‘Hotel ENM’ is Shanghai’s latest luxury hotel. It was built by some technical instructors who had become tired of training. They thought Shanghai was a lovely place to build a hotel, and so ‘Hotel ENM’ was created (This is pure fantasy, of course, there is no way technical instructors could afford to build a hotel).

At hotel ENM, there are 700 rooms. Each room can be one of five types: ‘executive’, ‘dignitary’, ‘royalty’, ‘instructor’, and ‘evad’. The size (square meters) and rate (RMB per day) for each type of room is the same for all rooms of that type. Each room is identified by a room number and can be either smoking or non-smoking.

The hotel does not store much information about guests. It only needs to know their full name, whether they prefer a smoking room, and their email address. The email address is used infrequently; typically when the hotel wants to tell previous guests about promotions.

Guests book rooms for a period of time identified by a start date and an end date (dates are inclusive). The hotel needs to retain a record of when guests booked rooms in the past, and current bookings.

Finally, the hotel needs to prepare bills for guests. Each bill has a start date and an end date, which may not be the same as the start and end dates of the customer's stay at the hotel. A customer may request to pay their bill at any time after checking in. For example, a long-staying guest may wish to pay their bill once per week during their stay. The calculated bill should reflect the costs from either check-in, or the date of the last bill. At check-out, all costs either since the last bill, or since check-in, if no previous bills have been issued, should be presented to the guest. When a bill is presented to a guest, they need to see the total cost of the bill, and an itemized costing for each bill.