CS6360.001 DATABASE DESIGN

PROJECT: DATABASE SYSTEM FOR UBER EATS

TEAM NUMBER: Uber Eats – T5

TEAM MEMBERS

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Step 3: Successive Normalization till 3NF

1st Normal Form (1NF):
There are no multi-valued attributes in the relational schema, all of them are handled when creating the schemas. We can state that every relation is in 1NF, as there are no existing multi-valued attributes in the relations.

2nd Normal Form (2NF):
We will have to check for the existence of partial dependency on a prime attribute of a relation. That is, a non-prime attribute should be fully functionally dependent on a prime attribute of a relation. Here are few functional dependencies violating the 2NF conditions.

ADDRESS table: ADDRESS(loginId, house_no, st_name, zip, city, state)

1. Zip attribute of Address table can determine the city and state attributes of this relation.

   zip -> city, state

   After 2NF normalization, we will have the following schema:

   ADDRESS(loginId, house_no, st_name, zip)
   ADDRESS_ZIP(zip, city, state)

DELIVERY_PARTNER table: DELIVERY_PARTNER(loginId, employeeId, rating, $_Share_Order, acc_no, routing_no, acc_holder_name, license_no, gender, DOB, expiry, license_issue_state)

1. acc_no attribute of Delivery partner relation can determine the routing_no, acc_holder_name of this relation.

   acc_no -> routing_no, acc_holder_name

2. license_no attribute of Delivery partner relation can determine gender, DOB, expiry, license_issue_state

   license_no -> gender, DOB, expiry, license_issue_state

   After 2NF normalization, we will have the following schema:
   DELIVERY_PARTNER(loginId, employeeId, rating, $_Share_Order, acc_no, license_no)
   ACC_DETAILS(acc_no, routing_no, acc_holder_name)
   LICENSE_DETAILS(license_no, gender, DOB, expiry, license_issue_state)

RESTAURANT table: RESTAURANT(restaurantId, restaurant_name, restaurant_manager, open_time, close_time, acc_no, routing_no, house_no, stree_name, city, state, zip, discount_percent)

1. Like Delivery partner table, acc_no can determine restaurant_name and routing_no.

   acc_no -> restaurant_name, routing_no

2. Like Address table, zip can determine city and state.

   zip ->state, city

   After 2NF normalization, we will have the following schema:

RESTAURANT(restaurantId, restaurant_manager, open_time, close_time, acc_no, house_no, stree_name, zip, discount_percent)

ADDRESS_ZIP(zip, city, state)

ACC_DETAILS(acc_no, routing_no, acc_holder_name)

ORDER table**:** ORDER(orderId, customer_id, cart_id, discount_code, order_date, total_amount, tax, discount, rating, payment_card_no, card_expiry)

1. payment_card_no can determine the card_expiry attribute of this relation.

   payment_card_no -> card_expiry

After 2NF normalization, we will have the following schema:

ORDER(orderId, customer_id, cart_id, discount_code, order_date, total_amount, tax, discount, rating, payment_card_no)

PAYMENT_DETAILS(payment_card_no, card_expiry)

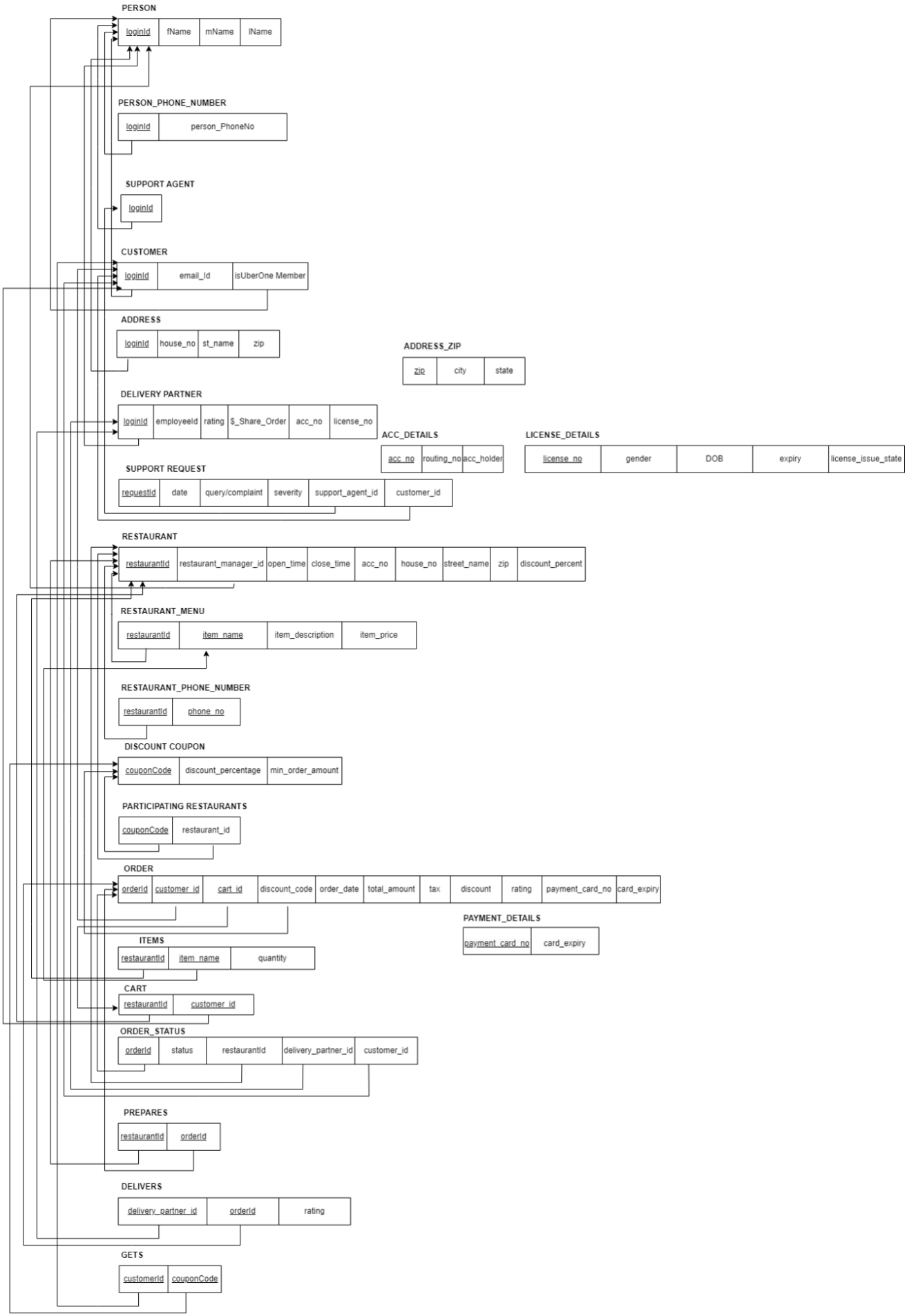
3rd Normal Form:

To verify if the relations are in 3NF, we made the following checks:

1. Check if all the functional dependencies are in 2NF.
2. Check if a non-prime attribute depends on a non-prime attribute.

All the checks are satisfied, and the relations are in 3NF.

Attaching Modified Relational Schema in the next page:


PERSON
loginId
fName
mName
lName
PERSON_PHONE_NUMBER
loginId
person_PhoneNo
SUPPORT AGENT
loginId
CUSTOMER
loginId
email_Id
isUberOne Member
ADDRESS
loginId
house_no
st_name
zip
ADDRESS_ZIP
zip
city
state
DELIVERY PARTNER
loginId
employeeId
rating
$_Share_Order
acc_no
license_no
ACC_DETAILS
acc_no
routing_no
acc_holder
LICENSE_DETAILS
license_no
gender
DOB
expiry
license_issue_state
SUPPORT REQUEST
requestId
date
query/complaint
severity
support_agent_id
customer_id
RESTAURANT
restaurantId
restaurant_manager_id
open_time
close_time
acc_no
house_no
street_name
zip
discount_percent
RESTAURANT_MENU
restaurantId
item_name
item_description
item_price
RESTAURANT_PHONE_NUMBER
restaurantId
phone_no
DISCOUNT COUPON
couponCode
discount_percentage
min_order_amount
PARTICIPATING RESTAURANTS
couponCode
restaurant_id
ORDER
orderId
customer_id
cart_id
discount_code
order_date
total_amount
tax
discount
rating
payment_card_no
card_expiry
PAYMENT_DETAILS
payment_card_no
card_expiry
ITEMS
restaurantId
item_name
quantity
CART
restaurantId
customer_id
ORDER_STATUS
orderId
status
restaurantId
delivery_partner_id
customer_id
PREPARES
restaurantId
orderId
DELIVERS
delivery_partner_id
orderId
rating
GETS
customerId
couponCode