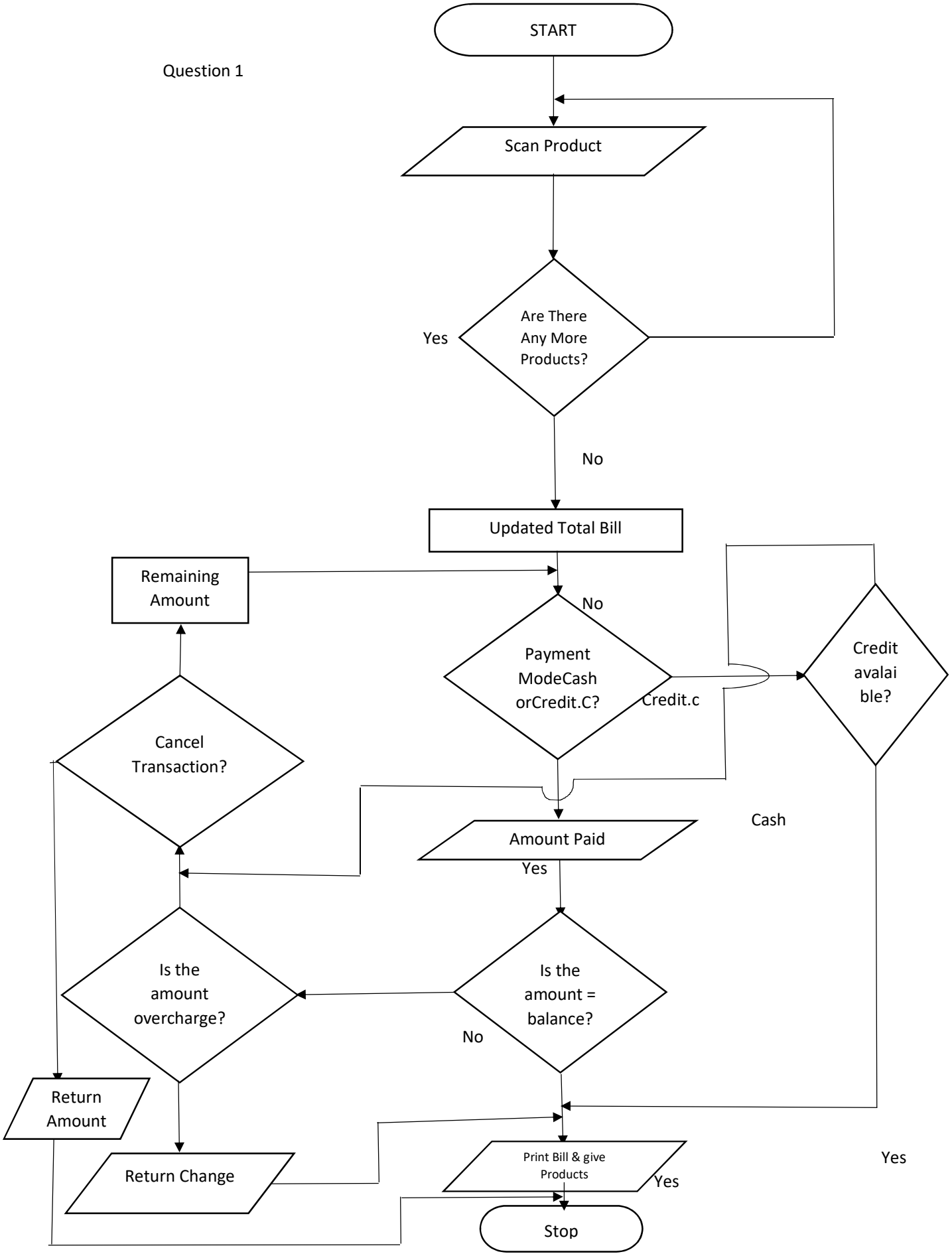
Question 1


START
Scan Product
Are There Any More Products?
Yes
No
Updated Total Bill
Remaining Amount
No
Payment ModeCash orCredit.C?
Credit.c
Credit avalai ble?
Cancel Transaction?
Cash
Amount Paid
Yes
Is the amount overcharge?
Is the amount = balance?
No
Return Amount
Return Change
Print Bill & give Products
Yes
Yes
Stop

Question 2

Instruction	Volume in A	Volume in B
Fill B	0	8
B → A	3	5
Empty A	0	5
B → A	3	2
Empty A	0	2
B → A	2	0
Fill B	2	8
B → A	3	7
Empty A	0	7
B → A	3	4

To fill 4 litres of Boza, I decomposed and abstracted the puzzle to that point where I realized only one of the containers which had the capacity of 8 litres could have 4 litres. First I filled the B container, transferred it to A which was then emptied. This was repeated until I had 2 litres left in B which then were transferred to A. Container B was filled again and transferred to A which led to 7 litres remaining in B, after emptying A and transferring from B to A again I had 4 litres of Boza in B container. Hence a pattern and a sequence was followed to solve the problem.

Question 3

It's not possible to complete the tour with passing each of the bridges once. Decomposing the problem lead to a path which will successfully cover all bridges except 15 Temmuz Şehitler Bridge and Atatürk Bridge – passing through all regions. Since we need to pass all the bridges and tunnels, after abstraction, we can put one additional tunnel between Region 1 and 4. This will complete the path which will ensure a route that includes all the bridge and tunnels.

The Path will be:

Region 1 → Yavuz Sultan Selim Bridge → Region 2 → Fatih Sultan Mehmet Bridge → Region 1 → Avrsaya Tunnel → Region 4 → Galata Bridge → Region 3 → 15 Temmuz Şehitler Bridge → Region 1 → New Bridge → Region 4 → Atatürk Bridge → Region 3 → Haliç Bridge → Region 5.