**Program #1 CSC 660**

**Spring 2018**

**The exhausted server problem**

**Due TBA**

**Statement of problem**

The Foo Bar and Restaurant is unfortunately under-staffed. In fact, they can only afford to have one server and he is forced to work double-shifts in order to keep the place open. The restaurant has only a single counter with 15 seats.

Business at the restaurant is somewhat variable. There are times when there is a line out the door waiting to get one of the limited available seats. At other times of the day, there are no customers and the server takes the opportunity to try to get a little bit of sleep.

If a customer arrives at the empty restaurant and finds the server sleeping then he wakes him up and the service begins. If the customer arrives and the server is active, then the customer will take an available seat (if one exists) and wait her turn for service. Finally, if the customer arrives and there are no available seats then she must wait outside the door for someone to exit and thus free up a counter seat. When the order is delivered it is quickly devoured and the customer leaves their payment and exit the establishment.

The server provides service (takes an order and serves up the request) in the order that people are seated. If the restaurant is empty, then the server simply sits down and sleeps until awakened by an arriving customer. Being a strange little establishment, the server only waits on one customer at a time. This is because he is also the cook. So, if the server/cook is busy then only one customer is actively being serviced and the others (in chairs or possibly outside) are waiting.

**The assignment**

Your job is to program a semaphore-based solution to this problem. You will write a Java program that will consist of two threaded classes – ***Customer*** and ***Server***. The programmed solution must avoid deadlock and starvation and livelock. You can avoid starvation in your solution by ensuring that appropriate semaphores are created using a fair scheduling strategy of first-come-first-served (see the slides on Semaphore constructors).

The main program will need to create a single Server object (***DO NOT CONFUSE the term “server” with some sort of network entity – it is not! It is just the title of the job!!!)***. It will also need to initially create 50 Customer objects which will attempt to get lunch during the busy period. These 50 threaded objects should be placed into a ThreadGroup (I called mine “rushhour” but the name of the group does not have any impact). Another 50 Customer objects should be created and placed into a second ThreadGroup for use in a slow period simulation. Remember that there are only 15 available seats. Anyone who shows up with the restaurant full must wait outside. As customers leave those outside may enter.

Each Customer object should report each of the following acts at appropriate times:

“Customer X attempting to enter restaurant”

“Customer X has entered restaurant and is seated”

“Customer X is waiting for the server”

“Customer X has been served”

“Customer X is leaving”

The server should report the following messages :

“Server is sleeping” (NOTE: whenever restaurant is empty)

“Server is now awake” (NOTE: whenever awakened )

“Server is servicing customer X”

Assume that all customers take a number as they enter the restaurant with the very first customer being #1, the second #2 and so on. We will simulate the time it takes to record an order, prepare it and serve it by having the Server object sleep for 200 milliseconds.

Once all 50 of the customers have been serviced, the main program should start an additional 50 customers but these will be arriving during the slow period. We will simulate this by creating a customer and then having the main thread sleep for a random amount of time from 50-500 milliseconds. Obviously the server may be able to catch a nap from time to time.

After creating the second 50 customers as described above, the main should wait for all customers in the second ThreadGroup to finish at which point it should interrupt the Server and end execution.

**Server**

The Server object should loop infinitely. It should be started before any customer objects are created. After all, you need to open the place before customers can begin to arrive! We will assume that no customers are waiting to get in and so the server will probably take the opportunity to try to catch a quick nap. How do we code this? I would suggest the use of a shared semaphore perhaps named *Nap* which is initialized to 0. If the server executes *Nap.tryAcquire()* on said semaphore then it will either acquire the semaphore meaning there are still customers to be serviced or it will see the method return false meaning no customers and it can then execute Nap.acquire() to block until the semaphore is signaled by the first customer who enters via *Nap.release().* Once the server is done with the nap it will take the customer’s order and will begin preparing and serving (see the note above about how to simulate the service using a Java sleep() ). The service is completed when the server performs a release() on a Semaphore named *Servicing* upon which the customer will be blocked. The Servicing semaphore should be initialized to 0. Once the current customer has been serviced, the server should check to see if there are any other customers in the restaurant. If there are then it should service the next customer. If there are none, then the server should return to napping and so on…

**Customer**

A customer must first gain access to the restaurant. Since there are only 15 seats they must wait outside if all seats are filled. This can be accomplished by initializing a Semaphore, perhaps named *Door* to 15. Thus, 15 customers can enter but a 16th will be blocked. Once entry is gained, the customer will take a number and sit to await service. If they are the first customer to enter they will awaken the server. They do both by simply executing Nap.release(). They then wait to be served. They do this by trying to acquire a permit from Servicing semaphore discussed in the previous section. At this point the customer will leave the restaurant by performing a release() on the Door semaphore thus leaving and allowing the next customer in line to enter the restaurant.

**Main Class**

I have produced an outline of what the main class should do below. Obviously this is NOT Java code but should be useful.

import java.util.\*;

import java.util.concurrent.Semaphore;

// Declare static volatile Semaphores for Door, Servicing and Nap

public static void main( String [ ] args ) {

// Instantiate Door to starting value of 15 and make it FCFS

// Instantiate Servicing Semaphore and Nap semaphores to 0 and also FCFS

// create a Random number generator and Scanner (Random( )

// Scanner(System.in))

// Create the two threadgroups for rushhour and slowtime.

// instantiate a new Server object passing it the Nap and Servicing semaphores.

// declare and instantiate an array of 100 Customer objects.

//Walk through the first 50 cells of the array and create 50 Customer objects

// passing them: the first ThreadGroup, the Door, Servicing and Nap semaphores

// Next, walk through remaining 50 doing the same but passing the second

// ThreadGroup.

// prompt user to hit enter to start rush hour simulation

// Start up the Server object.

// sleep for 1 second and then start up the first 50 customers

// While the first ThreadGroup activeCount( ) is greater than 0

// busy wait

// prompt user to hit enter for slow time simulation

// walk through second 50 customer objects and start them BUT this

// time wait from 50-500 milliseconds between each one.

// wait for second ThreadGroup activeCount( ) to reach zero

// then interrupt the Server object.

**Sample Output**

Obviously, your exact output will vary as we are using random sleeps. However, this is representative of the correct output for your program. ***Also note that interruptions to threads can occur at various times which will allow for customers to seemingly “jump ahead” of others due only to an accident of timing.***

**Hit enter to start rush hour simulation**

**Server is SLEEPING**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 1 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 2 has entered restaurant and is seated**

**Customer 6 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**Server is now AWAKE**

**Customer 5 has entered restaurant and is seated**

**Customer 1 is waiting for the server**

**Customer 4 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**Customer 3 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**Customer 8 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**Customer 4 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 5 is waiting for the server**

**Server is servicing customer 1**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 7 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**Customer 6 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 2 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 7 is waiting for the server**

**Customer 15 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 14 has entered restaurant and is seated**

**Customer 13 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 12 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 11 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 10 has entered restaurant and is seated**

**New Customer attempting to enter restaurant**

**Customer 8 is waiting for the server**

**New Customer attempting to enter restaurant**

**Customer 9 has entered restaurant and is seated**

**Customer 3 is waiting for the server**

**Customer 9 is waiting for the server**

**Customer 10 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 11 is waiting for the server**

**New Customer attempting to enter restaurant**

**Customer 12 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 13 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 14 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Customer 15 is waiting for the server**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**New Customer attempting to enter restaurant**

**Server is servicing customer 2**

**Customer 1 has been served**

**Customer 1 is leaving**

**Customer 16 has entered restaurant and is seated**

**Customer 16 is waiting for the server**

**Server is servicing customer 3**

**Customer 4 has been served**

**Customer 4 is leaving**

**Customer 17 has entered restaurant and is seated**

**Customer 17 is waiting for the server**

**Server is servicing customer 4**

**Customer 5 has been served**

**Customer 5 is leaving**

**Customer 18 has entered restaurant and is seated**

**Customer 18 is waiting for the server**

**Server is servicing customer 5**

**Customer 6 has been served**

**Customer 6 is leaving**

**Customer 19 has entered restaurant and is seated**

**Customer 19 is waiting for the server**

**Server is servicing customer 6**

**Customer 2 has been served**

**Customer 2 is leaving**

**Customer 20 has entered restaurant and is seated**

**Customer 20 is waiting for the server**

**Server is servicing customer 7**

**Customer 7 has been served**

**Customer 7 is leaving**

**Customer 21 has entered restaurant and is seated**

**Customer 21 is waiting for the server**

**Server is servicing customer 8**

**Customer 8 has been served**

**Customer 8 is leaving**

**Customer 22 has entered restaurant and is seated**

**Customer 22 is waiting for the server**

**Server is servicing customer 9**

**Customer 3 has been served**

**Customer 3 is leaving**

**Customer 23 has entered restaurant and is seated**

**Customer 23 is waiting for the server**

**Server is servicing customer 10**

**Customer 9 has been served**

**Customer 9 is leaving**

**Customer 24 has entered restaurant and is seated**

**Customer 24 is waiting for the server**

**Server is servicing customer 11**

**Customer 10 has been served**

**Customer 10 is leaving**

**Customer 25 has entered restaurant and is seated**

**Customer 25 is waiting for the server**

**Server is servicing customer 12**

**Customer 11 has been served**

**Customer 11 is leaving**

**Customer 26 has entered restaurant and is seated**

**Customer 26 is waiting for the server**

**Server is servicing customer 13**

**Customer 12 has been served**

**Customer 12 is leaving**

**Customer 27 has entered restaurant and is seated**

**Customer 27 is waiting for the server**

**Server is servicing customer 14**

**Customer 13 has been served**

**Customer 13 is leaving**

**Customer 28 has entered restaurant and is seated**

**Customer 28 is waiting for the server**

**Server is servicing customer 15**

**Customer 14 has been served**

**Customer 14 is leaving**

**Customer 29 has entered restaurant and is seated**

**Customer 29 is waiting for the server**

**Server is servicing customer 16**

**Customer 15 has been served**

**Customer 15 is leaving**

**Customer 30 has entered restaurant and is seated**

**Customer 30 is waiting for the server**

**Server is servicing customer 17**

**Customer 16 has been served**

**Customer 16 is leaving**

**Customer 31 has entered restaurant and is seated**

**Customer 31 is waiting for the server**

**Server is servicing customer 18**

**Customer 17 has been served**

**Customer 17 is leaving**

**Customer 32 has entered restaurant and is seated**

**Customer 32 is waiting for the server**

**Server is servicing customer 19**

**Customer 18 has been served**

**Customer 18 is leaving**

**Customer 33 has entered restaurant and is seated**

**Customer 33 is waiting for the server**

**Server is servicing customer 20**

**Customer 19 has been served**

**Customer 19 is leaving**

**Customer 34 has entered restaurant and is seated**

**Customer 34 is waiting for the server**

**Server is servicing customer 21**

**Customer 20 has been served**

**Customer 20 is leaving**

**Customer 35 has entered restaurant and is seated**

**Customer 35 is waiting for the server**

**Server is servicing customer 22**

**Customer 21 has been served**

**Customer 21 is leaving**

**Customer 36 has entered restaurant and is seated**

**Customer 36 is waiting for the server**

**Server is servicing customer 23**

**Customer 22 has been served**

**Customer 22 is leaving**

**Customer 37 has entered restaurant and is seated**

**Customer 37 is waiting for the server**

**Server is servicing customer 24**

**Customer 23 has been served**

**Customer 23 is leaving**

**Customer 38 has entered restaurant and is seated**

**Customer 38 is waiting for the server**

**Server is servicing customer 25**

**Customer 24 has been served**

**Customer 24 is leaving**

**Customer 39 has entered restaurant and is seated**

**Customer 39 is waiting for the server**

**Server is servicing customer 26**

**Customer 25 has been served**

**Customer 25 is leaving**

**Customer 40 has entered restaurant and is seated**

**Customer 40 is waiting for the server**

**Server is servicing customer 27**

**Customer 26 has been served**

**Customer 26 is leaving**

**Customer 41 has entered restaurant and is seated**

**Customer 41 is waiting for the server**

**Server is servicing customer 28**

**Customer 27 has been served**

**Customer 27 is leaving**

**Customer 42 has entered restaurant and is seated**

**Customer 42 is waiting for the server**

**Server is servicing customer 29**

**Customer 28 has been served**

**Customer 28 is leaving**

**Customer 43 has entered restaurant and is seated**

**Customer 43 is waiting for the server**

**Server is servicing customer 30**

**Customer 29 has been served**

**Customer 29 is leaving**

**Customer 44 has entered restaurant and is seated**

**Customer 44 is waiting for the server**

**Server is servicing customer 31**

**Customer 30 has been served**

**Customer 30 is leaving**

**Customer 45 has entered restaurant and is seated**

**Customer 45 is waiting for the server**

**Server is servicing customer 32**

**Customer 31 has been served**

**Customer 31 is leaving**

**Customer 46 has entered restaurant and is seated**

**Customer 46 is waiting for the server**

**Server is servicing customer 33**

**Customer 32 has been served**

**Customer 32 is leaving**

**Customer 47 has entered restaurant and is seated**

**Customer 47 is waiting for the server**

**Server is servicing customer 34**

**Customer 33 has been served**

**Customer 33 is leaving**

**Customer 48 has entered restaurant and is seated**

**Customer 48 is waiting for the server**

**Server is servicing customer 35**

**Customer 34 has been served**

**Customer 34 is leaving**

**Customer 49 has entered restaurant and is seated**

**Customer 49 is waiting for the server**

**Server is servicing customer 36**

**Customer 35 has been served**

**Customer 35 is leaving**

**Customer 50 has entered restaurant and is seated**

**Customer 50 is waiting for the server**

**Server is servicing customer 37**

**Customer 36 has been served**

**Customer 36 is leaving**

**Server is servicing customer 38**

**Customer 37 has been served**

**Customer 37 is leaving**

**Server is servicing customer 39**

**Customer 38 has been served**

**Customer 38 is leaving**

**Server is servicing customer 40**

**Customer 39 has been served**

**Customer 39 is leaving**

**Server is servicing customer 41**

**Customer 40 has been served**

**Customer 40 is leaving**

**Server is servicing customer 42**

**Customer 41 has been served**

**Customer 41 is leaving**

**Server is servicing customer 43**

**Customer 42 has been served**

**Customer 42 is leaving**

**Server is servicing customer 44**

**Customer 43 has been served**

**Customer 43 is leaving**

**Server is servicing customer 45**

**Customer 44 has been served**

**Customer 44 is leaving**

**Server is servicing customer 46**

**Customer 45 has been served**

**Customer 45 is leaving**

**Server is servicing customer 47**

**Customer 46 has been served**

**Customer 46 is leaving**

**Server is servicing customer 48**

**Customer 47 has been served**

**Customer 47 is leaving**

**Server is servicing customer 49**

**Customer 48 has been served**

**Customer 48 is leaving**

**Server is servicing customer 50**

**Customer 49 has been served**

**Customer 49 is leaving**

**Server is SLEEPING**

**Customer 50 has been served**

**Customer 50 is leaving**

**Hit enter to begin slow time simulation**

**New Customer attempting to enter restaurant**

**Customer 51 has entered restaurant and is seated**

**Customer 51 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 51**

**Server is SLEEPING**

**Customer 51 has been served**

**Customer 51 is leaving**

**New Customer attempting to enter restaurant**

**Customer 52 has entered restaurant and is seated**

**Customer 52 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 52**

**New Customer attempting to enter restaurant**

**Customer 53 has entered restaurant and is seated**

**Customer 53 is waiting for the server**

**Server is servicing customer 53**

**Customer 52 has been served**

**Customer 52 is leaving**

**Server is SLEEPING**

**Customer 53 has been served**

**Customer 53 is leaving**

**New Customer attempting to enter restaurant**

**Customer 54 has entered restaurant and is seated**

**Customer 54 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 54**

**Server is SLEEPING**

**Customer 54 has been served**

**Customer 54 is leaving**

**New Customer attempting to enter restaurant**

**Customer 55 has entered restaurant and is seated**

**Customer 55 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 55**

**Server is SLEEPING**

**Customer 55 has been served**

**Customer 55 is leaving**

**New Customer attempting to enter restaurant**

**Customer 56 has entered restaurant and is seated**

**Customer 56 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 56**

**Server is SLEEPING**

**Customer 56 has been served**

**Customer 56 is leaving**

**New Customer attempting to enter restaurant**

**Customer 57 has entered restaurant and is seated**

**Customer 57 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 57**

**Server is SLEEPING**

**Customer 57 has been served**

**Customer 57 is leaving**

**New Customer attempting to enter restaurant**

**Customer 58 has entered restaurant and is seated**

**Customer 58 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 58**

**Server is SLEEPING**

**Customer 58 has been served**

**Customer 58 is leaving**

**New Customer attempting to enter restaurant**

**Customer 59 has entered restaurant and is seated**

**Customer 59 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 59**

**New Customer attempting to enter restaurant**

**Customer 60 has entered restaurant and is seated**

**Customer 60 is waiting for the server**

**Server is servicing customer 60**

**Customer 59 has been served**

**Customer 59 is leaving**

**Server is SLEEPING**

**Customer 60 has been served**

**Customer 60 is leaving**

**New Customer attempting to enter restaurant**

**Customer 61 has entered restaurant and is seated**

**Customer 61 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 61**

**Server is SLEEPING**

**Customer 61 has been served**

**Customer 61 is leaving**

**New Customer attempting to enter restaurant**

**Customer 62 has entered restaurant and is seated**

**Customer 62 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 62**

**Server is SLEEPING**

**Customer 62 has been served**

**Customer 62 is leaving**

**New Customer attempting to enter restaurant**

**Customer 63 has entered restaurant and is seated**

**Customer 63 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 63**

**New Customer attempting to enter restaurant**

**Customer 64 has entered restaurant and is seated**

**Customer 64 is waiting for the server**

**Server is servicing customer 64**

**Customer 63 has been served**

**Customer 63 is leaving**

**Server is SLEEPING**

**Customer 64 has been served**

**Customer 64 is leaving**

**New Customer attempting to enter restaurant**

**Customer 65 has entered restaurant and is seated**

**Customer 65 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 65**

**New Customer attempting to enter restaurant**

**Customer 66 has entered restaurant and is seated**

**Customer 66 is waiting for the server**

**Server is servicing customer 66**

**Customer 65 has been served**

**Customer 65 is leaving**

**Server is SLEEPING**

**Customer 66 has been served**

**Customer 66 is leaving**

**New Customer attempting to enter restaurant**

**Customer 67 has entered restaurant and is seated**

**Customer 67 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 67**

**Server is SLEEPING**

**Customer 67 has been served**

**Customer 67 is leaving**

**New Customer attempting to enter restaurant**

**Customer 68 has entered restaurant and is seated**

**Customer 68 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 68**

**Server is SLEEPING**

**Customer 68 has been served**

**Customer 68 is leaving**

**New Customer attempting to enter restaurant**

**Customer 69 has entered restaurant and is seated**

**Customer 69 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 69**

**Server is SLEEPING**

**Customer 69 has been served**

**Customer 69 is leaving**

**New Customer attempting to enter restaurant**

**Customer 70 has entered restaurant and is seated**

**Customer 70 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 70**

**Server is SLEEPING**

**Customer 70 has been served**

**Customer 70 is leaving**

**New Customer attempting to enter restaurant**

**Customer 71 has entered restaurant and is seated**

**Customer 71 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 71**

**New Customer attempting to enter restaurant**

**Customer 72 has entered restaurant and is seated**

**Customer 72 is waiting for the server**

**Server is servicing customer 72**

**Customer 71 has been served**

**Customer 71 is leaving**

**Server is SLEEPING**

**Customer 72 has been served**

**Customer 72 is leaving**

**New Customer attempting to enter restaurant**

**Customer 73 has entered restaurant and is seated**

**Customer 73 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 73**

**Server is SLEEPING**

**Customer 73 has been served**

**Customer 73 is leaving**

**New Customer attempting to enter restaurant**

**Customer 74 has entered restaurant and is seated**

**Customer 74 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 74**

**New Customer attempting to enter restaurant**

**Customer 75 has entered restaurant and is seated**

**Customer 75 is waiting for the server**

**Server is servicing customer 75**

**Customer 74 has been served**

**Customer 74 is leaving**

**New Customer attempting to enter restaurant**

**Customer 76 has entered restaurant and is seated**

**Customer 76 is waiting for the server**

**New Customer attempting to enter restaurant**

**Customer 77 has entered restaurant and is seated**

**Customer 77 is waiting for the server**

**Server is servicing customer 76**

**Customer 75 has been served**

**Customer 75 is leaving**

**New Customer attempting to enter restaurant**

**Customer 78 has entered restaurant and is seated**

**Customer 78 is waiting for the server**

**New Customer attempting to enter restaurant**

**Customer 79 has entered restaurant and is seated**

**Customer 79 is waiting for the server**

**Server is servicing customer 77**

**Customer 76 has been served**

**Customer 76 is leaving**

**Server is servicing customer 78**

**Customer 77 has been served**

**Customer 77 is leaving**

**New Customer attempting to enter restaurant**

**Customer 80 has entered restaurant and is seated**

**Customer 80 is waiting for the server**

**Server is servicing customer 79**

**Customer 78 has been served**

**Customer 78 is leaving**

**Server is servicing customer 80**

**Customer 79 has been served**

**Customer 79 is leaving**

**New Customer attempting to enter restaurant**

**Customer 81 has entered restaurant and is seated**

**Customer 81 is waiting for the server**

**Server is servicing customer 81**

**Customer 80 has been served**

**Customer 80 is leaving**

**New Customer attempting to enter restaurant**

**Customer 82 has entered restaurant and is seated**

**Customer 82 is waiting for the server**

**Server is servicing customer 82**

**Customer 81 has been served**

**Customer 81 is leaving**

**Server is SLEEPING**

**Customer 82 has been served**

**Customer 82 is leaving**

**New Customer attempting to enter restaurant**

**Customer 83 has entered restaurant and is seated**

**Customer 83 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 83**

**New Customer attempting to enter restaurant**

**Customer 84 has entered restaurant and is seated**

**Customer 84 is waiting for the server**

**Server is servicing customer 84**

**Customer 83 has been served**

**Customer 83 is leaving**

**Server is SLEEPING**

**Customer 84 has been served**

**Customer 84 is leaving**

**New Customer attempting to enter restaurant**

**Customer 85 has entered restaurant and is seated**

**Customer 85 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 85**

**New Customer attempting to enter restaurant**

**Customer 86 has entered restaurant and is seated**

**Customer 86 is waiting for the server**

**Server is servicing customer 86**

**Customer 85 has been served**

**Customer 85 is leaving**

**New Customer attempting to enter restaurant**

**Customer 87 has entered restaurant and is seated**

**Customer 87 is waiting for the server**

**Server is servicing customer 87**

**Customer 86 has been served**

**Customer 86 is leaving**

**New Customer attempting to enter restaurant**

**Customer 88 has entered restaurant and is seated**

**Customer 88 is waiting for the server**

**Server is servicing customer 88**

**Customer 87 has been served**

**Customer 87 is leaving**

**Server is SLEEPING**

**Customer 88 has been served**

**Customer 88 is leaving**

**New Customer attempting to enter restaurant**

**Customer 89 has entered restaurant and is seated**

**Customer 89 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 89**

**Server is SLEEPING**

**Customer 89 has been served**

**Customer 89 is leaving**

**New Customer attempting to enter restaurant**

**Customer 90 has entered restaurant and is seated**

**Customer 90 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 90**

**New Customer attempting to enter restaurant**

**Customer 91 has entered restaurant and is seated**

**Customer 91 is waiting for the server**

**Server is servicing customer 91**

**Customer 90 has been served**

**Customer 90 is leaving**

**Server is SLEEPING**

**Customer 91 has been served**

**Customer 91 is leaving**

**New Customer attempting to enter restaurant**

**Customer 92 has entered restaurant and is seated**

**Customer 92 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 92**

**Server is SLEEPING**

**Customer 92 has been served**

**Customer 92 is leaving**

**New Customer attempting to enter restaurant**

**Customer 93 has entered restaurant and is seated**

**Customer 93 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 93**

**Server is SLEEPING**

**Customer 93 has been served**

**Customer 93 is leaving**

**New Customer attempting to enter restaurant**

**Customer 94 has entered restaurant and is seated**

**Customer 94 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 94**

**Server is SLEEPING**

**Customer 94 has been served**

**Customer 94 is leaving**

**New Customer attempting to enter restaurant**

**Customer 95 has entered restaurant and is seated**

**Customer 95 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 95**

**Server is SLEEPING**

**Customer 95 has been served**

**Customer 95 is leaving**

**New Customer attempting to enter restaurant**

**Customer 96 has entered restaurant and is seated**

**Customer 96 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 96**

**Server is SLEEPING**

**Customer 96 has been served**

**Customer 96 is leaving**

**New Customer attempting to enter restaurant**

**Customer 97 has entered restaurant and is seated**

**Customer 97 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 97**

**New Customer attempting to enter restaurant**

**Customer 98 has entered restaurant and is seated**

**Customer 98 is waiting for the server**

**Server is servicing customer 98**

**Customer 97 has been served**

**Customer 97 is leaving**

**Server is SLEEPING**

**Customer 98 has been served**

**Customer 98 is leaving**

**New Customer attempting to enter restaurant**

**Customer 99 has entered restaurant and is seated**

**Customer 99 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 99**

**Server is SLEEPING**

**Customer 99 has been served**

**Customer 99 is leaving**

**New Customer attempting to enter restaurant**

**Customer 100 has entered restaurant and is seated**

**Customer 100 is waiting for the server**

**Server is now AWAKE**

**Server is servicing customer 100**

**Server is SLEEPING**

**Customer 100 has been served**

**Customer 100 is leaving**