

### Problem 1:

Solution provided.

Output:

```
cd "/Users/nabid/Documents/MS TUK/Winter_19-20/Database
System/Exercise/Exercise 10/exec" ;
/Library/Java/JavaVirtualMachines/jdk1.8.0_144.jdk/Contents/Home/bin/ja
va -
agentlib:jdwp=transport=dt_socket,server=n,suspend=y,address=localhost:
54566 -Dfile.encoding=UTF-8 -cp "/Users/nabid/Library/Application
Support/Code/User/workspaceStorage/6ff3f04169006a1c4a445d34afb09355/red
hat.java/jdt_ws/exec_67744d7c/bin" Recovery
----- Test 1 -----
--- Input log: ---
[#1, T1, BOT, , , ]
[#2, T2, BOT, , , ]
[#3, T1, A, A-=50, A+=50, #1]
[#4, T2, C, C+=100, C-=100, #2]
[#5, T1, B, B+=50, B-=50, #3]
[#6, T1, COMMIT, , , #5]
[#7, T2, A, A-=100, A+=100, #4]
--- Tests: ---
Loser Transactions: [T2]
Expected Loser Transactions: [T2]
Test 1 successful
```

### Question 2:

- a) Rollback is performed on T2 due to ABORT as followed:
- Log entries that belong to this transaction are processed in reverse order.
  - This can be done using the log buffer, since we can see here that the main memory is still intact (Abort happened before crash).
  - Using PrevLSN we can traverse backward and execute undo operations.
  - Before the execution of the undo we need to, write a log entry using CLRs.
- b)

<#7'	T2	PA	U(A2)	-	#7	#5>
<#5'	T2	PC	U(C)	-	#7'	#2>
<#2'	T2	BOT	-	-	#5'	0>