# CIS6930-1G46(11328) - Special Topics

# Homework 2

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# Part 1: Transactions analysis

**This analysis has been done on trimmed data set of 212575 blocks.**

1. What is the number of transactions and addresses in the dataset?

   Ans:

   ```
   the number of transactions : 10000054
   the number of Unique  address : 8385061
   ```

2. What is the Bitcoin address that is holding the greatest amount of bitcoins? How much is that exactly? Note that the address here must be a valid Bitcoin address string. To answer this, you need to calculate the balance of each address. The balance here is the total amount of bitcoins in the UTXOs of an address.

   Ans:

   ```
   the max balance Id : 1083442 with maxbalance : 11111100000000
   The Address with maximum Balance : 1933phfhK3ZgFQNLGSDXvqCn32k2buXY8a
   ```

3. What is the average balance per address?

   Ans:

   ```
   The average balance per Address : 125990615
   ```

4. What is the average number of input and output transactions per address? What is the average number of transactions per address (including both inputs and outputs)? An output transaction of an address is the transaction that is originated from that address. Likewise, an input transaction of an address is the transaction that sends bitcoins to that address.

   Ans:

   ```
   ************************************************************
   Total unique input Address :7600910
   Total input transactions : 20168554
   Average input transactions per Address : 2
   ************************************************************
   Total unique out Address :8385061
   Total out transactions : 23266807
   Average out transactions per Address : 2
   ************************************************************
   Total average transaction per Address: 2
   ```

5. What is the transaction that has the greatest number of inputs? How many inputs exactly? Show the hash of that transaction. If there are multiple transactions that have the same greatest number of inputs, show

all of them.

Ans:

The transaction id transactions with largest number of inputs:
**7553001**
The hash values of the transactions with largest number of inputs:
**9621b3c67f9bddd3de65fafc488087b8f2b40b638e3a06209a904c66c0b32982**

6. What is the average transaction value? Transaction value is the sum of all outputs' value.

Ans:

Average out transaction value : **5293229878**

7. How many coinbase transactions are there in the dataset?

Ans:

The number of Coinbase transactions : **212576**

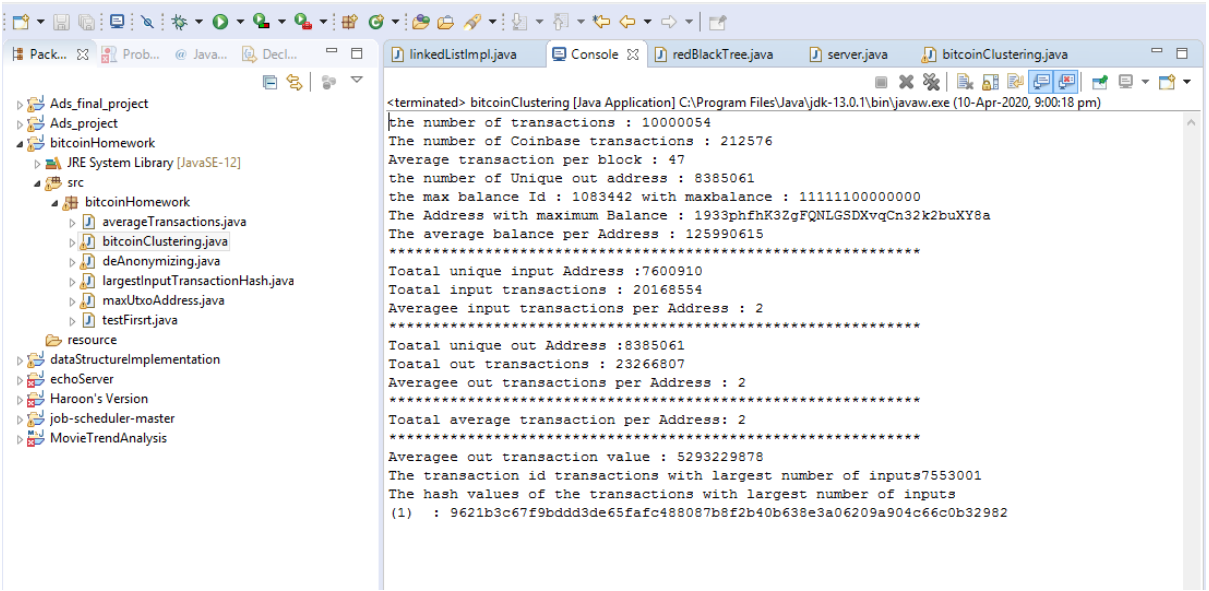
8. What is the average number of transactions per block?

Ans:

Average transaction per block : **47**

For part 1 of the homework unzip the folder of part 1 and import it into any ide . Place the unzipped data set in the **resources** folder which is empty and run the **bitcoinClustering.java** file in **bitcoinHomework\src\bitcoinHomework**

Example from my System:



## Part 2: Address de-anonymization

1. How many users are there in the dataset?

   Ans:

   No of users in dataset : **475837**

2. Answer questions 2, 3, and 4 in part 1 by replacing "address" with "user". Note that each user is identified by the addresses that are owned by him/her. Thus, in answering question 2 (i.e., the user who is holding the greatest amount of bitcoins), you need to list all the user's addresses.

   Average balance per user: **2220169917**

   Average input transaction per user: 42

   Average Output transaction per user : 48

For part 2 of the homework unzip the folder of part 1 and import it into any ide . Place the unzipped data set in the **resources** folder which is empty and run the **deAnonymizing.java** file in **bitcoinHomework\src\bitcoinHomework**