CSE344 – SYSTEM PROGRAMMING – MIDTERM PROJECT

REPORT

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I made the variables used in the processes shared variables between the processes so that the other one is affected by this change and while the process was using these variables, I used semaphore to wait for the other process.

First of all, I want to talk about shared variables that will be used in supplier, cook and student processes.

- kitchenP, kitchenC, kitchenD: these variables show how many P, C and D are in the kitchen. [Supplier increases, Cook decreases]
- kitchenSize: this variable shows the total number of plates in the kitchen. [Supplier increases, Cook decreases]
- P, C, D: these variables represent the numbers of P, C and D on the counter. [Cook increases, Student decreases]
- counterSize: This variable refers to the total number of plates on the counter. [Cook increases, decreases Student.]
- emptyTable: This variable refers to empty tables. [Increased and decreased between student processes]
- counterStudent: this variable refers to the number of students waiting in the counter. [Increased and decreased between student processes]

Now I will explain how I do Supplier,Cook and Student processes.

Supplier

The Supplier reads filePath file character characters [Lm in each plate type, containing up to 3LM characters].

The supplier leaves the plate in the kitchen if there is room in the kitchen. If the kitchen is full, he waits. I made this wait by using counting semaphore.

I gave you the initial value of the semaphore as much as the kitchen size, and if the value of the semaphore is 0, the supplier waits.

According to the plate left by the supplier in kitchen, kitchenP, kitchenC, kitchenD increases and kitchenSize increases.

As the cook changed these variables, I made a lock with sem_wait while entering the critical region, and unlocked with sem_post when leaving the region.

Cook

The cook also used counting semahore for both counter and kitchen size.

If the number of plates on the counter is S, the cook waits for the number of plates on the counter to decrease.

If there are no S plates, it looks at the number of plates in the kitchen.

If there are no plates in the kitchen, Cook waits the Supplier.

If there is, it first looks at the numbers P, C and D on the counter.

If the amount is 0, the cook will bring it from the kitchen first.

If there is no 0, it brings the least amount from the kitchen.

Bringing P, C or D to the counter is locked between cook processes because we don't want a few other cooks to bring the same plate.

While the cook reduces kitchenP, kitchenC, kitchenD and kitchenSize, the same binary semaphore used in the supplier is locked and unlocked.

While increasing P, C, D and counterSize on the counter another binary semaphore locking is performed because student processes also decrease these variables.

Student

I created a shared array to be used between student processes to classify students' table as table 1, table 2 ..

I gave the elements of this array a value of 0 if a student sits on any table, the value of the array element is 1.

I created a for loop for each student to eat up to L.

first the student goes to the counter and the counterStudent increases.

This increment is critical as it will be among other student processes, so I used binary semaphore and locked it with sem_wait and unlocked it with sem_post.

Then, if the counter is empty, the student waits for the counter to be filled with counting semaphore.

If P, C and D are available on the counter the student decreases the number of P, C and D on the counter and the counterSize.

Since these variables also changed in the cook, I locked where these variables changed.

I reduced the counterStudent variable by one, since the student who took her plate will go off the counter.I locked where there was a reduction.

The student who gets his plates goes to look for a table. If there is no empty table, he waits. I made this wait with counting semaphore.

If there is an empty table,student sits on one of the tables with 0 in the table array and reduces the number of empty tables by one.

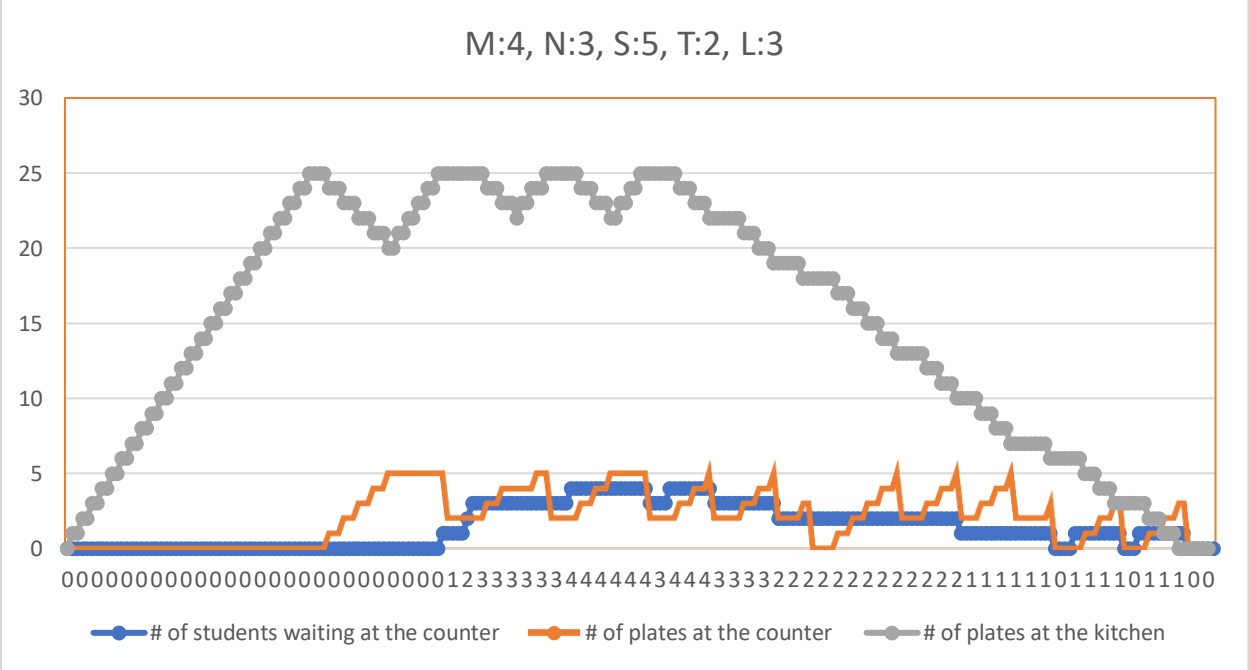
I locked in the region where the variable decreased and increased because this variable will decrease and increase other student processes.

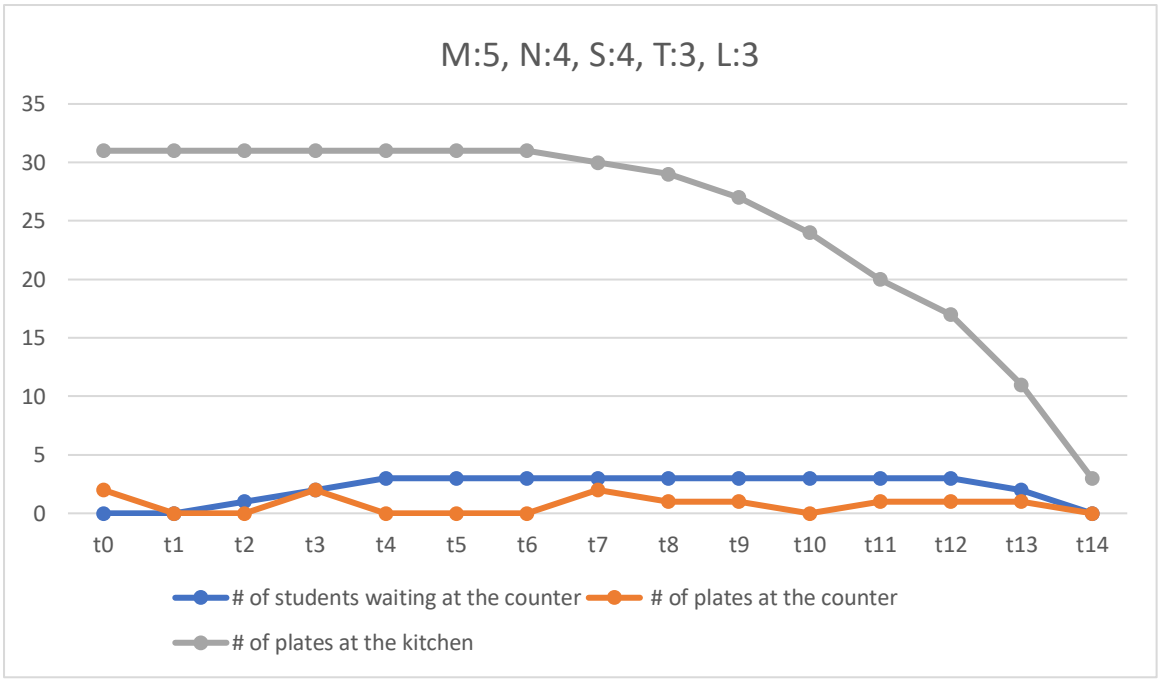
The student who eats her food gets off the table,she/he makes the value of the table it sits on again 1 and also increases the number of empty tables by one.

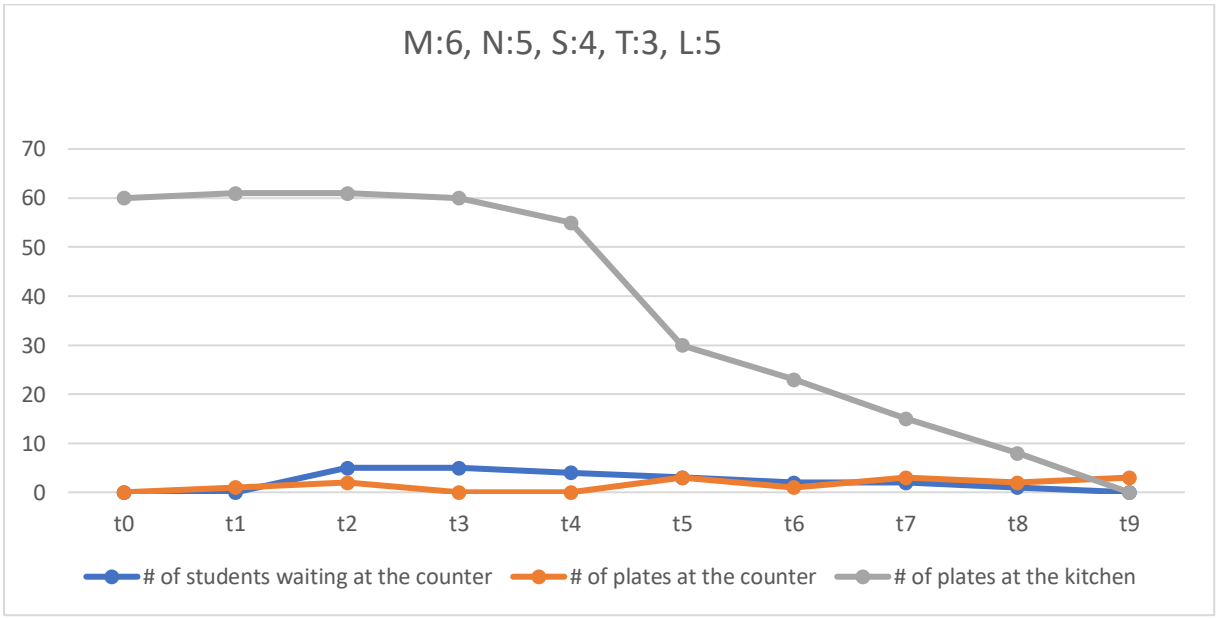
Notes

- If ctrl c is entered from the terminal during the program, all processes end.
- I deleted the shared variables and semaphores at the end of the program.

GRAPHICAL PLOTS




M:5, N:4, S:4, T:3, L:3
35
30
25
20
15
10
5
0
t0
t1
t2
t3
t4
t5
t6
t7
t8
t9
t10
t11
t12
t13
t14
# of students waiting at the counter
# of plates at the counter
# of plates at the kitchen


M:6, N:5, S:4, T:3, L:5
70
60
50
40
30
20
10
0
t0
t1
t2
t3
t4
t5
t6
t7
t8
t9
# of students waiting at the counter
# of plates at the counter
# of plates at the kitchen

SAMPLE OUTPUT

```
zeynep@zeynep-VirtualBox:~/Desktop$ ./program -N 3 -M 4 -T 2 -S 4 -L 3 -F filePath
The supplier is going to the kitchen to deliver soup: kitchen items P:0,C:0,D:0=0
The supplier delivered soup - after delivery: kitchen items P:1,C:0,D:0=1
The supplier is going to the kitchen to deliver soup: kitchen items P:1,C:0,D:0=1
The supplier delivered soup - after delivery: kitchen items P:2,C:0,D:0=2
The supplier is going to the kitchen to deliver soup: kitchen items P:2,C:0,D:0=2
The supplier delivered soup - after delivery: kitchen items P:3,C:0,D:0=3
The supplier is going to the kitchen to deliver soup: kitchen items P:3,C:0,D:0=3
The supplier delivered soup - after delivery: kitchen items P:4,C:0,D:0=4
The supplier is going to the kitchen to deliver soup: kitchen items P:4,C:0,D:0=4
The supplier delivered soup - after delivery: kitchen items P:5,C:0,D:0=5
The supplier is going to the kitchen to deliver soup: kitchen items P:5,C:0,D:0=5
The supplier delivered soup - after delivery: kitchen items P:6,C:0,D:0=6
The supplier is going to the kitchen to deliver soup: kitchen items P:6,C:0,D:0=6
The supplier delivered soup - after delivery: kitchen items P:7,C:0,D:0=7
The supplier is going to the kitchen to deliver soup: kitchen items P:7,C:0,D:0=7
The supplier delivered soup - after delivery: kitchen items P:8,C:0,D:0=8
The supplier is going to the kitchen to deliver soup: kitchen items P:8,C:0,D:0=8
The supplier delivered soup - after delivery: kitchen items P:9,C:0,D:0=9
The supplier is going to the kitchen to deliver soup: kitchen items P:9,C:0,D:0=9
The supplier delivered soup - after delivery: kitchen items P:10,C:0,D:0=10
The supplier is going to the kitchen to deliver soup: kitchen items P:10,C:0,D:0=10
The supplier delivered soup - after delivery: kitchen items P:11,C:0,D:0=11
The supplier is going to the kitchen to deliver soup: kitchen items P:11,C:0,D:0=11
The supplier delivered soup - after delivery: kitchen items P:12,C:0,D:0=12
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:0,D:0=12
The supplier delivered main course - after delivery: kitchen items P:12,C:1,D:0=13
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:1,D:0=13
The supplier delivered main course - after delivery: kitchen items P:12,C:2,D:0=14
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:2,D:0=14
The supplier delivered main course - after delivery: kitchen items P:12,C:3,D:0=15
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:3,D:0=15
The supplier delivered main course - after delivery: kitchen items P:12,C:4,D:0=16
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:4,D:0=16
The supplier delivered main course - after delivery: kitchen items P:12,C:5,D:0=17
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:5,D:0=17
The supplier delivered main course - after delivery: kitchen items P:12,C:6,D:0=18
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:6,D:0=18
The supplier delivered main course - after delivery: kitchen items P:12,C:7,D:0=19
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:7,D:0=19
The supplier delivered main course - after delivery: kitchen items P:12,C:8,D:0=20
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:8,D:0=20
The supplier delivered main course - after delivery: kitchen items P:12,C:9,D:0=21
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The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:9,D:0=21
The supplier delivered main course - after delivery: kitchen items P:12,C:10,D:0=22
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:10,D:0=22
The supplier delivered main course - after delivery: kitchen items P:12,C:11,D:0=23
The supplier is going to the kitchen to deliver main course: kitchen items P:12,C:11,D:0=23
The supplier delivered main course - after delivery: kitchen items P:12,C:12,D:0=24
The supplier is going to the kitchen to deliver desert: kitchen items P:12,C:12,D:0=24
The supplier delivered desert - after delivery: kitchen items P:12,C:12,D:1=25
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:12,C:12,D:1=25
Cook 2 is going to the counter to deliver soup - counter items P:0,C:0,D:0=0
Cook 2 placed soup on the counter - counter items P:1,C:0,D:0 = 1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:11,C:12,D:1=24
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
The supplier is going to the kitchen to deliver desert: kitchen items P:11,C:11,D:1=23
The supplier delivered desert - after delivery: kitchen items P:11,C:11,D:2=24
The supplier is going to the kitchen to deliver desert: kitchen items P:11,C:11,D:2=24
The supplier delivered desert - after delivery: kitchen items P:11,C:11,D:3=25
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:11,C:11,D:3=25
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:11,C:11,D:2=24
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
The supplier is going to the kitchen to deliver desert: kitchen items P:10,C:11,D:2=23
The supplier delivered desert - after delivery: kitchen items P:10,C:11,D:3=24
The supplier is going to the kitchen to deliver desert: kitchen items P:10,C:11,D:3=24
The supplier delivered desert - after delivery: kitchen items P:10,C:11,D:4=25
Student 3 is going to the counter (round 1) - # of students at counter: 0 and counter items P:0,C:0,D:0=0
Student 3 got food and is going to get a table (round 1) - # of empty tables: 2
Student 3 sat at table 1 to eat (round 1) - empty tables:1
Student 3 left table 1 to eat again (round 1) - empty tables:2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:10,C:11,D:4=25
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Student 2 is going to the counter (round 1) - # of students at counter: 0 and counter items P:1,C:0,D:0=1
The supplier is going to the kitchen to deliver desert: kitchen items P:10,C:10,D:4=24
The supplier delivered desert - after delivery: kitchen items P:10,C:10,D:5=25
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:10,C:10,D:5=25
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:10,C:10,D:4=24
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
The supplier is going to the kitchen to deliver desert: kitchen items P:9,C:10,D:4=23
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The supplier delivered desert - after delivery: kitchen items P:9,C:10,D:5=24
The supplier is going to the kitchen to deliver desert: kitchen items P:9,C:10,D:5=24
The supplier delivered desert - after delivery: kitchen items P:9,C:10,D:6=25
Student 1 is going to the counter (round 1) - # of students at counter: 1 and counter items P:1,C:1,D:0=2
Student 3 is going to the counter (round 2) - # of students at counter: 2 and counter items P:1,C:0,D:0=1
Student 2 got food and is going to get a table (round 1) - # of empty tables: 2
Student 2 sat at table 1 to eat (round 1) - empty tables:1
Student 2 left table 1 to eat again (round 1) - empty tables:2
Student 2 is going to the counter (round 2) - # of students at counter: 2 and counter items P:1,C:0,D:0=1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:9,C:10,D:6=25
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:9,C:9,D:6=24
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
The supplier is going to the kitchen to deliver desert: kitchen items P:9,C:9,D:5=23
The supplier delivered desert - after delivery: kitchen items P:9,C:9,D:6=24
The supplier is going to the kitchen to deliver desert: kitchen items P:9,C:9,D:6=24
The supplier delivered desert - after delivery: kitchen items P:9,C:9,D:7=25
Student 0 is going to the counter (round 1) - # of students at counter: 3 and counter items P:1,C:0,D:0=1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:9,C:9,D:7=25
Student 2 got food and is going to get a table (round 2) - # of empty tables: 2
Student 2 sat at table 1 to eat (round 2) - empty tables:1
Cook 2 is going to the counter to deliver soup - counter items P:0,C:0,D:0=0
Student 2 left table 1 to eat again (round 2) - empty tables:2
Cook 2 placed soup on the counter - counter items P:1,C:0,D:0 = 1
Student 2 is going to the counter (round 3) - # of students at counter: 3 and counter items P:1,C:0,D:0=1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:8,C:9,D:7=24
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:8,C:8,D:7=23
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:8,C:8,D:6=22
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
The supplier is going to the kitchen to deliver desert: kitchen items P:7,C:8,D:6=21
The supplier delivered desert - after delivery: kitchen items P:7,C:8,D:7=22
The supplier is going to the kitchen to deliver desert: kitchen items P:7,C:8,D:7=22
The supplier delivered desert - after delivery: kitchen items P:7,C:8,D:8=23
Supplier finished supplying - GOODBYE!
Student 2 got food and is going to get a table (round 3) - # of empty tables: 2
Student 2 sat at table 1 to eat (round 3) - empty tables:1
Student 2 left table 1 to eat again (round 3) - empty tables:2
Student 2 is done eating L=3 times - going home - GOODBYE!!!
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Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:7,C:8,D:8=23
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:7,C:7,D:8=22
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:7,C:7,D:7=21
Student 3 got food and is going to get a table (round 2) - # of empty tables: 2
Student 3 sat at table 1 to eat (round 2) - empty tables:1
Student 3 left table 1 to eat again (round 2) - empty tables:2
Student 3 is going to the counter (round 3) - # of students at counter: 2 and counter items P:0,C:0,D:0=0
Cook 2 is going to the counter to deliver soup - counter items P:0,C:0,D:0=0
Cook 2 placed soup on the counter - counter items P:1,C:0,D:0 = 1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:6,C:7,D:7=20
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:6,C:6,D:7=19
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:6,C:6,D:6=18
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
Student 3 got food and is going to get a table (round 3) - # of empty tables: 2
Student 3 sat at table 1 to eat (round 3) - empty tables:1
Student 3 left table 1 to eat again (round 3) - empty tables:2
Student 3 is done eating L=3 times - going home - GOODBYE!!!
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:5,C:6,D:6=17
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:5,C:5,D:6=16
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:5,C:5,D:5=15
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
Student 0 got food and is going to get a table (round 1) - # of empty tables: 2
Student 0 sat at table 1 to eat (round 1) - empty tables:1
Student 0 left table 1 to eat again (round 1) - empty tables:2
Student 0 is going to the counter (round 2) - # of students at counter: 1 and counter items P:1,C:0,D:0=1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:4,C:5,D:5=14
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:4,C:4,D:5=13
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
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Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:4,C:4,D:5=13
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:4,C:4,D:4=12
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
Student 1 got food and is going to get a table (round 1) - # of empty tables: 2
Student 1 sat at table 1 to eat (round 1) - empty tables:1
Student 1 left table 1 to eat again (round 1) - empty tables:2
Student 1 is going to the counter (round 2) - # of students at counter: 1 and counter items P:1,C:0,D:0=1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:3,C:4,D:4=11
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:3,C:3,D:4=10
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:3,C:3,D:3=9
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
Student 1 got food and is going to get a table (round 2) - # of empty tables: 2
Student 1 sat at table 1 to eat (round 2) - empty tables:1
Student 1 left table 1 to eat again (round 2) - empty tables:2
Student 1 is going to the counter (round 3) - # of students at counter: 1 and counter items P:1,C:0,D:0=1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:2,C:3,D:3=8
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:2,C:2,D:3=7
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:2,C:2,D:2=6
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
Student 1 got food and is going to get a table (round 3) - # of empty tables: 2
Student 1 sat at table 1 to eat (round 3) - empty tables:1
Student 1 left table 1 to eat again (round 3) - empty tables:2
Student 1 is done eating L=3 times - going home - GOODBYE!!!
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:1,C:2,D:2=5
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:1,C:1,D:2=4
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:1,C:1,D:1=3
Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
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Cook 2 is going to the counter to deliver soup - counter items P:1,C:1,D:1=3
Cook 2 placed soup on the counter - counter items P:2,C:1,D:1 = 4
Student 0 got food and is going to get a table (round 2) - # of empty tables: 2
Student 0 sat at table 1 to eat (round 2) - empty tables:1
Student 0 left table 1 to eat again (round 2) - empty tables:2
Student 0 is going to the counter (round 3) - # of students at counter: 0 and counter items P:1,C:0,D:0=1
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:0,C:1,D:1=2
Cook 2 is going to the counter to deliver main course - counter items P:1,C:0,D:0=1
Cook 2 placed main course on the counter - counter items P:1,C:1,D:0 = 2
Cook 2 is going to the kitchen to wait for/get a plate - kitchen items P:0,C:0,D:1=1
Cook 2 is going to the counter to deliver desert - counter items P:1,C:1,D:0=2
Cook 2 placed desert on the counter - counter items P:1,C:1,D:1 = 3
Cook 2 finished serving - items at kitchen: 0 - going home - GOODBYE!!!
Cook 1 finished serving - items at kitchen: 0 - going home - GOODBYE!!!
Student 0 got food and is going to get a table (round 3) - # of empty tables: 2
Student 0 sat at table 1 to eat (round 3) - empty tables:1
Student 0 left table 1 to eat again (round 3) - empty tables:2
Student 0 is done eating L=3 times - going home - GOODBYE!!!
Cook 0 finished serving - items at kitchen: 0 - going home - GOODBYE!!!
zeynep@zeynep-VirtualBox:~/Desktop$
```