**Seminar**

**Hotel Chain**

**Team BHV**

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**Distributed Database Schema**

1.1         Global Database Tables

We have six global tables. They are***Hotel Attributes, Rooms Attributes, Services Attributes, Booking Attributes*** *and* ***Customers Attributes***. Their conceptual schemas are described below.

Table 1. global tables

|  |
| --- |
| **Global Tables** |
| * ***Hotel Attributes***(hotel\_id (varchar 50), hotel\_name (varchar 100), hotel type (float), hotel\_description (varchar max), hotel\_budget(float), hotel\_location (varchar max)). * ***Rooms Attributes***(room\_id (varchar 50), hotel\_id (varchar 50), room\_number (varchar 50), room\_type (varchar 50), room\_description (varchar max)). * ***Booking\_Attributes***(booking\_id (varchar 50), room\_id (varchar 50), hotel\_id (varchar 50), customer\_id (varchar 100), checkin\_date (datetime), checkout\_date (datetime), booking\_type (varchar 50), booking\_description (varchar max)), total\_price (float). * ***Customers\_Attributes***(customer\_id (varchar 100), customer\_name (varchar 100), customer\_mobile (int), customer\_email (varchar 100). |

1.2         Table Description

* **Hotel Attributes: hotel\_id (varchar 50), hotel\_name (varchar 100), hotel type (float), hotel\_description (varchar max), hotel\_location (varchar max), hotel\_budget (float).**

Table 2. Description of Table “**Hotel Attributes**”

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Description** | **Type** | **Value** |
| **Hotel\_id(key)** | The ID of the hotel | Varchar(50) | 1-100 no duplicate |
| **Hotel\_name** | The name of hotel | Varchar(100) | A string name |
| **Hotel\_type** | The type of the hotel | Float | The number of stars. |
| **Hotel\_description** | The description of the hotel | Varchar(max) |  |
| **Hotel\_location** | The location of the hotel | Varchar(max) | VN (Vietnam)  SG (Singapore)  USA (United States) |
| **Hotel budget** | The budget of the hotel | Float |  |

Number of records: 100

* **Rooms Attributes: room\_id (varchar 50), hotel\_id (varchar 50), room\_type (varchar 50), room\_descryption (varchar max).**

Table 3. Description of Table “Customer”

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Description** | **Type** | **Value** |
| **Room\_id (key)** | The ID of room in the system. | Varchar(50) | 0001 => 1000, no duplicate |
| **Hotel\_id (key)** | The id of room in each hotel | Varchar(50) | 001 => 100, no duplicate |
| **Room\_type** | The type of the room | Varchar(50) | * Single. * Double. * Triple. * Quad. * Queen. * King. |
| **Room\_description** | The description of the room | Varchar(max) | * Single: a room assigned to one person. * Double: a room assigned to two people. * Triple: a room assigned to three people. * Quad: A room assigned to four people. * Queen: A room with a queen-sized bed. * King: A room with a king-sized bed. |

Number of records: 1000

* **Booking\_Attributes: booking\_id (varchar 50), room\_id (varchar 50), hotel\_id (varchar 50), customer\_id (varchar 100), checkin\_date (datetime), checkout\_date (datetime), booking\_type (varchar 50), booking\_description (varchar max)), total\_price (float).**

Table 4. Description of Table “Book”

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Description** | **Type** | **Value** |
| **Booking\_id (key)** | The ID of booking service | Varchar(50) | 000001 => 100000, no duplicate |
| **Room\_id (key)** | The ID of the room | Varchar(50) | 0001 => 1000, no duplicate |
| **Hotel\_id (key)** | The ID of the hotel | Varchar(50) | 001 => 100, no duplicate |
| **Customer\_id** | The ID of the customer | Varchar(50) | 0000001 => 1000000, no duplicate |
| **Checkin\_date** | The date of checking-in | Datetime |  |
| **Checkout\_date** | The date of checking-out | Datetime |  |
| **Booking\_type** | The type of booking | Varchar(50) | * Online * Offline |
| **Booking\_description** | The description of booking | Varchar(max) | Any description as customer asks |
| **Total\_price** | The amount of payment after checking-out | Float |  |

Number of records: 100000

* **Customers\_Attributes: customer\_id (varchar 50), customer\_name (varchar 100), customer\_mobile (varchar 20), customer\_email (varchar 100).**

|  |  |  |  |
| --- | --- | --- | --- |
| **Item** | **Description** | **Type** | **Value** |
| **Customer\_id** | The ID of customer | Varchar(50) | 0000001 => 1000000, no duplicate |
| **Customer\_name** | The name of the customer | Varchar(100) |  |
| **Customer\_mobile** | The phone number of the customer | Varchar(20) |  |
| **Customer\_email** | The email of customer | Varchar(100) |  |

Number of records: 1000000

1.3         Fragmentation

* **Hotel Attributes: hotel\_id (varchar 50), hotel\_name (varchar 100), hotel type (float), hotel\_description (varchar max), hotel\_budget (float), hotel\_location (varchar max).**

Table 6. Vertical Fragmentation of Table “**Hotel Attributes**”

|  |  |
| --- | --- |
| **Fragmentation Name** | **Fragmentation Condition** |
| **Hotel.1** | Hotel\_id, hotel\_name |
| **Hotel.2** | Hotel\_id, Hotel\_budget |
| **Hotel.3** | Hotel\_id, hotel\_type, hotel\_location, hotel\_description. |

* **Rooms Attributes: room\_id (varchar 50), hotel\_id (varchar 50), room\_number (varchar 50), room\_type (varchar 50), room\_description (varchar max)**

Table 7. Horizontal Fragmentation of Table “**Rooms**”

|  |  |
| --- | --- |
| **Fragmentation Name** | **Fragmentation Condition** |
| **Rooms.1** | Hotel\_id IN hotel.1.hotel\_id |
| **Rooms.2** | Hotel\_id IN hotel.2.hotel\_id |
| **Rooms.3** | Hotel\_id IN hotel.3.hotel\_id |

* **Booking\_Attributes: booking\_id (varchar 50), room\_id (varchar 50), hotel\_id (varchar 50), customer\_id (varchar 100), checkin\_date (datetime), checkout\_date (datetime), booking\_type (varchar 50), booking\_description (varchar max)), total\_price (float).**

Table 8. Horizontal Fragmentation of Table “Customer”

|  |  |
| --- | --- |
| **Fragmentation Name** | **Fragmentation Condition** |
| ***Booking*.1** | Hotel\_id in hotel.1.hotel\_id |
| ***Booking.*2** | Hotel\_id IN hotel.2.hotel\_id |
| ***Booking*.3** | Hotel\_id IN hotel.3.hotel\_id |

* **Customers\_Attributes: customer\_id (varchar 50), customer\_name (varchar 100), customer\_mobile (varchar 20), customer\_email (varchar 100).**

|  |  |
| --- | --- |
| **Fragmentation Name** | **Fragmentation Condition** |
| **Customer.1** | Customer\_id, customer\_name, customer\_mobile, customer\_email |

1.4         Allocation

Site Configuration: 3 sites deployed at 3 computers.

* **Scheme1: Basic Fragmentation**

Table 1. Allocation Scheme of Basic Fragmentation

|  |  |
| --- | --- |
| **At Site Name** | **Fragmentation Name** |
| **DB1 at Site 1** | Hotel.1, Room.1, Booking.1, Customer.1 |
| **DB2 at Site 2** | Hotel.2, Room.2, Booking.2 |
| **DB3 at Site 3** | Hotel.3, Room.3, Booking.3 |