DOS PROJECT 1 REPORT

Submitted By:
Shashank Ranjan, 03937125
Vipul Mittal, 51901508

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 # 12000 and Remote Worker Mode will bind on port # 13000

RESULTS:

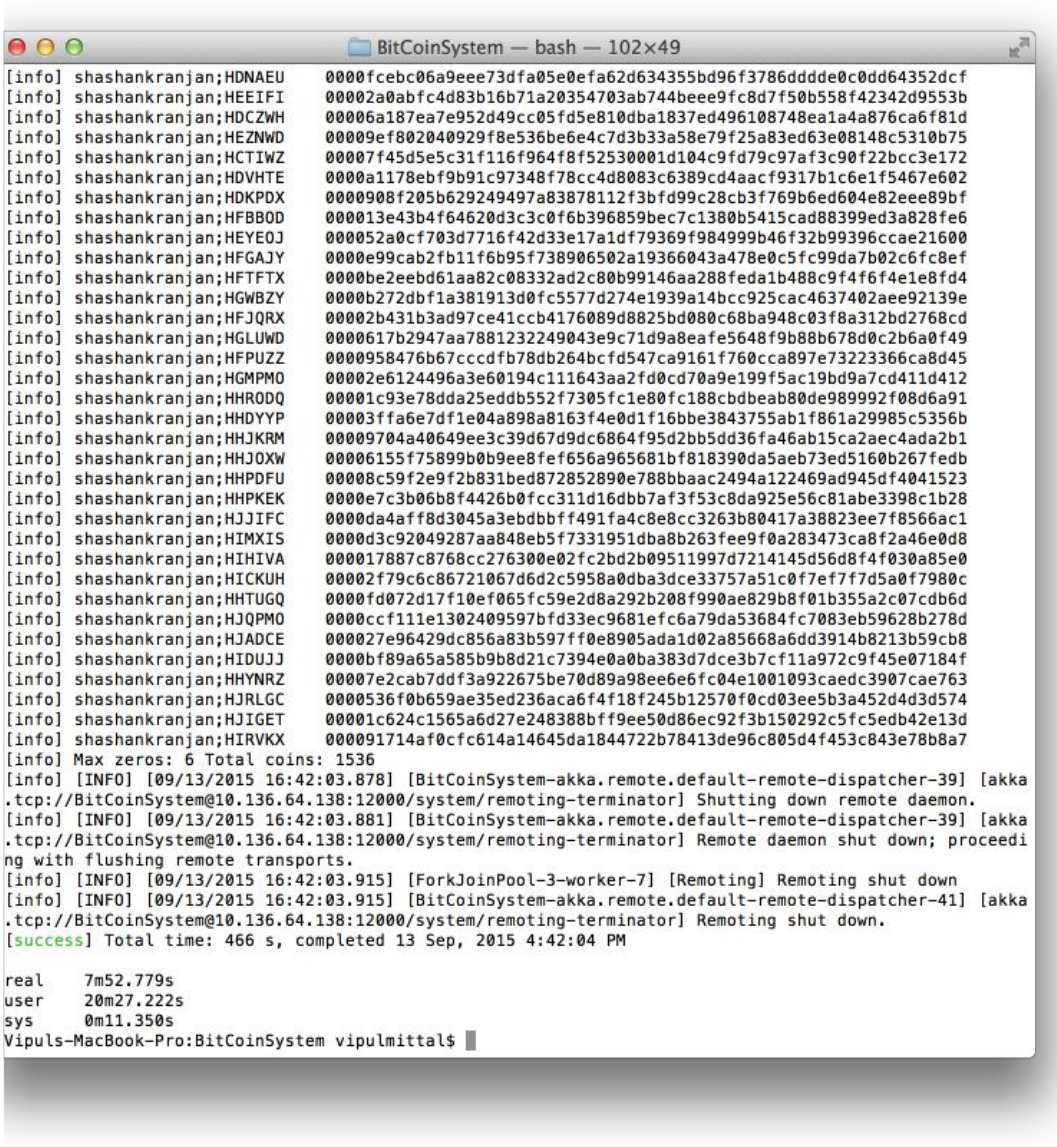
1. Size of work unit for best performance:

    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	10^4	10^6	2	24.965	16.257	1.535646183
5	5	10^4	10^6	2	25.957	16.597	1.563957342
5	10	10^4	10^6	2	26.896	16.306	1.649454189
5	5	10^5	10^6	2	25.263	17.06	1.480832356
5	10	10^5	10^6	2	26.322	15.794	1.666582246
5	5	10^5	10^7	8	134.234	66.17	2.028623243
5	10	10^5	10^7	8	126.246	51.898	2.43257929
5	20	10^5	10^7	8	144.978	57.057	2.540932751
5	50	10^5	10^8	93	1374.454	498.527	2.757030211
5	20	10^5	10^8	93	1311.972	483.587	2.71300097

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



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 00000010454f7bee650f0f570a1843bdcfebc75e953a2e5e56c692caaf011208
   shashankranjan;GWACSM 00000041d44dcb99fbb59bb382e24a20a43f61511b520ef865226816d83065a0

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