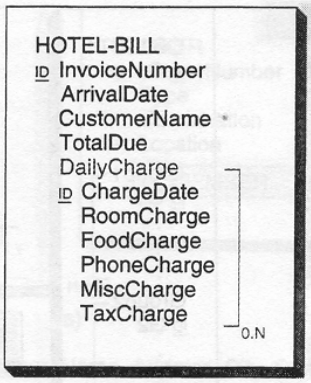
➤ FIGURE 7-3

Relational Representation of Example Composite Object: (a) HOTEL-BILL Object Diagram and (b) Relations Representing HOTEL-BILL



(a)

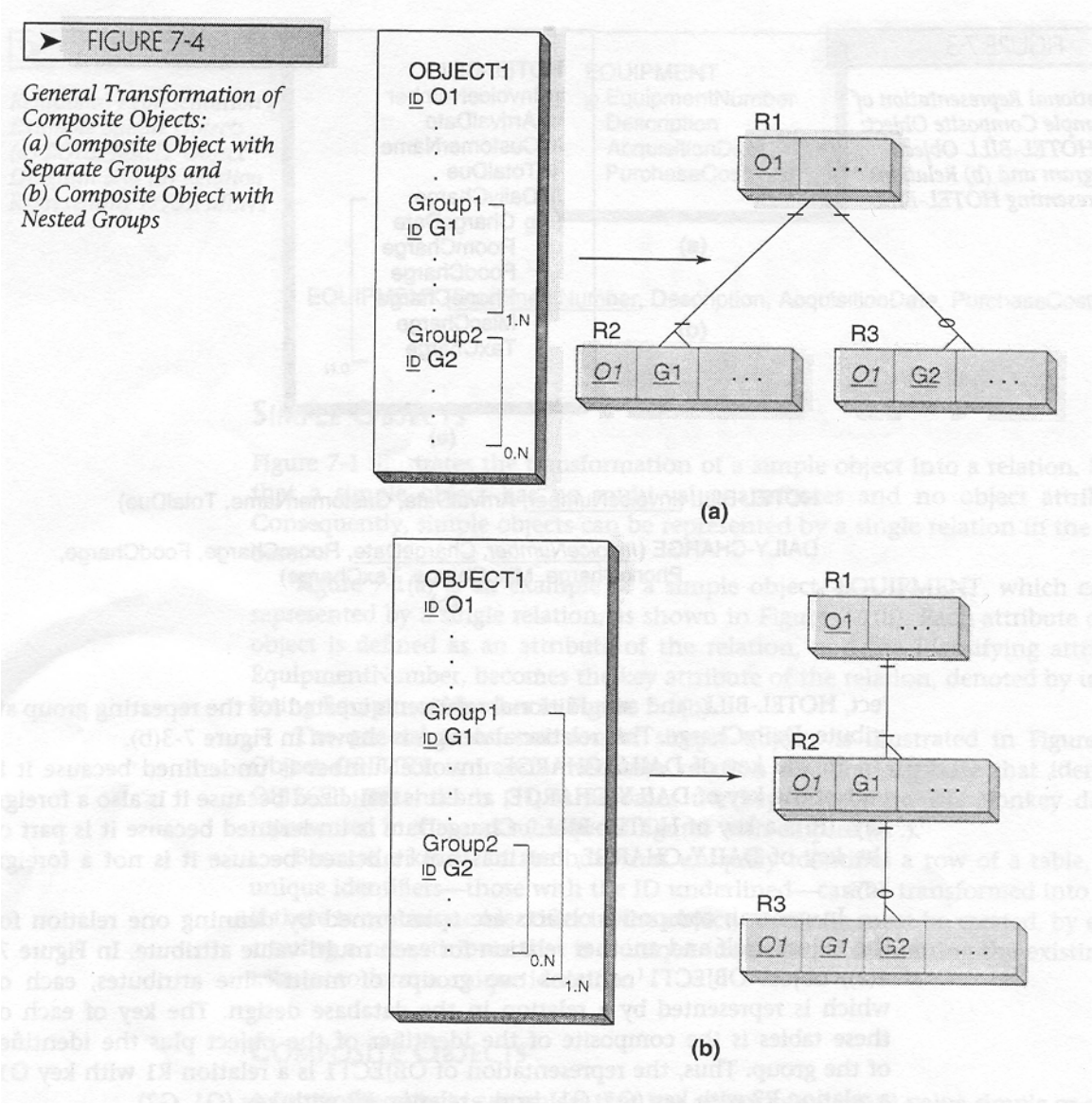
HOTEL-BILL (InvoiceNumber, ArrivalDate, CustomerName, TotalDue)

DAILY-CHARGE (*InvoiceNumber*, ChargeDate, RoomCharge, FoodCharge, PhoneCharge, MiscCharge, TaxCharge)

(b)

A composite object is an object that has one or more multi-value simple or group attributes but no object attributes. **Figure 7-3(a)** shows an example composite object, HOTEL-BILL. To represent this object, one relation is created for the base object, HOTEL-BILL, and an additional relation is created for the repeating group attribute, DailyCharge. This relational design is shown in Figure 7-3(b).

In the key of DAILY-CHARGE, InvoiceNumber is underlined because it is part of the key of DAILY-CHARGE, and it is italicized because it is also a foreign key. ChargeDate is underlined because it is part of the key of DAILY-CHARGE, but it is not italicized because it is not a foreign key.



In general, composite objects are transformed by defining one relation for the object itself and another relation for each multi-value attribute. In **figure7-4(a)** object OBJECT1 contains two groups of multi-value attributes , each of which is represented by a relation in the database design. The key of each of these tables is the composite of the identifier of the object plus the identifier of the group. Thus, the representation of OBJECT1 is a relation R1 with key O1, a relation R2 with key (O1,G1), and a relation R3 with key (O1,G2).

The minimum cardinality from the object to the group is specified by the minimum cardinality of group attribute. In figure 7-4(a), the minimum cardinality of Group1 is 1 and that of Group2 is 0. These cardinalities are shown as a hash mark and an oval in the data structure diagram. The minimum cardinality from the group to the object is, by default, always 1, because a group cannot exist if the object that contains that group does

not exist. These minimum cardinalities are shown by hash marks on the relationship lines into R1.

Groups can be nested. **Figure 7-4(b)** shows an object in which Group2 is nested within Group1. When this occurs, the relation representing the nested group is made subordinate to the relation that represents its containing group. In figre 7-4(b), relation R3 is subordinate to relation R2. The key of R3 is the key of R2, which is(O1,G1) plus the identifier of Group2, which is G2; thus the key of R3 is (O1,G1, G2).