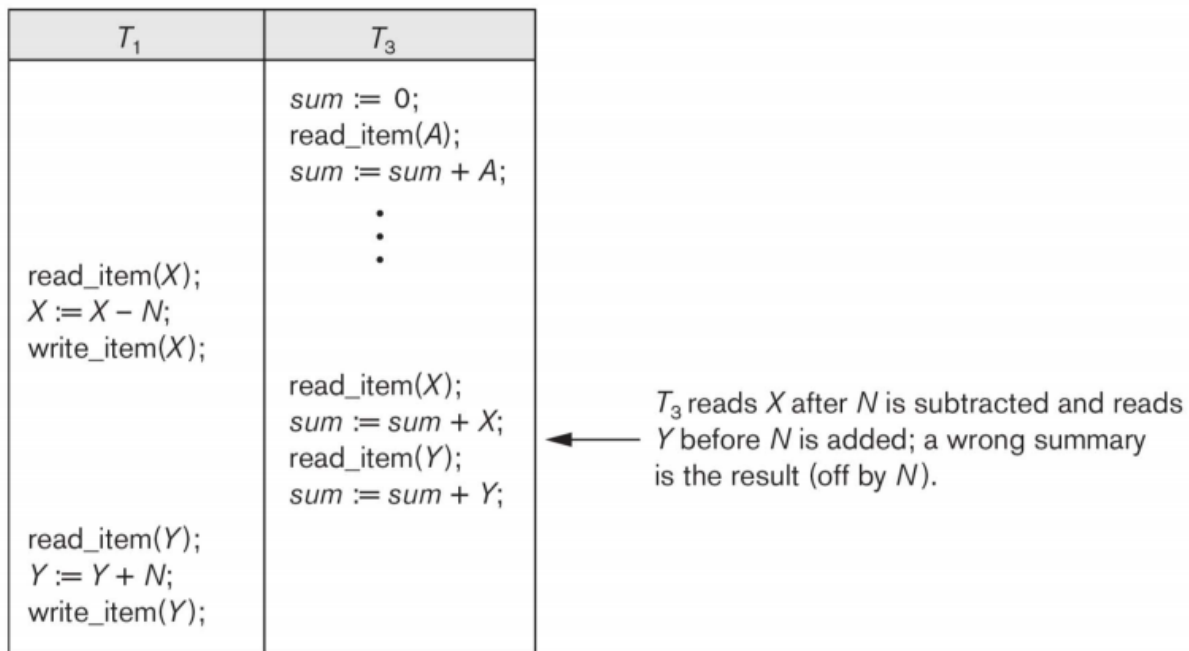## 1. Honor's Assignment - Part III (Due: Anytime before May 8)

You are adding "Summary" menu option now.

i.   Bank Summary – Create a bank summary table named "BANK_SUMMARY" with three columns (SN, TOTAL_AMOUNT, TIMESTAMP). TOTAL_AMOUNT is sum of all the accounts balances at certain TIMESTAMP.

ii. Introduce a new menu item called "Summary" (e.g. 6 Summary). Choosing this option should calculate the total amount currently deposited in the bank.

iii. Use the following scheduling example (from the textbook).

T_1	T_3

	sum := 0;
	read_item(A);
	sum := sum + A;
	
	$\vdots$

read_item(X);
X := X − N;
write_item(X);	

	read_item(X);
	sum := sum + X;
	read_item(Y);
	sum := sum + Y;

read_item(Y);
Y := Y + N;
write_item(Y);	

T_3 reads X after N is subtracted and reads Y before N is added; a wrong summary is the result (off by N).

iv. Introduce three bank accounts (corresponding to A, X and Y) with initial balances $100, $200 and $300, respectively. Let N = $50.

v.   Introduce another menu item (Option 7) to allow T_1 from the above figure. One way to do this would be to modify your transfer feature and let user initiate withdraw and deposit in tandem with some sleep in between as part of the transfer transaction. You must maintain atomicity here.

vi. Demonstrate that data (sum) will be corrupted without using proper locks. (Do not introduce any locks). **DO NOT** use DBMS SUM () aggregate function, because MySQL will handle the locks internally. Place a delay of 10 seconds for each read on T_3. Display some message to show that you finished reading a record (e.g. "Reading A is done"). During the 10 seconds delay after reading A by T_3, you must start T_1 in different instance of your program (another bank Teller window), i.e., by

using Option 7. Write the summary into BANK_SUMMARY table. Also display sum value on the screen.

vii. This time use locks and demonstrate that when locks are used bank summary data will not be corrupted. i.e. Sum is calculated properly. In doing so, observe the sequence of arrival of operations given in the figure above.

2. *Deliverables* ==*Honor's Assignment - Part III email to dong.shin@uconn.edu*==

You are required to submit your source code (zip file if there are multiple source files) and a report (PDF file) with following contents (use same number system in your report):

i. Attach screenshots from your program and corresponding code snippet to demonstrate each subsection of assignment in Section 1 above.