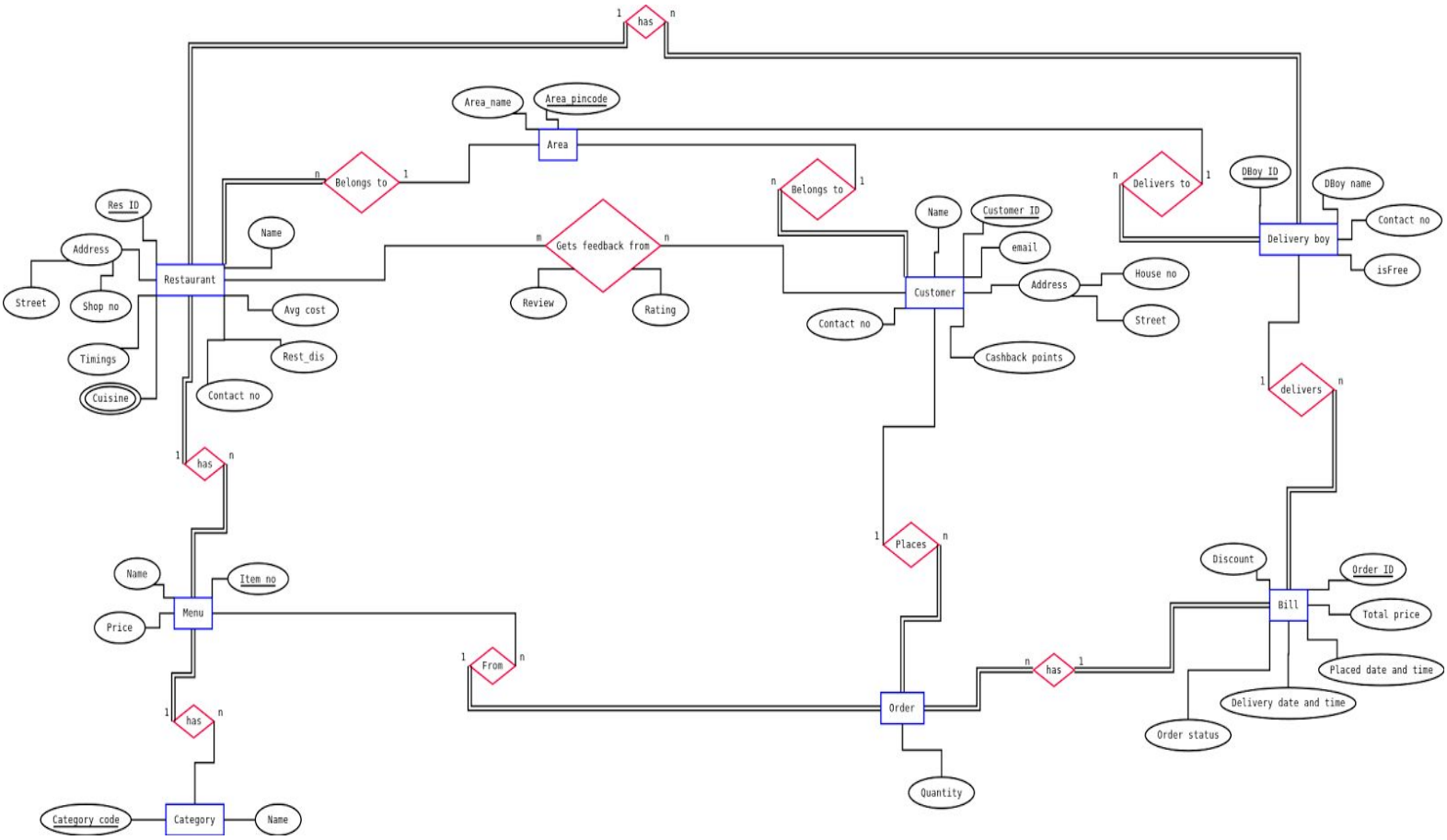
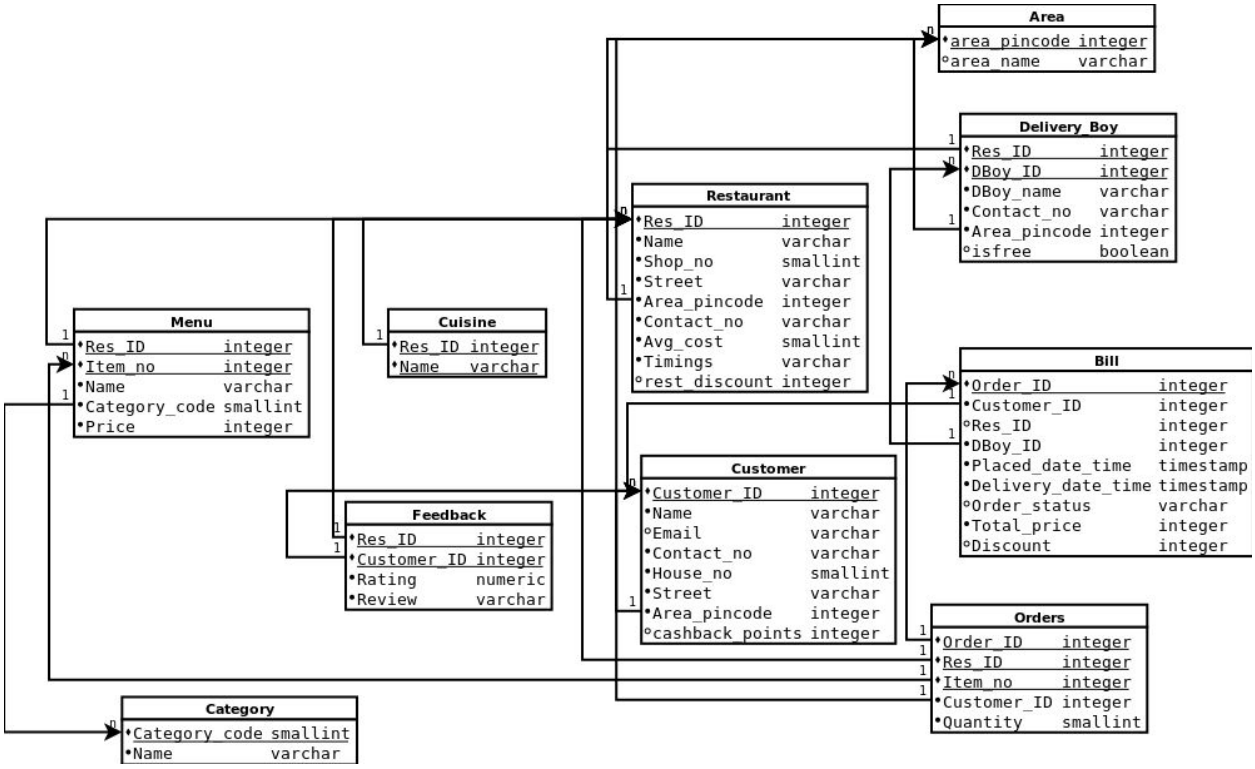
Online Food Ordering System

1. ERD



2. Relational Schema



3. Functional Dependencies

1. **Restaurant(Res_ID,Name,Shop_no,Street,Contact_no,Avg_cost,Timings,rest_discount,cuisine_name,area_pincode,area_named, dboy_id, dboy_name, dboy_contact_no, dboy_areapincode, isFree)**

Res_ID → Name
Res_ID → Shop_no
Res_ID → Street
Res_ID → area_pincode
Res_ID → Contact_no
Res_ID → Avg_cost
Res_ID → Timings
Res_ID → rest_discount
Res_ID - >> Cuisine_name (Multivalue)
area_pincode → name
{Res_ID, Dboy_ID} → Dboy_name
{Res_ID, Dboy_ID} → Dboy_Contact_no

{Res_ID, Dboy_ID} → dboy_area_pincode
{Res_ID, Dboy_ID} → isFree

IN BCNF after decomposition

R1(Res_ID,Name, Shop_no, Street, area_pincode, Contact_no, Avg_cost, Timings, rest_discount) IN BCNF
R2(area_pincode, area_name) IN BCNF
R3(dboy_id, res_id, dboy_name, dboy_contact_no, dboy_areapincode,isFree) IN BCNF
R4(Res_ID, cuisine_name) IN BCNF

2. Customer(customer_id, name, email, contact_no, house_no, street, area_pincode, cashback_points, area_name) : IN BCNF
Customer_ID → Name
Customer_ID → Email
Customer_ID → Contact_no
Customer_ID → House_no
Customer_ID → Street
Customer_ID → area_pincode
Customer_ID → cashback_points
area_pincode → name

IN BCNF after decomposition

R5(customer_id, name, email, contact_no, house_no, street, area_pincode, cashback_points, area_name) IN BCNF
R6(area_pincode, area_name) [already exists] **IN BCNF**

4. Feedback(Res_id, Customer_id, Rating , Review)
{Res_ID, Customer_ID} → Rating
{Res_ID, Customer_ID} → Review

Primary Key: {Res_ID, Customer_ID}
No FD violation.
Therefore, **IN BCNF**

5. Menu(<u>Res_id , Item_no</u>, item_name, category_code, category_name, Price)

{Res_ID, Item_no} → item_name
{Res_ID, Item_no} → Category_code
{Res_ID, Item_no} → Price
category_code → category_name

R7(<u>Res_id , Item_no</u>, item_name, category_code, Price) **IN BCNF**
R8(<u>category_code</u>, category_name) **IN BCNF**

6. Order(<u>Order_id, Res_id, item_no, customer_id</u>, quantity)

{Order_ID, Res_ID, Item_no, customer_id} → Quantity

Primary Key: {Order_ID, Res_ID, Item_no, customer_no}
No FD violation.
Therefore, **IN BCNF**

7. Bill(<u>Order_id</u>, customer_id , res_id, dboy_id, placed_date_time, delivery_date_time, order_status, total_price, discount)

Order_ID → Customer_ID
Order_ID → Res_ID
Order_ID → dboy_ID
Order_ID → placed_date_time
Order_ID → delivery_date_time
Order_ID → order_status
Order_ID → discount
Order_ID → Total_price

Primary Key: Order_ID
No FD violation.
Therefore, **IN BCNF**

Final tables after BCNF decomposition

Restaurant(Res_ID,Name, Shop_no, Street, area_pincode, Contact_no, Avg_cost, Timings, rest_discount)

Customer(customer_id, name, email, contact_no, house_no, street, area_pincode, cashback_points, area_name)

Feedback(Res_id, Customer_id, Rating , Review)

Delivery_boy(dboy_id, res_id, dboy_name, dboy_contact_no,dboy_areapincode,isFree)

Menu(Res_id , Item_no, item_name, category_code, Price)

Order(Order_id, Res_id, item_no, customer_id, quantity)

Bill(Order_id, customer_id , res_id, dboy_id, placed_date_time, delivery_date_time, order_status, total_price, discount)

Cuisine(Res_ID, cuisine_name)

Category(category_code, category_name)

Area(area_pincode, area_name)