

## CSCI 332 Database Concepts

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## Assignment 1 -Basic Concepts -Solutions

Consider the Hotel-Room-Booking-Guest database described in the exercise section at the bottom of page 118 of your textbook. All of the primary keys (some of which are compound) are shown underlined in this schema.

- Based on the schema specification given, produce some sample tables for each of the Hotel, Room, Booking, and Guest tables. You must have at least three tuples in the Hotel relation, seven in the Room Relation, 10 in the Booking relation, and five in the Guest relation.

Furthermore:

- Your sample data must fully illustrate the role of the primary key attribute(s) especially in the case where there are compound keys.
- Your sample data must illustrate the foreign keys present.

Hotel		
<u>hotelNo</u>	hotelName	city
01	Ritz	Charleston
11	Overnight	Atlanta
21	NoTell	Charleston

Room			
<u>roomNo</u>	<u>hotelNo</u>	type	price
101	11	single	70
202	11	double	90
101	21	double	70
321	21	single	40
123	01	suite	400
101	01	double	200
202	01	suite	400

Booking				
<u>hotelNo</u>	<u>guestNo</u>	<u>dateFrom</u>	dateTo	roomNo
01	165	09-01-2020	09-03-2020	202
11	888	07-04-2018	07-07-2018	202
01	165	05-03-2019	05-04-2019	123
01	392	09-01-2020	09-02-2020	101
11	717	03-17-2020	03-18-2020	101
11	888	03-17-2020	03-21-2020	202
21	392	04-01-2020	04-02-2020	101
11	165	06-12-2020	06-14-2020	101
21	392	07-04-2019	07-05-2019	321
11	888	07-04-2018	07-06-2018	202

Guest		
<u>guestNo</u>	guestName	guestAddress
165	A Turing	10 Halting Lane, Bletchley Pary, UK
392	L Byron	36 Poets Corner, London, UK
448	G Hopper	1 Nanosecond Place, Arlington, VA
717	A Lovelace	1 Programmer Circle, Nottingham, UK
888	G Pothering	66 George St. Charleston, SC

2. From the schema given produce a detailed schema of the type described on pages 7 and 8 of your notes. In particular, you will have to determine appropriate types for each attribute, and whether a data value is required for the attribute, or not.

- Your sample data's various types must be consistent with your sample data in problem 1.

**Table** HOTEL

**Attribute** HotelNo  
**Type** CHAR(2)  
**Required** Yes  
**Attribute** HotelName  
**Type** VARCHAR(15)  
**Required** Yes  
**Attribute** City  
**Type** VARCHAR (12)  
**Required** Yes  
  
**Primary Key** (HotelNo)

**Table** ROOM

**Attribute** RoomNo  
**Type** CHAR(3)  
**Required** Yes  
**Attribute** HotelNo  
**Type** CHAR(2)  
**Required** Yes  
**Attribute** Type  
**Type** VARCHAR(10)  
**Required** No  
**Attribute** Price  
**Type** Decimal(6,2)  
**Required** No  
**Primary Key** (RoomNo,HotelNo)  
**Foreign Key** HotelNo **References** HOTEL(HotelNo)

**Table** BOOKING

**Attribute** HotelNo  
**Type** CHAR(2)  
**Required** Yes  
**Attribute** GuestNo  
**Type** INTEGER  
**Required** Yes  
**Attribute** DateFrom  
**Type** Date  
**Required** Yes  
**Attribute** DateTo  
**Type** Date

**Required** No  
**Attribute** RoomNo  
**Type** CHAR(3)  
**Required** No  
  
**Primary Key** (HotelNo, GuestNo, DateFrom)  
**Foreign Key** HotelNo **References** HOTEL(HotelNo)  
**Foreign Key** GuestNo **References** GUEST(GuestNo)  
**Foreign Key** RoomNo **References** Room(RoomNo)

**Table** GUEST

**Attribute** GuestNo  
**Type** INTEGER  
**Required** Yes  
**Attribute** GuestName  
**Type** VARCHAR(20)  
**Required** Yes  
**Attribute** Address  
**Type** VARCHAR(30)  
**Required** No  
  
**Primary Key** (GuestNo)

- For the two relations with compound primary keys, redesign the relation so that it uses a single-attribute primary key. Each relation must still retain all of the attributes that were part of the compound key, only now they are no longer compound key attributes. Once again, use the detailed schema format from pages 7 and 8 of your notes.

**Table** ROOM

**Attribute** RoomID  
**Type** CHAR(5)  
**Required** Yes  
**Attribute** RoomNo  
**Type** CHAR(3)  
**Required** Yes  
**Attribute** HotelNo  
**Type** CHAR(2)  
**Required** Yes  
**Attribute** Type  
**Type** VARCHAR(10)  
**Required** No  
**Attribute** Price  
**Type** Decimal(6,2)  
**Required** No  
**Primary Key** (RoomID)  
**Foreign Key** HotelNo **References** HOTEL(HotelNo)

**Table** BOOKING

**Attribute** BookingID

**Type** INTEGER

**Required** Yes

**Attribute** HotelNo

**Type** CHAR(2)

**Required** Yes

**Attribute** GuestNo

**Type** INTEGER

**Required** Yes

**Attribute** DateFrom

**Type** Date

**Required** Yes

**Attribute** DateTo

**Type** Date

**Required** No

**Attribute** RoomNo

**Type** CHAR(3)

**Required** No

**Primary Key** (BookingID)

**Foreign Key** HotelNo **References** HOTEL(HotelNo)

**Foreign Key** GuestNo **References** GUEST(GuestNo)

**Foreign Key** RoomNo **References** Room(RoomNo)