DS Assignment 2

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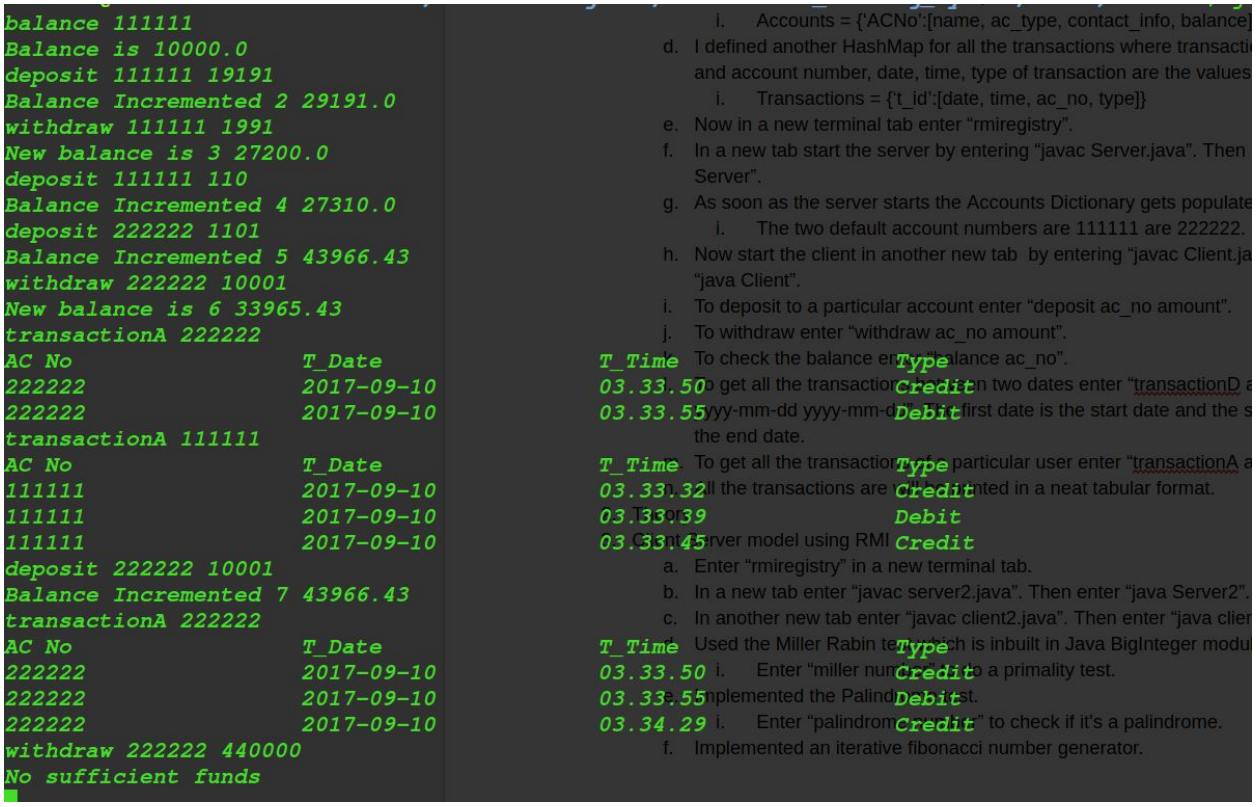
1. Distributed Banking System using RMI
    a. I created a class named “Bank” which holds the name of the person, account type, contact info, remaining balance.
    b. I created another class named “Transaction” which holds the transaction_id, account number, date and time of the transaction and the type of transaction(Credit/Debit).
    c. I defined a HashMap for the accounts where key is the account number and values are the other details of the person.
        i. Accounts = {‘ACNo’:[name, ac_type, contact_info, balance]}
    d. I defined another HashMap for all the transactions where transaction id is the key and account number, date, time, type of transaction are the values.
        i. Transactions = {‘t_id’:[date, time, ac_no, type]}
    e. Now in a new terminal tab enter “rmiregistry”.
    f. In a new tab start the server by entering “javac Server.java”. Then do “java Server”.
    g. As soon as the server starts the Accounts Dictionary gets populated.
        i. The two default account numbers are 111111 are 222222.
    h. Now start the client in another new tab by entering “javac Client.java”. Then do “java Client”.
    i. To deposit to a particular account enter “deposit ac_no amount”.
    j. To withdraw enter “withdraw ac_no amount”.
    k. To check the balance enter “balance ac_no”.
    l. To get all the transactions between two dates enter “transactionD ac_no yyyy-mm-dd yyyy-mm-dd”. The first date is the start date and the second date is the end date.
    m. To get all the transactions of a particular user enter “transactionA ac_no”.
    n. All the transactions are will be printed in a neat tabular format.



2. Theory
3. Client Server model using RMI
    a. Enter “rmiregistry” in a new terminal tab.
    b. In a new tab enter “javac server2.java”. Then enter “java Server2”.
    c. In another new tab enter “javac client2.java”. Then enter “java client2”.
    d. Used the Miller Rabin test which is inbuilt in Java BigInteger module.
        i. Enter “miller number” to do a primality test.
    e. Implemented the Palindrome test.
        i. Enter “palindrome number” to check if it's a palindrome.
    f. Implemented an iterative fibonacci number generator.
        i. Enter “fibonacci n” to get the nth fibonacci number.
    g. Implemented a function to change upper to lowercase and lower to upper case.
        i. Enter “utol UPPERCASE” to convert to lowercase.
        ii. Enter “ltou lowercase” to convert to uppercase.
    h. Implemented the Diffie Hellman Key exchange protocol for the above functions.
    i. A set of private and public keys is generated at both the client and server side.
    j. The public key is shared between the server and client.
    k. A secret key is generated at the client and server which is used to encrypt and decrypt the messages.

l. The server receives encrypted data from the client, decrypts it, gets the answer, encrypts it and sends it back to the client. The client decrypts the message and prints it to stdout.