

# DOS PROJECT 1 REPORT

Submitted By:

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## INSTALLING AND RUNNING THE PROGRAM:

Prerequisites:

1. Install sbt tool:
  - a. `echo "deb https://dl.bintray.com/sbt/debian /" | sudo tee -a /etc/apt/sources.list.d/sbt.list`
  - b. `sudo apt-key adv --keyserver hkp://keyserver.ubuntu.com:80 --recv 642AC823`
  - c. `sudo apt-get update`
  - d. `sudo apt-get install sbt`

Running the Server:

1. Unzip the project folder Project1.zip
2. Open Terminal
3. Navigate to "BitCoinSystem" folder in the terminal
4. Run the command ***sbt "run <# of zeros>"***

Running the Remote Workers:

1. Same steps 1 to 3 as above on a difference machine.
2. Run the command ***sbt "run <ip address of the server>"***

Note: By default Server Mode will bind on port # 12300 and Remote Worker Mode will bind on port # 13400

## RESULTS:

1. Size of work unit for best performance:

We changed the following configuration values to determine the work size for best performance

1. number of actors
2. work unit
3. threshold for number of coins to mine

The results of using various configuration is displayed in the table above. Based on the table, we were able to determine the work size for best performance to be **100000**

# 0's	# Actors	Work Unit	Limit	# Match	CPU Time (secs)	Real Time (sec)	Efficiency
5	3	10 <sup>4</sup>	10 <sup>6</sup>	2	24.965	16.257	1.535646183
5	5	10 <sup>4</sup>	10 <sup>6</sup>	2	25.957	16.597	1.563957342
5	10	10 <sup>4</sup>	10 <sup>6</sup>	2	26.896	16.306	1.649454189
5	5	10 <sup>5</sup>	10 <sup>6</sup>	2	25.263	17.06	1.480832356
5	10	10 <sup>5</sup>	10 <sup>6</sup>	2	26.322	15.794	1.666582246
5	5	10 <sup>5</sup>	10 <sup>7</sup>	8	134.234	66.17	2.028623243
5	10	10 <sup>5</sup>	10 <sup>7</sup>	8	126.246	51.898	2.43257929
5	20	10 <sup>5</sup>	10 <sup>7</sup>	8	144.978	57.057	2.540932751
5	50	10 <sup>5</sup>	10 <sup>8</sup>	93	1374.454	498.527	2.757030211
5	20	10 <sup>5</sup>	10 <sup>8</sup>	93	1311.972	483.587	2.71300097

## 2. Result for running the program for **sbt "run 4"**

```

BitCoinSystem — bash — 102x49
[info] shashankranjan;HDNAEU 0000fcebcb06a9ee73dfa05e0efa62d634355bd96f3786ddddd0c0dd64352dcf
[info] shashankranjan;HEEIFI 00002a0abfc4d83b16b71a20354703ab744beee9fc8d7f50b558f42342d9553b
[info] shashankranjan;HDCZWH 00006a187ea7e952d49cc05fd5e810dba1837ed496108748ea1a4a876ca6f81d
[info] shashankranjan;HEZNWD 00009ef802040929f8e536be6e4c7d3b33a58e79f25a83ed63e08148c5310b75
[info] shashankranjan;HCTIWX 00007f45d5e5c31f116f964f8f52530001d104c9fd79c97af3c90f22bcc3e172
[info] shashankranjan;HDVHTE 0000a1178ebf9b91c97348f78cc4d8083c6389cd4aacf9317b1c6e1f5467e002
[info] shashankranjan;HDKPDX 0000908f205b629249497a83878112f3bf99c28cb3f769b6ed604e82eee89bf
[info] shashankranjan;HFBBD0 000013e43b4f64620d3c3c0f6b396859bec7c1380b5415cad88399ed3a828fe6
[info] shashankranjan;HEYEOJ 000052a0cf703d7716f42d33e17a1df79369f984999b46f32b99396ccae21600
[info] shashankranjan;HFGAJY 0000e99cab2fb11f6b95f738906502a19366043a478e0c5fc99da7b02c6fc8ef
[info] shashankranjan;HFTFTX 0000be2eebd61aa82c08332ad2c80b99146aa288feda1b488c9f4f6f4e1e8fd4
[info] shashankranjan;HGWBYZ 0000b272dbf1a381913d0fc5577d274e1939a14bcc925cac4637402aee92139e
[info] shashankranjan;HFJQRX 00002b431b3ad97ce41ccb4176089d8825bd080c68ba948c03f8a312bd2768cd
[info] shashankranjan;HGLUWD 0000617b2947aa7881232249043e9c71d9a8eafe5648f9b88b678d0c2b6a0f49
[info] shashankranjan;HFPUZZ 0000958476b67ccdfb78db264bcbfd547ca9161f760cca897e73223366ca8d45
[info] shashankranjan;HGMPPM 00002e6124496a3e60194c111643aa2fd0cd70a9e199f5ac19bd9a7cd411d412
[info] shashankranjan;HHRDDQ 00001c93e78dda25eddb552f7305fc1e80fc188cbdbeab80de989992f08d6a91
[info] shashankranjan;HHDYYP 00003ffa6e7df1e04a898a8163f4e0d1f16bbe3843755ab1f861a29985c5356b
[info] shashankranjan;HHJKRM 00009704a40649ee3c39d67d9dc6864f95d2bb5dd36fa46ab15ca2aec4ada2b1
[info] shashankranjan;HHJOXW 00006155f75899b0b9ee8fe656a965681bf818390da5aeb73ed5160b267fedb
[info] shashankranjan;HHPDFU 00008c59f2e9f2b831bed872852890e788bbaac249a122469ad945df4041523
[info] shashankranjan;HHPKEK 0000e7c3b06b8f4426b0fcc311d16dbb7af3f53c8da925e56c81abe3398c1b28
[info] shashankranjan;HJJJFC 0000da4aff8d3045a3ebdbbf491fa4c8e8cc3263b80417a38823ee7f8566ac1
[info] shashankranjan;HIMXIS 0000d3c92049287aa848eb5f7331951dba8b263fee9f0a283473ca8f2a46e0d8
[info] shashankranjan;HIHIVA 000017887c8768cc276300e02fc2bd2b09511997d7214145d56d8f4f030a85e0
[info] shashankranjan;HICKUH 00002f79c6c86721067d6d2c5958a0dba3dce33757a51c0f7ef7f7d5a0f7980c
[info] shashankranjan;HHTUGQ 0000fd072d17f10ef065fc59e2d8a292b208f990ae829b8f01b355a2c07cd6bd
[info] shashankranjan;HJQPMO 0000ccf111e1302409597bfd33ec9681efc6a79da53684fc7083eb59628b278d
[info] shashankranjan;HJADCE 000027e96429dc856a83b597ff0e8905ada1d02a85668a6dd3914b8213b59cb8
[info] shashankranjan;HIDUJJ 0000bf89a65a585b9b8d21c7394e0a0ba383d7dce3b7cf11a972c9f45e07184f
[info] shashankranjan;HHYNRZ 00007e2cab7ddf3a922675be70d89a98ee66fc04e1001093caedc3907cae763
[info] shashankranjan;HJRLGC 0000536f0b659ae35ed236aca6f4f18f245b12570f0cd03ee5b3a452d4d3d574
[info] shashankranjan;HJIGET 00001c624c1565a6d27e248388bff9ee50d86ec92f3b150292c5fc5edb42e13d
[info] shashankranjan;HIRVKX 000091714af0cfc614a14645da1844722b78413de96c805d4f453c843e78b8a7
[info] Max zeros: 6 Total coins: 1536
[info] [INFO] [09/13/2015 16:42:03.878] [BitCoinSystem-akka.remote.default-remote-dispatcher-39] [akka
.tcp://BitCoinSystem@10.136.64.138:12000/system/remoting-terminator] Shutting down remote daemon.
[info] [INFO] [09/13/2015 16:42:03.881] [BitCoinSystem-akka.remote.default-remote-dispatcher-39] [akka
.tcp://BitCoinSystem@10.136.64.138:12000/system/remoting-terminator] Remote daemon shut down; proceedi
ng with flushing remote transports.
[info] [INFO] [09/13/2015 16:42:03.915] [ForkJoinPool-3-worker-7] [Remoting] Remoting shut down
[info] [INFO] [09/13/2015 16:42:03.915] [BitCoinSystem-akka.remote.default-remote-dispatcher-41] [akka
.tcp://BitCoinSystem@10.136.64.138:12000/system/remoting-terminator] Remoting shut down.
[success] Total time: 466 s, completed 13 Sep, 2015 4:42:04 PM

real    7m52.779s
user    20m27.222s
sys      0m11.350s
Vipuls-MacBook-Pro:BitCoinSystem vipulmittal$

```

## 3. Running time

Configuration Used:

1. Number of Actor : 50
2. Work Size :  $10^5$
3. Threshold :  $10^8$

Command	CPU Time	Real Time	Efficiency
sbt "run 4"	1227.222	484.129	2.534907019
sbt "run 5"	1319.279	546.261	2.41510743

## 4. The coins with most zeros which we managed to find

```

shashankranjan;BQNCFY 00000010454f7bee650f0f570a1843bdcfecb75e953a2e5e56c692caaf011208
shashankranjan;GWACSM 00000041d44dcb99fbb59bb382e24a20a43f61511b520ef865226816d83065a0

```

## 5. The largest number of working machines we were able to run our code with

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