MI CAZUELA—MEXICAN RESTAURANT

Maria opened her authentic Mexican restaurant **"Mi Cazuela"** (a cazuela is a clay cooking bowl with a small handle on each side) in Pasadena, California, in the 1980s. It quickly became popular for the tasty food and use of fresh organic produce and all-natural meats. As her oldest child, you have been asked to run the restaurant. If you are able to gain her confidence, she will eventually hand over the restaurant to you.

You have definite ideas about increasing the profitability at Mi Cazuela. Lately, you have observed a troubling trend in the restaurant. An increasing number of customers are expressing dissatisfaction with the long wait, and you have also observed that some people leave without being served.
Your initial analysis of the situation at Mi Cazuela indicates that one way to improve customer service is to reduce the waiting time in the restaurant. You also realize that by optimizing the process for the peak time in the restaurant, you will be able to increase the profit.

Customers arrive in groups that vary in size from one to four (uniformly distributed). Currently, there are four tables for four and three tables for two patrons in the dining area. Groups of one or two customers wait in one queue while groups of three or four customers wait in another queue. Each of these waiting lines can accommodate up to two groups only. One- or two-customer groups are directed to tables for two. Three- or four-customer groups are directed to tables for four.

There are two cooks in the kitchen and two waiters. The cooks are paid $100/day, and the waiters get $60/day. The cost of raw material (vegetables, meat, spices, and other food material) is $1 per customer. The overhead cost of the restaurant (rent, insurance, utilities, and so on) is $300/day. The bill for each customer varies uniformly from $10 to $16 or U(13,3).

The restaurant remains open seven days a week from 5 P.M. till 11 P.M. The customer arrival pattern is as follows. The total number of customer groups visiting the restaurant each day varies uniformly between 30 and 50 or U(40,10):

Customer Arrival Pattern

From	To	Percent
5 pm.	6 pm.	10
6 pm.	7 pm.	20
7 pm.	9 pm.	55
9 pm.	10 pm.	10
10 pm.	11 pm.	5

Processes at the Restaurant

When a table of the right size becomes available and a waiter is free, he or she seats the customer, writes down the order, and delivers the order to the kitchen. Cooks prepare the food in the kitchen and bring it out. Any available waiter delivers the food to the customer. Customers enjoy the dinner. A waiter cleans the table and collects payment from the customers. The customers leave the restaurant. The various activity times are as follows:

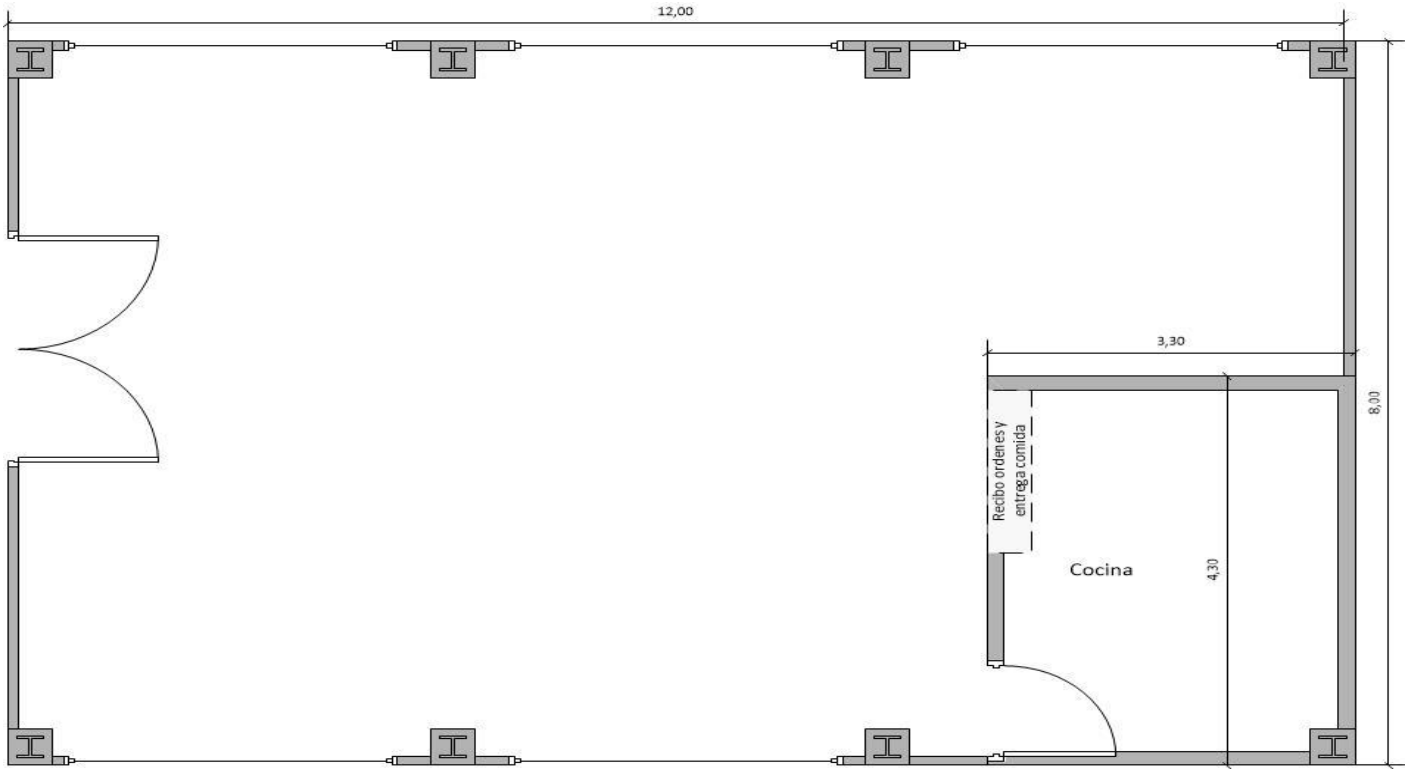
Activity	**# Activity**	**Activity Time Distributions**
1	Waiter seats the customer group.	N(2, 0.5) min
2	Waiter writes down the order.	N(3, 0.7) min
3	Waiter delivers the order to the kitchen.	N(2, 0.5) min
4	Cook prepares food.	N(5, 1) min
5	Cook brings out the food.	N(2, 0.5) min
6	Waiter delivers food to customer group.	N(2, 0.5) min
7	Customers eat.	N(10, 2) min
8	Waiter cleans table and collects payment + tips.	N(3, 0.8) min

Part A

Analyze and answer the following questions:
1. What is the average profit per day at Mi Cazuela?
2. How many customers leave the restaurant (per day) without eating?
3. What is the time that a customer group spends at the restaurant?
4. How much time does a customer group wait in line?

Part B

You are thinking of using an automated handheld device for the waiters to take the customer orders and transmit the information (wireless) to the kitchen. The order entry and transmission (activities #2 and 3) is estimated to take N(1.5, 0.2) minutes. The rent for each of these devices is $2/hour. Will using these devices improve profit? Reduce customer time in the system? Should you invest in these handheld devices?



Entregables:

- Modelo
- Documento escrito (No impreso)
- Descripción de cada uno de los elementos de Promodel empleados en la simulación (Locaciones, entidades, rutas, recursos, variables, atributos, distribuciones de usuario, ciclos de arribo…)
- Archivos de turnos de trabajo, librería grafica e interfaces de Excel

- Medidas de desempeño del sistema.
- Análisis de resultados.
- Conclusiones y recomendaciones.
- Fecha de entrega: viernes 16 de abril
- Hora: hasta las 6:00 pm
- Grupos de trabajo: parejas, o de manera individual si lo prefieren, la pareja puede estar conformada por estudiantes de los dos grupos, si deben especificar en la entrega de cada trabajo si el estudiante hace parte del grupo 1: lunes o 2: miércoles

Nota: si se encuentran archivos iguales para distintas parejas, el ejercicio se anula para las parejas involucradas y la nota será de 0.0.