# Term Project: Ophelia’s Oasis in the Amlet Desert

Ophelia's Oasis is a 45-room hotel situated on the top of a mountain overlooking the most beautiful part of the Amlet Desert in Australia.  Every room has an uninterrupted view of the desert stretching to the horizon some 15 or 20 miles away.

The cost of a stay in the hotel varies depending on the time of the year and the type of reservation.  At least one year in advance, management sets the rate that will be charged for all 45 rooms on that day.  This rate is called the *base rate*.  The base rate is higher in winter (peak season) and at holiday times.

There are four types of reservations:

1. *Prepaid reservations*.  Guests pay in full for their stay at the time the reservation is made.  The prepaid rate is 75 percent of the base rate.  Prepaid reservations have to be made at least 90 days in advance.  There is no refund if a prepaid reservation is canceled, but a prepaid reservation can be changed  (subject to availability) at an additional prepaid cost of 110 percent of the current base rate for the changed reservation, less the cost of the original reservation. (No refund is paid if the changed reservation costs less than the original reservation.)

2. *Sixty-days-in-advance reservations*.  When a 60-days-in-advance reservation is made, guests provide an e-mail address.  Forty-five days before their stay is due to begin, an e-mail is sent to the guests to inform them that the reservation has to be paid in full within 15 days or it will be cancelled. Each morning, an employee must generate these e-mail messages automatically. The 60-days-in-advance rate is 85 percent of the base rate.  There is no refund if a 60-days-in-advance reservation is canceled, but a 60-days-in-advance reservation can be changed  (subject to availability) at an additional prepaid cost of 110 percent of the current base rate for the changed reservation, less the cost of the original reservation. (No refund is paid if the changed reservation costs less than the original reservation.)

3. *Conventional reservations.*  For conventional reservations, guests pay at the end of their stay.  However, they have to give a credit card number at the time the reservation is made, and they are charged for the first day if they are “no shows” or cancel less than 3 days before the start of their stay.  Conventional reservations can be made at any time and changed at any time (subject to availability).

4. *Incentive reservations*.  The hotel is some 125 miles from the nearest town, so it is hard for management to hire temporary employees for peak periods.  Instead, management ensures that there are sufficient employees at all times to be able to handle full occupancy.  However, to defray the resulting high labor costs, management has to strive to achieve full occupancy every night.  Specifically, for a reservation made less than 30 days from the start of the stay, if the average expected occupancy rate is 60 percent or less for that period, the quoted rate is lowered by 20 percent.  For example, suppose a reservation is made 25 days ahead for a stay from Sunday to Thursday (4 nights), and the average number of reservations for those four nights is currently 22.5 rooms.  The average expected occupancy rate for that period is then 50 percent, so the rate for those four nights will be 80 percent of the base rate for each of those four nights.  Guests pay for an incentive reservation at the end of their stay, as with a conventional reservation. Incentive reservations are subject to the same cancellation and change policies as conventional reservations.

All payments must be made by credit card, both before and at the end of a stay. Credit card information must be provided at the time a reservation made, except for 60-days-in-advance reservations, where credit card information must be provided at least 30 days before the arrival date.

Management can change the base rate for any day at any time.  Therefore, it is possible that prospective guests making a reservation could be told that the rate for each night of their stay is different.  At the same time, a change in the base rate must not affect an existing reservation in any way.

Reservations cannot be made for a specific room; rooms are assigned on the morning of the day of expected arrival. Guests are given their room assignments when they check in. Guests who do not check in or call to confirm their room reservations by 11:59 P.M. on the first day of their reservations forfeit their reservations and are charged the “no show” penalty. Each morning, an employee must generate the penalty charges.

All records are to be retained. For example, if a reservation is canceled, the reservation should be modified to reflect the cancellation. Furthermore, the product should write data to disk at the end of each transaction. A backup copy of all files must be crated at the end of each business day and stored off-site.

The reservation system must print a number of reports. Three reports are generated daily by management:

The *expected occupancy report* is a one-page management report that shows the number of rooms currently reserved each night for the next 30 nights.  Each line of the report shows the date, the number of prepaid, 60-day, conventional, and incentive reservations and the total number of rooms reserved.  The last line of the report shows the average expected occupancy rate for that period.

The *expected room income report* is a one-page report that shows the expected income from the rooms each night for the next 30 days.  Each line of the report shows the date and the expected income for that night.  The last two lines of the report are the total income for that period and the average income for that period.

The *incentive report* is a one-page management report that shows how much money would be lost for the next 30 nights as a consequence of the incentive discount of 20 percent.  Each line of the report shows the date and the total incentive discount for that night.  The last two lines of the report are the total incentive discount for that period and the average incentive discount for that period.

Two reports are operating reports generated daily by employees:

The *daily arrivals report* is a list of guests who are expected to arrive that day.  Each line of the report shows the guest name, reservation type, assigned room number, and date of departure.  The report is sorted by guest name.

The *daily occupancy report* is a list of guests currently staying at the hotel.  Each line of the report shows the room number, the guest name, and date of departure if the room was occupied the previous evening.  If the guest is leaving that day, the name is preceded by an asterisk.  The list is sorted by room number.

In addition, the product must print *accommodation bills*.  A bill must reflect the date the bill was printed, the guest name, room number, arrival date, departure date, number of nights, and total charge.  For prepaid and 60-day reservations, the bill must reflect the date on which it was paid in advance and the amount paid. Accommodation bills are handed to the guests when they check out.