

PROJECT 4.1 - BONUS REPORT

Group Members:

1. Shivaditya Jatar - UF ID: 6203 9241

2. Ayush Mittal - UF ID: 3777 8171

For Bonus Part, we have implemented our project to run on 2 terminals such that one can act as server and other as worker. In our case, if the [args] is a number (e.g $k = 4$), then the Server is mining bitcoins with that many leading zeroes (4 in this case). If the [args] is an IP address, then it is the worker which is asking to participate in the bitcoin mining process. The first call message to the Server returns the value of k to the worker. The second call to the server sends an appended randomized string to the worker, generated by the server. The worker mines bitcoins with these randomized strings and sends it to the server using the 'cast' function if the leading number of zeroes matches the value of k . This is carried out in a loop and every time the worker calls the server to obtain a randomized string.

Now, there will be bitcoins mined by both the server and the worker. The worker will send the bitcoins to the server and now the total bitcoins will be equal to the addition of bitcoins mined by server and the worker.

For Transactions, they will be performed taking in consideration the total bitcoins for the network.

NOTE:

1. Keep the System connected to network. (LAN)

2. Before running the worker with the IP address of the server, we have to run the Server by giving the numeric k value first (i.e the number of leading zeroes) and then run the worker. Otherwise the worker will not be able to connect to the Server.

Testing

For Bonus Part, we have added 2 extra tests:

1. For correct evaluation of Key-Pair (public-private key pair)
2. For correctness of Signature

Screenshots (Server Side)

```
CA: Command Prompt - escript project4_1bonus 4
Y:\#STUDY\UFL\Fall 18\Distributed OS\project4_1bonus>escript project4_1bonus 4
bitcoin;ayushivaTDKWZ700pj27636 00009e87c3eb0a7185796d29eb13482f527702fd4620a97e40805502bc5da350
bitcoin;ayushivaszbfXYASHP36357 00006a0b43648f7475616bdaa05595098444cc769101bc5c8596fdcf6a9d6314
bitcoin;ayushivay1HehHrHPL34171 000083b723aefb0f00eb9e73cfc2d08d9d3f99d4f36a31620be88c09cf73d22
bitcoin;ayushivay1HehHrHPL39944 0000e2e2598ce01ffb185462c9f3fb203d5a9bcfad570313063ad5cbbc1714634
bitcoin;ayushivafr7Lez7yfZ5158 0000f25a17794ecb5834a5204b79f06d386c15d4e0c97f65422abf12631d685b
bitcoin;ayushivafr7Lez7yfZ40522 0000f9bdc42f7b78fba3e71b96ec6524cdcfe7c54bb88f3819b53361e05009f
bitcoin;ayushivaocgwzodDpY11149 00004e1843a177f8678356c90023bd41793bc7cdeddbd68c722f31f52fc8ee3c
bitcoin;ayushivaYKSwvNCXcw10295 0000950ca519134584f461f2f0d98ddab40e2188392fdfd1673b1eb3d33358fd
["client",
  "bitcoin;ayushivaTFnkxMRjxw27033\t0000c1b4dd2e3a93367cd9ad8cc1fd067f64217b9203760a962cbde8ef4bbcf"]
bitcoin;ayushivakXMoXkQsAj29838 00000debc4f1a4a0b293b92f9eb9b9fc0ebd7118d1820efac9f0f03565067741
["client",
  "bitcoin;ayushivaTFnkxMRjxw44203\t0000834104aac027d7391119b8864cf7011ab9e8be91064787801d49443b37ff"]
bitcoin;ayushiva9m89vUzGcu9400 000062b2d4b4d93a7c339acea78f068b777f47a43dbe7abd018fa78777d38a11
bitcoin;ayushiva9m89vUzGcu44134 00004e8673d3235109d0dcbead68d5267f0dadffa0e7e574854d9fbe59100fb
["client",
  "bitcoin;ayushivaBelOfT4qUn27883\t000057be8b678ba0d9252ed7842dc02e663d377c1762019ffdf4af86bc19e517"]
bitcoin;ayushivaCT3K43pnDo12618 0000a1c1448743e5699fd3ed62f7766f177e30983388f96f129c8ecaf8cde8c3
bitcoin;ayushivaxE6t8mliyd28897 000012541361e0d12803af4fd000872aa75d208527285bceae4d6a64b4608cbe
```

```
CA: Command Prompt - escript project4_1bonus 4
bitcoin;ayushivaaQQ1TDHN2V9101 0000f6a553b6a56f6fdd61fe71ac6bb0e3ca1d54cd434dc80cd91df45c08f7ec
bitcoin;ayushivaaQQ1TDHN2V31258 00007e254efb813a75b8dcfca273b95e455a3b973d14c94437e5ee0271d346de
bitcoin;ayushivaMKfYVvHj6k26519 00005cd30c1f7e15af68fd43f045d653737de4f773c301fc81fafdb6ed3c0e59
Maximum number of threads reached!
Total Bitcoins mined by Server: 72
Total Bitcoinscoins mined by Worker: 36
Total Bitcoins Mined: 108

*****
-----Transactions Information-----
*****

Transaction id | Sender Addr. | Receiver Addr. | Time | Status | Amount
K3WsiRP5 | 044107 | 04D41B | 2018-11-26 19:47:02.611000Z | Success | 8 BTC
4dIw2ovv | 049628 | 043246 | 2018-11-26 19:47:03.111000Z | Success | 1 BTC
3XAS7YUI | 043246 | 047F7A | 2018-11-26 19:47:03.627000Z | Success | 6 BTC
McBY1TrI | 047F7A | 04D41B | 2018-11-26 19:47:04.127000Z | Success | 9 BTC
fnzBZiiT | 049628 | 044107 | 2018-11-26 19:47:04.642000Z | Success | 2 BTC
er8aFePS | 049628 | 047F7A | 2018-11-26 19:47:05.157000Z | Success | 3 BTC
OQ051eIU | 043246 | 049628 | 2018-11-26 19:47:05.674000Z | Unconfirmed | 11 BTC
Aclre8N2 | 04D25B | 04D41B | 2018-11-26 19:47:06.174000Z | Success | 1 BTC
TgzxK193 | 04D41B | 049628 | 2018-11-26 19:47:06.689000Z | Success | 16 BTC
XdaPLs9e | 049628 | 044107 | 2018-11-26 19:47:07.205000Z | Success | 18 BTC

*****
-----WALLETS-----
*****

Wallet: 049628
Transaction:1
Receiver: 043246
Amount: 1
Status: Success
-----
Transaction:2
Receiver: 044107
Amount: 2
Status: Success
-----
Transaction:3
Receiver: 047F7A
Amount: 3
Status: Success
-----
```

Bitcoin mined by Worker:


```
["client",  
"bitcoin;ayushiva99AIJrl6X49848\t00007d5fae039457676f4c5ed1aa8e6b5896d26d6a64fd3  
b2ac5762ff77b0e8c"]
```

Bitcoin mined by Server:

```
bitcoin;ayushiva0o9VesaqHZ3285 000005e126208a76ef94615ab9d4e6b4cb5bcaa90e862c6  
79a863bbce2802018
```

Screenshots (Worker Side)

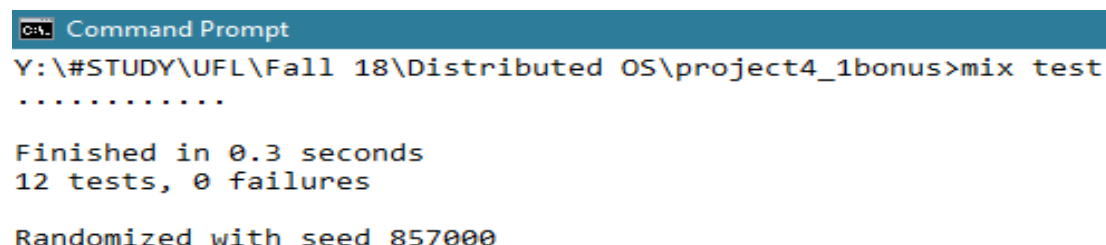
\$ escript project4_1bonus 172.16.104.132



```
C:\> Command Prompt  
Y:\#STUDY\UFL\Fall 18\Distributed OS\project4_1bonus>escript project4_1bonus 172.16.104.132  
Connected to the master successfully!  
bitcoin;ayushivaTfnkxMRjxw27033 0000c1b4dd2e3a93367cd9ad8cc1fd067f64217b9203760a962cbde8ef4bbcfce  
bitcoin;ayushivaTfnkxMRjxw44203 0000834104aac027d7391119b8864cf7011ab9e8be91064787801d49443b37ff  
bitcoin;ayushivaBelOfT4qUn27883 000057be8b678ba0d9252ed7842cd02e663d377c1762019ffdf4af86bc19e517  
bitcoin;ayushivaC5LR4pS7Lm35483 00001b8963df66b0915da2a5a26526b2c86d084e7bbd19cddb3ae35ca98b24b09  
bitcoin;ayushivapVrX0x8G9x6516 00004cc193c55ae35f2b9ce4f6873406064a5357c5f166fad9dc478cfc44c4c  
bitcoin;ayushivapVrX0x8G9x14730 0000eeec0aa35f07af734fe4e98f40eed9bc2d9afde5e4814369e501c6a45977  
bitcoin;ayushivapVrX0x8G9x42410 0000006499de8a8740e4993b08b8a6199d98362579a06e1b005b562d353c68ba  
bitcoin;ayushivaTzmftY9TOi32192 000071611187799fa842c26efaa572ae406101dc9610a91e58032039f9805ca7  
bitcoin;ayushivaFpkNvFf4xc7428 0000ac349078edce148f4e09cbf056642a71950323b9c1944ae879fe98e5e2af  
bitcoin;ayushivaPTdQzmOmYx38053 00000af3dcc47677aa38c4a8e1ffc9c8f61bdf3bdd7a3476ac2e8c7a48ca77f3  
bitcoin;ayushivaY2xjrEAQ1212594 00005b5d8fed21aad06209dcb17d91b3008048df36c507d72c73fe3a8565cfff  
bitcoin;ayushivaKXJCUPmwo6571 0000acaa58a46d21ebbb8ee9d5774d88f87bd778507d37e1fcf40bc8b550b6050  
bitcoin;ayushivaCUE5A2cVe813746 00008412da399ef3c4b0af2ca488f0727a6b22c616670bae47716b62994c5263  
bitcoin;ayushivapjYRkn8rnk25338 00001c1010d0aa3fbc2f4b392f7035ee810fb0bfebf5a501f4981147727ad0d3f  
bitcoin;ayushivaN3aIf1Xc9b39912 000042341a695d0f42650df621da03f1af232c90f5a5b68b56db4e6d48d2252  
bitcoin;ayushivapKZPk257DX11770 000024f0cb56b49d644f24f3f058298d8dba6dc90fc56a4a5da77b14fb91d1b1  
bitcoin;ayushivawK6xk5LIF810949 0000690607b4be28e957530e1fb9402e34d4c2c773fdea72514c917ac636c165  
bitcoin;ayushivawK6xk5LIF811983 00002fd252e03aa5d73750652fba33cc5ee32dd4310459029edec36b989cf1d8  
bitcoin;ayushivaQ2HXupjLps11239 0000614884510536d6069db84b8c6c13ec4686300816fd87a46246573dd0b974  
bitcoin;ayushivaQ2HXupjLps20698 000076588f6fe8e297700828eda5b73d06d5dfa8ea59e7b74004bf8a240af445  
bitcoin;ayushivaQ2HXupjLps33360 0000e63ef265c26f37368692852b509a41b6d0f1e79980e9e8db9e8fea70d3fc  
bitcoin;ayushiva7eKfzaz25u39968 0000994e3d7426338572893665bfba88a0ebf618a97acee21728533c0f1787a9  
bitcoin;ayushivawBqAonffPD14697 0000b9ac7f7847fe5dd567afd766215c1c4a792edd98eeef069da43815e98d9  
bitcoin;ayushivahM3uHeivio35979 0000df6de8c484988ff3c4f2419a6fb9a4f2fd7c5202856e8cec9cc95d09ecc2  
bitcoin;ayushivaaa08ThKCMM1291 00008a05770de25cffe2f1dbcc70657741aeca439eafd31004a1e99e3141614  
bitcoin;ayushivaaa08ThKCMM27337 000064974497f62b581eb579cf87e5cb1cbf895ca39234d60c5d2a4fa4c14ea6  
bitcoin;ayushivaaIAiDv5NoJ4778 00006c0ed7d30fbef5f3c3a7882c900d9748404ebfd275909219c843d9a4ff6  
bitcoin;ayushivaaIAiDv5NoJ8728 000012af1f21e4de59bb30ad62e25caf8d21c0c34e33c1d2e363bc05943f35e3  
bitcoin;ayushivaaIAiDv5NoJ17067 0000589c35c06aad9d53ed484f84ae7d939d750868bc1c56322e180382204850  
bitcoin;ayushiva99AIJr16X47753 0000ac6c9abb5b9879dbc19c1a07a379a7fea9a62f7712bdb08fe8e08742424c  
bitcoin;ayushiva99AIJr16X49848 00007d5fae039457676f4c5ed1aa8e6b5896d26d6a64fd3b2ac5762ff77b0e8c  
bitcoin;ayushivat7w6QF1PuW26778 000068648cd3e78a577468e942f0705e94ab3bdb78b3082ddb45b2b38e888281  
bitcoin;ayushivakbYMR4ROhb12810 0000ce59426c33cbb850281e5193470f8fd8d6a52400e424dd93bd05ee75fb04  
bitcoin;ayushivaPU6WVEX05N35156 000001f0f4ecd6ad1a45f30e663ceebd13f314d641605e9aab1af7e4387fab0e  
bitcoin;ayushivaPU6WVEX05N35837 00008acb5af81f0264250133d40f9000a632392e13399efb0af344175465bf0d  
bitcoin;ayushivaXttSqwu0a3757 000088d0038b9cd298aa81675c3743eefd78aa754bcab9e865a86ba14adaf365  
Maximum number of threads reached!  
Bitcoins mined by Worker: 36
```

***** These bitcoins are mined and sent to server.***

Screenshot (Testing):



```
C:\> Command Prompt  
Y:\#STUDY\UFL\Fall 18\Distributed OS\project4_1bonus>mix test  
.....  
  
Finished in 0.3 seconds  
12 tests, 0 failures  
  
Randomized with seed 857000
```