

(Hotel Revenue Management) It's Wednesday evening, the manager at downtown Beirut Stay Here Hotel (SHH) is planning the capacity control policy for Thursday, Friday and Saturday nights. SHH manager is not concerned with reservations beyond Saturday night. The first international Family Guy fans convention will be in Beirut and SHH is completely sold-out all next week.

Current reservations, forecasts of future demand, and fares for single- and multi-night stays are shown in Table 1. On any given day, SHH allows incoming customers to check-in after 1:00 PM and requires leaving customers to check-out by noon. Assume that all customers who made reservation will show up and request their rooms.

SHH receives reservations from two customer classes, first class (C1) and second class (C2). SHH capacity is 100 rooms. Each room can accommodate both C1 and C2 customers. C1 (business) customers reserve late (close to their desired stay time), are allowed to cancel or not show to their room at little or no penalty, and will usually not stay over a weekend. On the other hand, C2 (leisure) customers usually reserve early (few weeks before their stay), are not entitled for a refund in the event of a cancellation or no-show, and are likely to stay over a weekend. Therefore, a C1 customer pays a higher rate (for the same room) than a C2 customer.

**Table 1 SHH current reservations and future demand**

Check-in	Check-out	Current Reservations		Future Demand		Fares	
		C1	C2	C1	C2	C1	C2
Thu	Fri	10	10	15	10	\$200	\$60
Thu	Sat	5	15	10	15	\$350	\$120
Thu	Sun	4	20	3	20	\$500	\$170
Fri	Sat	2	10	2	14	\$200	\$70
Fri	Sun	2	14	3	16	\$320	\$130
Sat	Sun	1	12	2	12	\$180	\$70

- (a) Formulate a LP to assist SHH manager deciding which reservation requests to accept. Define your decision variables and objective function clearly.
- (b)
  - (i) Solve the LP developed in (a) using Excel Solver.
  - (ii) Name your Excel as "yourlastname\_b.xls" (E.g. I would name my file Maddah\_b.xls).
  - (iii) Email the file to [probhw@gmail.com](mailto:probhw@gmail.com).
- (c) How would you verify and validate the model developed in (a) and (b)?

- (d) Based on the LP solution in (b), develop a table that explains to SHH manager how to decide on each reservation request SHH receives.
- (e) Suppose that SHH manager received the reservation requests in Table 2 on Thursday between 8 AM and 8 PM.

**Table 2 Reservation requests on Thursday**

Check-in	Check-out	# of Reservation Requests	
		C1	C2
Thu	Fri	7	4
Thu	Sat	3	4
Thu	Sun	1	4
Fri	Sat	0	3
Fri	Sun	1	4
Sat	Sun	0	4

- (i) Which reservation requests should the manager accept?
- (ii) On Thursday evening (at 11 PM), SHH manager believes that no more reservations for Thursday night will be received. The manager wants to update the capacity control policy for Friday and Saturday nights based on the new information in Table 2. Formulate a linear program and solve it using Excel solver to assist SHH manager. Name the Excel file “yourlastname\_e.xls” and email it to [probhwa@gmail.com](mailto:probhwa@gmail.com) as in (b). Develop a table similar to that in (d).
- (f) Suppose that SHH is not sold-out next week. How would you plan capacity control?

