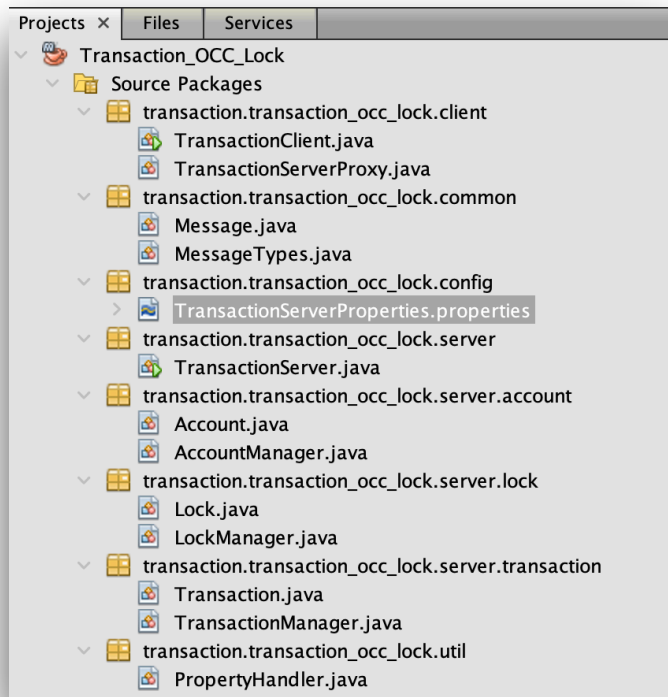


Transaction Server with Locking Mechanism

1. Project Structure



Client -

- | - TransactionClient.java -
- | - TransactionServerProxy.java -

Common -

- | - Message.java -
- | - MessageTypes.java -

Config -

- | - TransactionServerProperties.properties -

Server -

- | - TransactionServer.java -

Account -

- | - Account.java
- | - AccountManager.java

Transaction -

- | - Transaction.java -
- | - TransactionManager.java -

Lock -

- | - Lock.java
- | - LockManager.java

Util -

- | - PropertyHandler.java

Executing Project -

1. Make configuration changes in **TransactionServerProperties.properties**

HOST=localhost (Hostname)

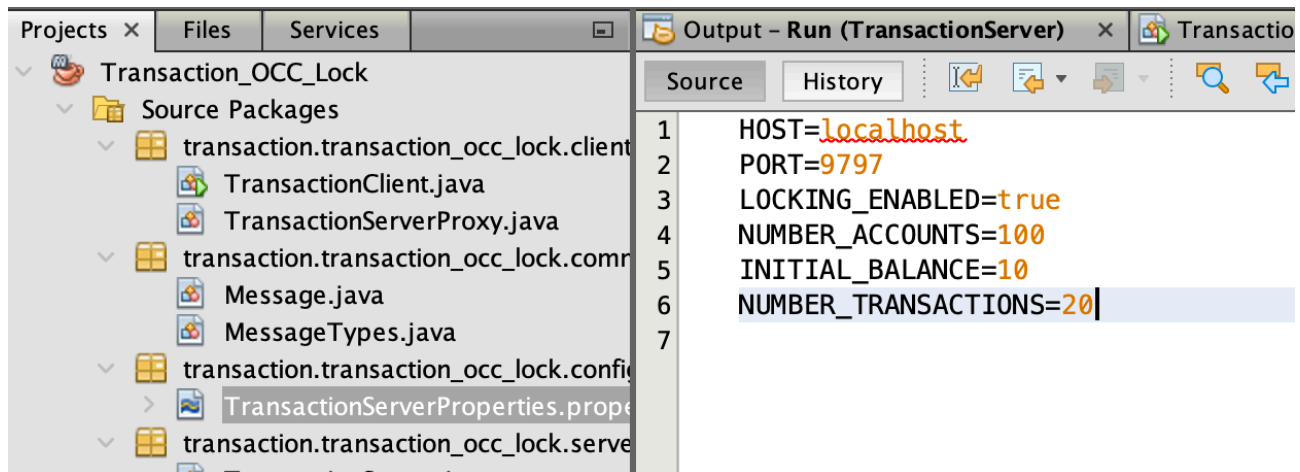
PORT=9797 (Port Number)

LOCKING_ENABLED=true (change it to false to disable locking mechanism)

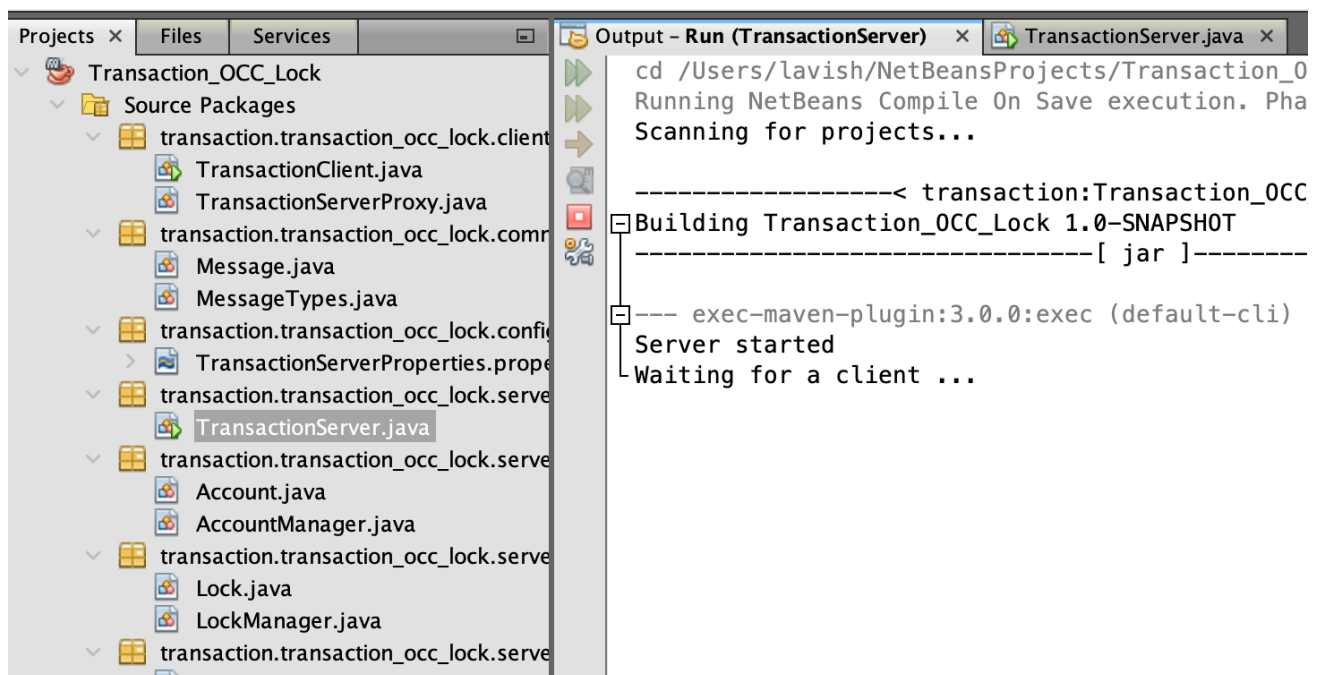
NUMBER_ACCOUNTS=100 (Total number of accounts)

INITIAL_BALANCE=10 (Initial Balance in each Account)

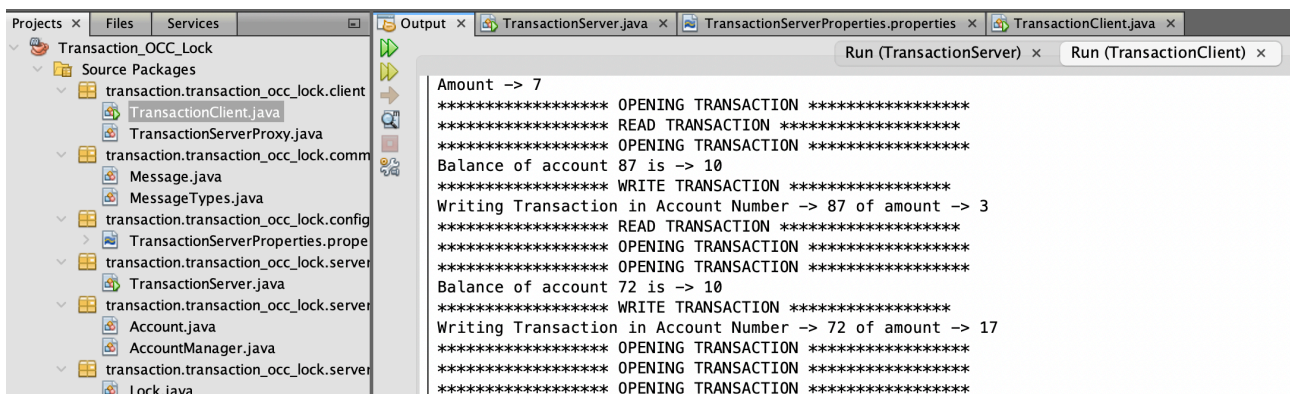
NUMBER_TRANSACTIONS=20 (Number of transactions to be executed by client)



2. Run **TransactionServer.java**



3. Run TransactionClient.java



Logs in console -

Client side Logs

- Shows Total accounts (Value from Configuration file)
- Shows Initial Balance (Value from Configuration file)
- Shows Total Transactions (from Configuration file)
- TRANSACTION ID INITIATED (SRC, DESTINATION) -> AMOUNT
- OPENING TRANSACTION (Initialisation of client thread)
- READ TRANSACTION (Reading of account balance of random account)
- WRITE TRANSACTION (Writing an amount in random account)
- CLOSE TRANSACTION (Closing of client thread)
- Closing Socket.... (Termination of all client threads)

```
***** WRITE TRANSACTION *****
Writing Transaction in Account Number -> 26 of amount -> 26
***** CLOSE TRANSACTION *****
***** READ TRANSACTION *****
***** WRITE TRANSACTION *****
Balance of account 35 is -> 10
Writing Transaction in Account Number -> 35 of amount -> 3
***** READ TRANSACTION *****
Balance of account 49 is -> 10
***** WRITE TRANSACTION *****
Writing Transaction in Account Number -> 49 of amount -> 17
***** CLOSE TRANSACTION *****
***** READ TRANSACTION *****
Balance of account 43 is -> 10
***** WRITE TRANSACTION *****
Writing Transaction in Account Number -> 43 of amount -> 2
***** READ TRANSACTION *****
Balance of account 31 is -> 10
***** WRITE TRANSACTION *****
Writing Transaction in Account Number -> 31 of amount -> 18
***** CLOSE TRANSACTION *****
Closing Socket....
```

BUILD SUCCESS

Server side Logs

- OPEN TRANSACTION (Initialisation of server thread)
- READ REQUEST (Reading Source account balance)
- WRITE REQUEST (Writing an amount in Source account)
- READ REQUEST (Reading Destination account balance)
- WRITE REQUEST (Writing an amount in Destination account)
- CLOSE TRANSACTION (Closing of server thread)
- SHUTTING IT DOWN (After all the server threads are done executing)
- PRINTOUT SUMMARY (Shows total balance in all Accounts and Account wise balance)
- LOCK ACQUIRED BY TID (When a lock is acquired by a thread)
- SETTING LOCK ON TRANSACTION ID(When a lock is set on Transaction)
- UNSETTING LOCK ON Transaction ID(When a lock is unset on Transaction)
- DEADLOCK OCCURED FOR TRANSACTION ID (When deadlock occurs)
- LOCK RELEASED BY TID(When acquired lock is released)
- TRANSACTION COMMITTED FOR TRANSACTION ID(when transaction is committed)
- TRANSACTION ABORTED ID(when transaction aborted due to deadlock)
- TOTAL AMOUNT IN THE BANK(shown in last, the sum of balance of accounts)

```
Lock acquired by TID #1924
Read Account balance -> 10
(#1924) --- Balance of Account Number 1 is 10
Read Account balance -> 10
(#1924) --- Balance of Account Number 1 is 10
WriteAccount balance -> 3
(#1924) -- Writing 3 into Account Number -> 1
Read Account balance -> 3
(#1924) --- Balance of Account Number 1 is 3
Read Account balance -> 3
UnSetting Lock on Transaction ID #74742
(#1924) --- Balance of Account Number 1 is 3
WriteAccount balance -> 10
(#1924) -- Writing 10 into Account Number -> 1
UnSetting Lock on Transaction ID #1924
Lock released by TID #1924
Transaction Committed for Transaction ID #1924
Lock acquired by TID #95538
Read Account balance -> 10
(#95538) --- Balance of Account Number 1 is 10
Read Account balance -> 10
(#95538) --- Balance of Account Number 1 is 10
WriteAccount balance -> 1
(#95538) -- Writing 1 into Account Number -> 1
Read Account balance -> 1
(#95538) --- Balance of Account Number 1 is 1
Read Account balance -> 1
(#95538) --- Balance of Account Number 1 is 1
WriteAccount balance -> 10
(#95538) -- Writing 10 into Account Number -> 1
UnSetting Lock on Transaction ID #95538
Lock released by TID #95538
Transaction Committed for Transaction ID #95538
SHUTTING IT DOWN
PRINTOUT SUMMARY
```

```
***** Total Amount in the Bank -> 20
```

```
(Account Number , Balance) ==> (1 , 10)
- (Account Number , Balance) ==> (2 , 10)
```