**COP 5615- PROJECT1**

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1. The user controlled parameters in our program is the time for which each ‘Worker’ actor runs and the minimum number of leading zeros to be obtained in the output hash code. We have 6 ‘Worker’ actors running on the server and 6 ‘Worker’ actors running on the client machine. We tested the program for **5 test cases** for an output with **minimum 4 leading zeros** and listed the **total bitcoins generated by client and server in total**:
   1. 5 minutes: 228 bitcoins mined (bitcoins/minute = 45.6)
   2. 4 minutes: 130 bitcoins mined (bitcoins/minute = 32.5)
   3. 3 minutes: 103 bitcoins mined (bitcoins/minute = 34.3)
   4. 2 minutes: 69 bitcoins mined (bitcoins/minute = 34.5)
   5. 1 minute: 39 bitcoins mined (bitcoins/minute = 39)

Average 37.18 bitcoines mined per minute.The **optimum** time case is, that is, the work unit that gives best performance is **5 mins**.

1. The output for running the program for a hash code with **4 leading zeros** and **5 minutes per worker** is :

|  |  |  |
| --- | --- | --- |
| Total BitCoins mined: 39 | |  |
| The bitcoins mined by server are: | |  |
| 1 | ngnishant;aYuWOBjCxG0 | 00001f0511e8d21444645dd1fbc3728c0930f1bb806f0c5c23dd7fb72c731a20 |
| 2 | ngnishant;V0OBO3qPUC0 | 0000aa893949618619f56ff6da58dd4e65cae114e9395f91c57e5ededb2e14cf |
| 3 | ngnishant;3kZP5kEuY41 | 00000e096992b0d692929b5b4e2e82c76219bc8a7d82da7bc34e37dd2ff851da |
| 4 | ngnishant;xx1EQT9es52 | 00005db7d44752cad51ff99dd91d290d93dccf5190904debff75931c21d3d477 |
| 5 | ngnishant;T1pzBb594b0 | 000068a112a9218973a3ff8be10850bea11665c7d1ecce38a264c776a82754dc |
| 6 | ngnishant;8RcBdojdfB1 | 000048eb464d1fa78c22337796f96e0e0e8b1e5feab5b672adee223e722c6a42 |
| 7 | ngnishant;23d0dz6nAS2 | 00005bf1a51f2db16bc29f4611dbbfd79b02af14fe1f12ad56e61b0c3d9ff285 |
| 8 | ngnishant;SarPensCzR0 | 0000d703bcd5db02fd146c62aa6234ff48516b96424f4d364b6db0a6c0327133 |
| 9 | ngnishant;d5Dx4n04pw1 | 0000136a6e1e83c1d28a39c03957b00ca846f2675c96b5d2ccffb7bff06fa5b7 |
| 10 | ngnishant;SKSqKD6mn30 | 0000338763d9b45d09e663ede9be2ea90660ec7738e018db05d8ee247778f9df |
| 11 | ngnishant;WqLUZnsvs40 | 00003383ae726d003c730b08cf6eff8396cded6bd5fa3c98f18c99bcd9f29f4b |
| 12 | ngnishant;MOlvR12Kdk1 | 000007b7476185a5a7f33c07faf327ee4e5c237d7ff9b48c31f6e8f349456bce |
| 13 | ngnishant;W3PbSeurfP2 | 00004b265239544a386924be33788718e00872d7e32afddf103c5e83df20191f |
| 14 | ngnishant;Bq0XfptnEA3 | 0000e51cdb5e54a64f6574eeabb46c8fc953eb049db9669bb6b97e0de366e6a0 |
| 15 | ngnishant;B7IHlT2lky4 | 000078d84df3026585680a4675b12162b8d8acccc6e8b4d97a7606294eba7bdf |
| 16 | ngnishant;1I71iAbwUy5 | 00002129ec80b82dbeb87793832f790a1574a8a0263e1e5bdc21cd2514b52df8 |
| The bitcoins mined by client are: | |  |
| 1 | ngnishant;BZFKgjYXda0 | 00009025cf27650912f53c028182f616c20c0909d2e19ceadd09e9ab7e019a5a |
| 2 | ngnishant;GCe0vy07sh1 | 00003ef568af885dc75f96904eeaaadc3dd4b9495b32c9cb257f285a07692d60 |
| 3 | ngnishant;99MXxSkvpC2 | 000023ac9ad4b6720a8134107460a3a26e8c2d2743ebc41e144dec8c6213ace6 |
| 4 | ngnishant;cl0F9fWF8H0 | 0000b86c1fc1e2ff39e3def07cc40c4c345d0cb01ff4f186f07fb63a68bcdb1a |
| 5 | ngnishant;V0AjRQiXTl1 | 000089289e2aeec021adc92f9fc3e7a833deae8855a538575502422504158a8d |
| 6 | ngnishant;dySeEHyjVz2 | 0000bfa5dd3603c3c0ea07f05c5b380d360b4fd0c9ef8adedc8b8137df1639a2 |
| 7 | ngnishant;2WHMgBzP2x0 | 00006c9af53876ad1f06bc5f96d86c7cb2cc95186a4574796b33f989973ba997 |
| 8 | ngnishant;GjeIFbsAMF1 | 0000ffc49aa74c55e40a31c5c40820f68aecdcfd9215d9f5fe8ca342c81165c4 |
| 9 | ngnishant;yCrVz6jzrR2 | 00003bdf749123c5c417a1d588877f0ede51770a85a15ba5456286572c45b21e |
| 10 | ngnishant;k1WCwAaG9j3 | 0000932e2c2bc5172771e46818862fffcab8ddad1673730ec657e2b48f26728e |
| 11 | ngnishant;4xbNw7FtAW0 | 000054924e29bc4c3c9cf1f7d235f8e7e569c2b32b9e08cd5d71ac51148f7ac1 |
| 12 | ngnishant;PUU7YVmJLc1 | 0000327ab97126b3b5d8a34a6ef0280c84bd3d171227efe174264fddfb0efdb7 |
| 13 | ngnishant;d90gYofILa2 | 0000a8c15cb1a01c72785003dd38a239d978fa5cd5d380c38a13f34180579215 |
| 14 | ngnishant;QeoEIC3BGg0 | 00004608a3ee2372f5afc1621d6b49fe4f3110f7c8d11bc9315b2671c5369228 |
| 15 | ngnishant;Qy21Ovz9cr1 | 00009a7346056c01b6a8b5dc9386d6a11de6ef9966ebf9fe31fda5e4a3c77eeb |
| 16 | ngnishant;AHxSMjkUDt2 | 00005e95845a71a7caad36c7281c368092157f0f9f965422e4702efe4c7d0136 |
| 17 | ngnishant;2cMDiApUo23 | 0000e76fa4a84bcf023dfb93b6b7404c339f8ab5448481ee55ba9301c5acbaa0 |
| 18 | ngnishant;QJ7aFUPMVQ0 | 0000716382e48c0552a3db238d063a319fd457459a5bb3473885949b56fcb409 |
| 19 | ngnishant;7bN1VgADT21 | 0000d06859c75454e25e9ce4e49e4952254c251db245d015fb9d443bac557dde |
| 20 | ngnishant;Icqw6yBZJc2 | 00001c7379efc29750e2d199208f43e84317120499d07b1140f9ef9500906111 |
| 21 | ngnishant;OHlbhrYQmT3 | 00009ac216289a46747d6a6c7a82a20ec583583dd11a4a1498440312d8af0b62 |
| 22 | ngnishant;1QoG62TkCe4 | 0000b8cc1771eb02a714fe54303ff24c0aec4db9d2e368159f63d3cd4bfb9daa |
| 23 | ngnishant;Dnn95h9VqO5 | 0000423c3a81fe060067d9e26d1ca0e65bec6ef7301cb1bd9312d62241970333 |

1. The coin with max. 0s running the program for **5 mins** :

Input - ngnishant;AWJl6MVC5S0

Coin - 0000004ccb8739a5710e7dd0d7ad3878c479647695f1e56e3ad8887834d59352

Coin has 6 leading 0s.

1. Ratio(with **Client and Server setup on the same machine** which is a **2 core machine**): 2.53
2. We were able to run the code with 2 machines. **We were later not able to use the second machine for ratio and longest 0s calculation due to a system corruption on one of the machines**.