 000002f9de30601be91d3b1949149e08a2c8e685abe3b285
8b94090f2ea48efd
Bitcoin found String= itrivedi19Q0S0ZG85QTA30US Hash= 00000b68d9cfa8bbb3d06b0f3c6eed2b4d53ddf9aca116a
5d4ab811258c5048
[DEBUG][9/25/2021 2:35:49 AM][Thread 0019][EventStream] Shutting down: StandardOutLogger started
[DEBUG][9/25/2021 2:35:49 AM][Thread 0019][EventStream] All default loggers stopped
```

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