

Normalization

Table With the data

Room

Room_Number	Room_Type	Room_availability	Room_rate	Maximum_occupancy	Bed_type
501	Single Room	Open	155	2	Double bed
502	Double Room	Closed	165	4	King Size
503	Attach room	Closed	250	6	King Size

Booking

Booking_id	Room_Number	Customer_Id	Number_of_Guest	Date_of_arrival	Date_of_Depature
101	502	201	2	2023-12-31	2024-01-02
102	503	205	4	2024-01-23	2024-02-03
103	505	202	5	2024-02-22	2024-02-24

Customer

Custo mer_id	Custome r_Name	Customer _Number	Email_address	Booking _history	Addre ss	membersh ip_status	Natio nality	Payme nt_id
201	Davidson jr	56995135 78	david@gmail.c om	1	Missis sauga	No	US	Card
202	Sam Patel	98765432 11	Sampatel2@g mail.com	0	New York	Yes	UK	Cash
205	Hari Krishna	56498725 89	Harikrishna02 @gmail.com	5	Toron to	Yes	Can adian	Card

Reservation

Reservation_id	Customer_Id	Reservation_time	Reservation_date	Payment_id
100	252	12:30	2023-12-01	20
101	265	02:00	2024-01-02	25
105	545	13:25	2024-02-25	35

Payment Method

Payment_id	Payment_type	Payment_status	Payment_date	Card_details
25	Card	Full	2024-01-02	RBC
40	Card	Partial	2023-11-25	CIBC
41	None	None	2023-12-24	TD

Room Inventory

RoomInventory_id	Room_Number	Inventory_id	Room_Quantity
1	201	101	20
2	205	103	50
3	203	102	25

Feedback

Feedback_id	Customer_id	Room_number	Comment	Rating
6622	101	252	This is good	5
6988	103	202	Not good service	3
7024	105	208	Very Good Service	5

Department

Department_id	Department_Name
01	Cleaning
02	Kitchen
03	Room Staff

Staff Member

Staff_id	Staff_Name	Staff_address	Staff_contact	Staff_hours	Department_id
20	Ram KC	Mississauga	6578903245	25	03
21	Harry Bonj	Texas	56789032	50	01
23	Roshan Bhandari	Nepal	5896321254	23	02

Inventory

Inventory_id	Inventory_Name	Inventory_rate	Inventory_Quantity	Inventory_description	Purchased_date	Supplier_id	Product_type	Supplier_Name	Supplier_address	Supplier_contact
101	Towel	10	100	For toilet use	2023-12-21	501	Cleaning	Ram Sharma	Mississauga	4379551559
102	Shampo	25	250	For human body	2023-11-20	503	Liquid	David Becham	Toronto	3576545925
103	Chair	35	600	For room	2022-01-12	524	Furniture	William Jr	Brampton	5658973654

First Normal Form / 1NF

- ✚ 1NF is also known as First Normal Form. It is used to reduce the multivalued and multi-column in the table.

Requirement / Criteria of the 1NF.

- ❖ It doesn't contain repeating group and there is no multi-column in the table.
- ✚ **Room, Booking, Customer, Reservation, Payment Method, Room Inventory, Feedback, Department and Staff member** are in 1NF. Because, it full fill the 1NF requirement
- ✚ Inventory was not in 1NF but it also fulfill the criteria to be 1NF

Table Complete the below criteria to be 1NF

- ❖ **Inventory_id** and **Supplier_id** are composite key for the table.
- ❖ Doesn't contain any multi-valued column or repeating group

Inventory

Inventory_id	Supplier_id	Inventory_y_Name	Inventory_rate	Inventory_Quantity	Inventory_description	Purchased_date	Product_type	Supplier_Name	Supplier_address	Supplier_contact
101	501	Towel	10	100	For toilet use	2023-12-21	Cleaning	Ram Sharma	Mississauga	4379551559
102	503	Shampo	25	250	For human body	2023-11-20	Liquid	David Becham	Toronto	3576545925
103	524	Chair	35	600	For room	2022-01-12	Furniture	William Jr	Brampton	5658973654

Second Normal Form / 2NF

The table is said to be in 2NF if it is in 1NF and there is composite key in the 1NF and partial dependency which can be reduce in the 2NF.

Requirement / Criteria to be 2NF

- ❖ The table must be in 1NF
- ❖ The 2nd Normal Form is performed when there is composite primary key and partial dependencies.
- ✚ **Room, Booking, Customer, Reservation, Payment Method, Room Inventory, Feedback, Department and Staff member** are in 1NF. Because, it full fill the 2NF requirement
- ✚ **Supplier_id** is foreign key in inventory

Table Complete the below Criteria to be 2NF

- ❖ Table is already in 1NF
- ❖ There is partial dependency between Inventory_id and Supplier_id which has been eliminated in 2NF

Inventory

Inventory_id	Inventory_name	Inventory_rate	Inventory_quantity	Inventory_Description	Purchase_date	Supplier_id
101	Towel	10	100	For toilet Use	2023-12-21	501
102	Shampo	25	250	For human body	2023-11-20	503
103	Chair	35	600	For room	2022-01-12	524

Supplier

Supplier_id	Supplier_name	Supplier_address	Supplier_contact	Product_type
501	Cleaning	Ram Sharma	Mississauga	4379551559
503	Liquid	David Becham	Toronto	3576545925
524	Furniture	William Jr	Brampton	5658973654

Third Normal Form / 3NF

The table should be in 2NF to be in 3NF. There should not be transitive dependency for the table to be in 3NF.

Requirement / Criteria to be 3NF

- ❖ The table must be in 2nd Normal Form to be converted into 3NF
- ❖ The table should not contain non-key dependencies.

✚ **Room, Booking, Customer, Reservation, Payment Method, Room Inventory, Feedback, Department and Staff member** are in 2NF. Because, it full fill the 3NF requirement

Table Complete the criteria to be 3NF

- ❖ The table is in 2NF.
- ❖ The table doesn't contain any non-key dependencies.

Inventory

Inventory_id	Inventory_name	Inventory_rate	Inventory_quantity	Inventory_Description	Purchase_date	Supplier_id
101	Towel	10	100	For toilet Use	2023-12-21	501
102	Shampo	25	250	For human body	2023-11-20	503
103	Chair	35	600	For room	2022-01-12	524

Supplier

Supplier_id	Supplier_name	Supplier_address	Supplier_contact	Product_type
501	Cleaning	Ram Sharma	Mississauga	4379551559
503	Liquid	David Becham	Toronto	3576545925
524	Furniture	William Jr	Brampton	5658973654