ITCS241 Database Management System

Project01

7-11 CP ALL Co,. Ltd

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Business Domain

This report is about the "E-commerce" business domain. Electronic commerce or e-commerce is a business model that lets firms and individuals buy and sell things over the internet. E-commerce operates in all four major market segments including business to business, business to consumer, consumer to consumer, and consumer to business. So, the company that we will analyze in this report is the 7-Eleven Company.

The overview of 7-Eleven

7-Eleven Thailand trial manager application is about order to deliver products to the 7-Eleven store and deliver products. 7-Delivery is an application designed for 7-Eleven Thailand and customers located in Thailand. To make it easier to order products from 7-Eleven stores (only branches and service areas). By ordering goods via smartphone and choosing to receive products both to the current address or deliver to the home, office.

History of 7-Eleven

CP All Public Company was established in 1988 by the Charoen Pokphand Group to operate its main business, which is a convenience store retail business. Under the trademark "7-Eleven" in Thailand, the company received the right to use the said trademark from 7-Eleven, Inc., USA, and opened the first store in Soi Patpong in 1989. It also operates various businesses that support the core business such as a service business as a payment agent for goods and services, a business to produce and sell ready-to-eat food and bakeries, a business selling and repairing retail equipment, a business providing payment for goods and services through a smart card, the business providing information systems services, marketing services, retail vocational colleges, and management education institutions. Including the business of selling products through catalogs and e-commerce businesses, etc. In 2013, the Company acquired the business of Siam Makro Public Company, which is a distribution center business. Cash and Carry goods

Vision

7-Eleven aims to be the number one retailer store in Thailand. In the long term, 7-Eleven's vision tried to provide the best possible services to improve the quality of life in the communities that they serve.

Goal of business

- 7-Eleven is determined to reduce and stop the use of plastic bags and their environmental impact.
- They are trying to achieve 10,000 stores and plan to open 600 stores every year.
- 7-Eleven aims to be a leading convenience store that focuses on safety, cleanliness, and innovation of food and instant food.
- To provide convenient and high-quality goods and services to the customers.
- To continuously serve the change of consumer needs for their convenience.

Business process

7-Eleven has many branches, each branch is located in a diverse location, and has a partnership and stock to store product supplies (a product that displays in the 7-Delivery application depends on product supplies of a branch which is located nearest a user location). One branch has a financial statement to report information of each quarter in a year. And each branch employs many employees to work.

7-Eleven also provides an online delivery service that will allow the customer to order any products via an online application platform. In the 7-Eleven application, the customer must register for an account before using the 7-Eleven delivery service, and the customer can apply for the membership card (All Member) to collect points and redeem discounts on purchases. Once the customer has an account, the customer can finally order the products by following this step. First, the customer can choose to buy any products that are stored in the stock, which also gives the information of product, product label, and certificate mark for the customer to look for, and our order will keep the record in the order lists. Next, when the customer gets all the orders, the customer can click on the order and pay button to place an order and make a payment through the true money wallet that binds with a credit card, and we can also put in a promotion code in this step. Promotion is made for encourage people to buy product such as discount, buy 2 get 1 free, etc. Once this step is complete, the customer will get the receipt. Then, the sender will deliver the goods to the address (customer address) provided by the customer. Lastly, when the products have been delivered, the order status will be completed, and the system will allow the customer to write a review and comment.

7-Eleven also has a logistics department (SPEED-D) that customers can send the package to the recipient by deposit of the package at 7-11 stations. Customers and receivers can track the package status at the 7-Eleven app.

Business rules and constraints

No.	Business rules and Constraints	Relation
1	One customer can order many orders. One order can be ordered by only one customer.	1:M
2	One order can send by one sender. One sender can be sent many orders.	1:M
3	One order can order many products. One product can be ordered by many orders.	M:N
4	One order gets one receipt. One receipt is for one order.	1:1
5	One product has one information about the product. One information about the product has only one product.	1:1
6	One customer can have many locations customer. One location customer is for only one customer.	1:M
7	One customer receives one member card customer. One member card customer can be received by only one customer.	1:1
8	One true money wallet can bind many credit cards. One credit card can be binned by one true wallet.	1:M
9	Some employees can be manager, sender, or call center.	-
10	One branch can employ many employees. One employee can be employed by one branch.	1:M
11	One employee can have many locations' employee. Each location's employee is for one employee.	1:M
12	One customer can give many reviews. One review can be written by one customer.	1:M

No.	Business rule and Constraints	Relation
13	One branch can have only one location branch. Each location branch can have one branch.	1:1
14	One customer can use only one true money wallet. Each true money wallet can be used only one customer.	1:1
15	One product can appear many promotions. Each promotion can be appeared in many products.	M:N
16	One branch stock many products. One product can be stocked in many branches.	M:N
17	One branch can have only one financial report. Each financial report can be in one branch.	1:1
18	One order can have many order statuses. One order status can have one order.	1:M
19	One branch can have many partnerships. One partnership can cooperate with many branches.	M:N
20	All location must be location employee, location branch, location customer, or location receiver.	-
21	One product type is for many products. Each product is for one product type.	1:M
22	One product can be verified by many certificates. Each certificate is for products.	1:M
23	One customer can send many packages. One package can be sent by one customer.	1:M
24	One package can be sent to one receiver (have one receiver information). One receiver can receive many packages.	1:M

No.	Business rule and Constraints	Relation
25	One package can have many package statuses. Each package status can come from one packet.	1:M
26	One true money wallet has many statements of TMW. One statement of TMW has one true money wallet.	1:M
27	One package can be sent to one branch. One branches can receive many packages.	1:M
28	One customer can call to one call center (the person who answer phone). One call center can talk with many customers.	1:M
29	One call center can receive many reviews. One review can review only one call center.	1:M
30	One employee can receive one member card employee. One member card employee can be receiving by one employee.	1:1
31	One receiver information can have only one location receiver. One location receiver can have only one receiver.	1:1
32	One product can have many lots of products. One lot of products can have only one information of product.	1:M
33	Member card can be member card customer and member card employee.	-
34	One manager can manage only one branch. One branch can be managed by one manager.	1:1

Business Constraints

1. Users must be over 20 years old.
2. Customers can order 8 am. until 21 pm.
3. One customer can have only one user account.
4. Free delivery when purchased at least 100 baths.
5. Membership can transfer the point at most 10 times per day.
6. The company reserves the right to cancel the order if the user doesn't specify the correct delivery address.
7. In case of damaged or defective items, the company will return a refund within 15 days.
8. The customer must pick up the product within the date of purchase otherwise the company reserves the right to cancel the orders.

INFORMATION_OF_PRODUCT

INFORMATION_NO

HOW_TO_USE

WARNING

COMPONENT

PRODUCER

LOGO

BARCODE

LOT_OF_PRODUCT

LOT_NO

MANUFACTURED_DATE

EXPIRY_DATE

BEST_BEFORE_END

CERTIFICATE

CERTIFICATE_ID

DESCRIPTION

LICENSER

LICENSING_DATE

HALLMARK

PRODUCT

PRODUCT_ID

NAME_OF_PRODUCT

MEMBER_POINT

PRICE

PRODUCT_TYPE

TYPE_ID

TYPE_NAME

PROMOTION

PROMOTION_NO

DISCOUNT

DESCRIPTION

RECEIPT

RECEIPT_NO

BALANCE_PAID

TOTAL_DISCOUNT

TOTAL_MEMBER_POINT

MANAGER

BRANCH_ID (FK)

EMPLOYEE_ID (FK)

INAUGURATION_DATE

RESIGNATION_DATE

EMPLOYEE

EMPLOYEE_ID

TITLE

FIRSTNAME

LASTNAME

PHONE

EMAIL

DATE_OF_BIRTH

SALARY

SENDER

LICENCE_PLATE

EMPLOYEE_ID (FK)

CALL_CENTER

CALL_CENTER_PHONE

EMPLOYEE_ID (FK)

LANGUAGE

SHIFT

ORDER

ORDER_ID

PAYMENT

ORDER_NOTE

TOTAL_UNIT

DATE

ORDER_STATUS

TIMESTAMP

ORDER_ID

STATUS

RECEIVER

RECEIVER_ID

FIRSTNAME

LASTNAME

PACKAGE

PACKAGE_ID

WEIGHT

DIMENSION

SHIPPING_TYPE

PRICE

PACKAGE_STATUS

TIMESTAMP

STATUS

PARTNERSHIP

COMPANY_NAME

DESCRIPTION

BRANCH

BRANCH_ID

BRANCH_NAME

BRANCH_PHONE

REVIEW

REVIEW_NO

DESCRIPTION

SCORE

CUSTOMER

USER_ID

USERNAME

TITLE

FIRSTNAME

LASTNAME

PHONE

EMAIL

DATE_OF_BIRTH

PICTURE_PROFILE

MODIFIED_DATE

TRUE_MONEY_WALLET

WALLET_ID

BALANCE

TRUE_POINT

TRUE_CARD_NUMBER

CREDIT_CARD

CREDIT_CARD_NUMBER

NAME_ON_CARD

CARD_TYPE

CVS

VALID_DATE

FINANCIAL_REPORT

REPORT_ID

INCOME

OUTCOME

PROFIT

STATEMENT_OF_TMW

STATEMENT_NO

NOTE

TYPE_OF_STATEMENT

LOCATION

LOCATION_NO

HOUSE_NO

VILLAGE

ROAD

SUB_DISTRICT

DISTRICT

PROVINCE

POSTAL_CODE

COUNTRY

MEMBER_CARD

MEMBER_ID

MEMBER_POINT

mission completed!!!

Actor

MEMBER_CARD_CUSTOMER

MEMBER_ID (FK)

CUSTOMER_ID (FK)

MEMBER_CARD_EMPLOYEE

MEMBER_ID (FK)

EMPLOYEE_ID (FK)

LOCATION_EMPLOYEE

EMPLOYEE_ID (FK)

LOCATION_NO (FK)

LOCATION_BRANCH

BRANCH_ID (FK)

LOCATION_NO (FK)

LOCATION_CUSTOMER

CUSTOMER_ID (FK)

LOCATION_NO (FK)

LOCATION_RECIVER

RECEIVER_ID (FK)

LOCATION_NO (FK)

Relationship labels: have, have, be verified, appears, for, stock, orders, gets, has, sends, orders, send to, sends by, have, manage, has, receives, employs, sends, calls, gives, uses, binds, has, receives, has, has, receives, has

Relational Schema

We select 10 entities to change

Step 1: Relation R for regular entity

BRANCH	
PK	**BRANCH_ID**
	BRANCH_NAME
	BRANCH_PHONE

PRODUCT	
PK	**PRODUCT_ID**
	NAME_OF_PRODUCT
	MEMBER_POINT
	PRICE

CUSTOMER	
PK	**USER_ID**
	USERNAME
	TITLE
	FIRSTNAME
	LASTNAME
	PHONE
	EMAIL
	DATE_OF_BIRTH
	PICTURE_PROFILE
	MODIFIED_DATE

ORDER	
PK	**ORDER_ID**
	PAYMENT
	ORDER_NOTE
	TOTAL_UNIT
	DATE

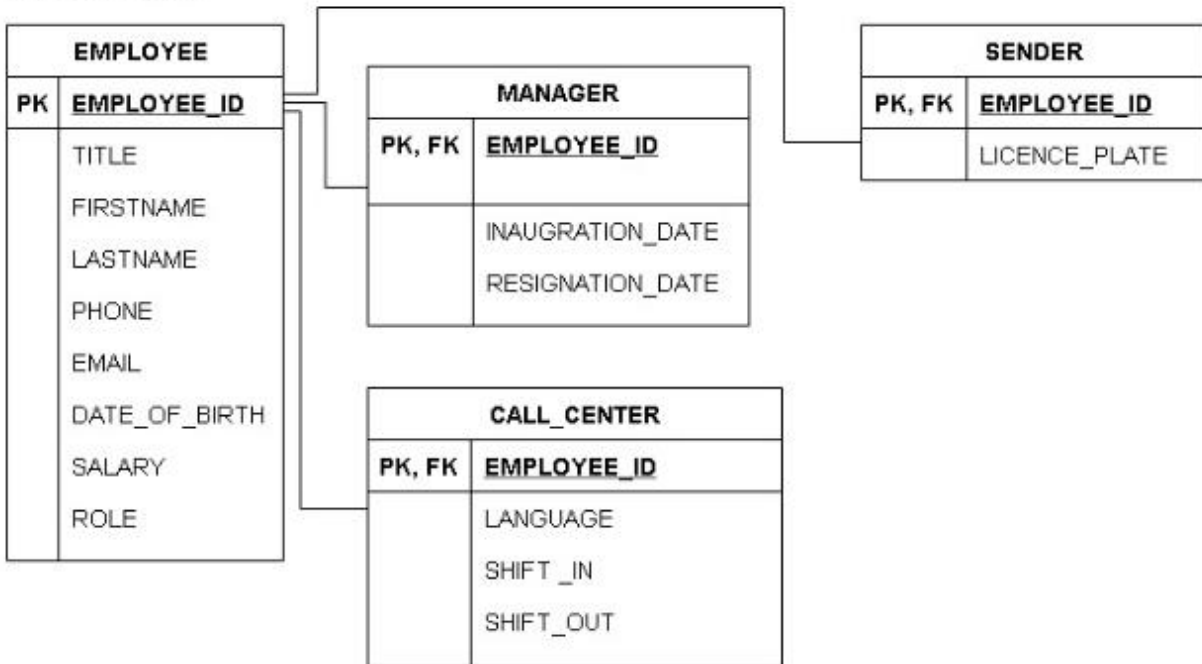| INFORMATION_OF_PRODUCT	
PK	**INFORMATION_NO**
	HOW_TO_USE
	WARNING
	COMPONENT
	PRODUCER
	LOGO
	BARCODE

Step 2: Relation R for each weak entity

We do not have this step because we do not have weak entity.
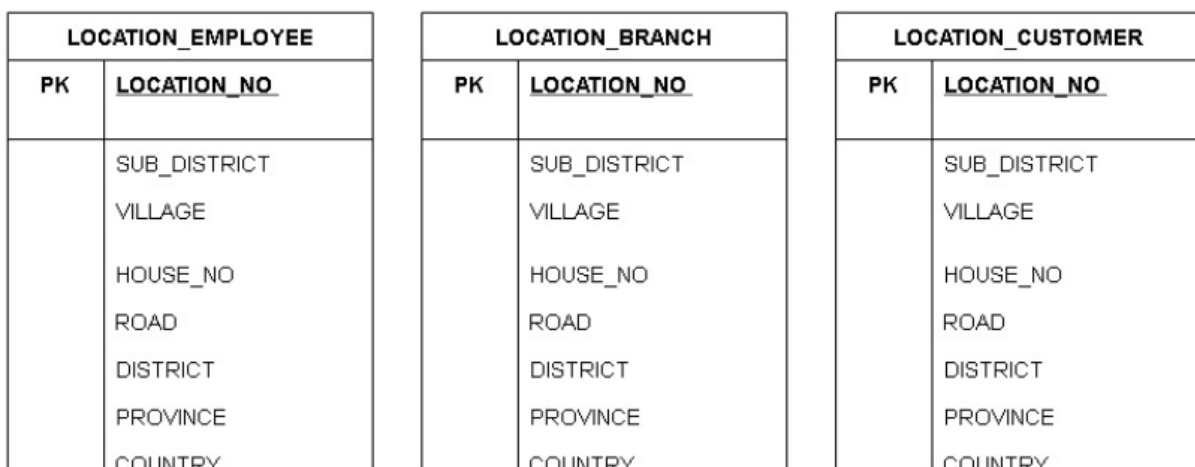
Step 3: Transforming Specialization
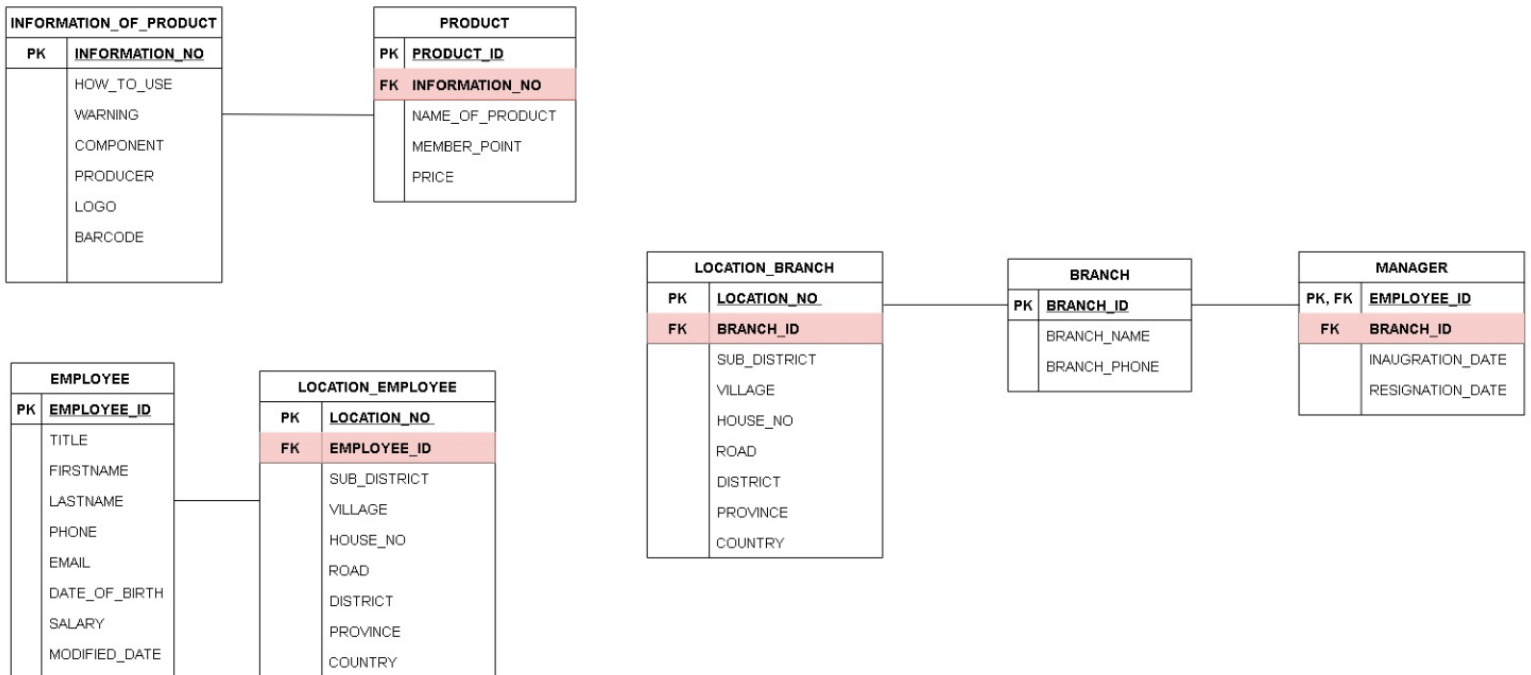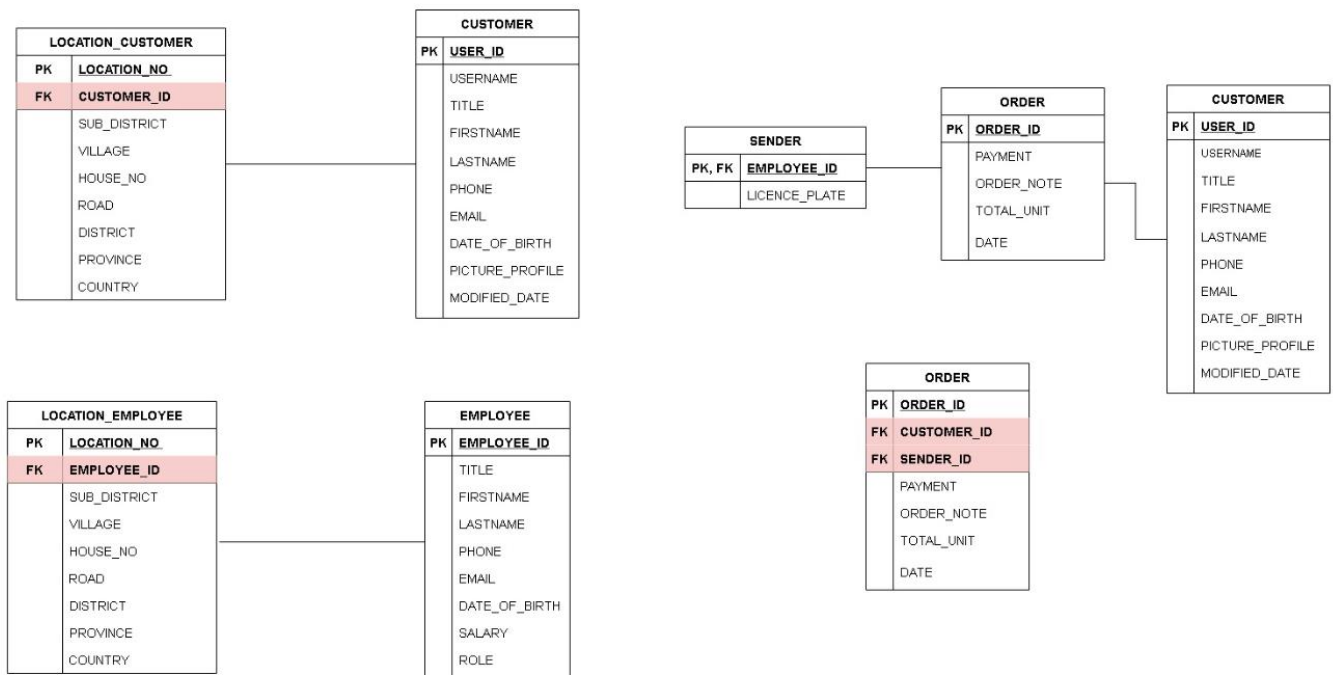
3A) Multiple Relations

EMPLOYEE (3A)

EMPLOYEE	
PK	EMPLOYEE_ID
	TITLE
	FIRSTNAME
	LASTNAME
	PHONE
	EMAIL
	DATE_OF_BIRTH
	SALARY
	ROLE

MANAGER	
PK, FK	EMPLOYEE_ID
	INAUGRATION_DATE
	RESIGNATION_DATE

SENDER	
PK, FK	EMPLOYEE_ID
	LICENCE_PLATE

CALL_CENTER	
PK, FK	EMPLOYEE_ID
	LANGUAGE
	SHIFT _IN
	SHIFT_OUT

3B) Multiple Relations

LOCATION(3B)

LOCATION_EMPLOYEE	
PK	LOCATION_NO
	SUB_DISTRICT
	VILLAGE
	HOUSE_NO
	ROAD
	DISTRICT
	PROVINCE
	COUNTRY

LOCATION_BRANCH	
PK	LOCATION_NO
	SUB_DISTRICT
	VILLAGE
	HOUSE_NO
	ROAD
	DISTRICT
	PROVINCE
	COUNTRY

LOCATION_CUSTOMER	
PK	LOCATION_NO
	SUB_DISTRICT
	VILLAGE
	HOUSE_NO
	ROAD
	DISTRICT
	PROVINCE
	COUNTRY

Step 4: Binary 1:1 Relationship Type R

INFORMATION_OF_PRODUCT

PK	INFORMATION_NO
	HOW_TO_USE
	WARNING
	COMPONENT
	PRODUCER
	LOGO
	BARCODE

PRODUCT

PK	PRODUCT_ID
FK	INFORMATION_NO
	NAME_OF_PRODUCT
	MEMBER_POINT
	PRICE

LOCATION_BRANCH

PK	LOCATION_NO
FK	BRANCH_ID
	SUB_DISTRICT
	VILLAGE
	HOUSE_NO
	ROAD
	DISTRICT
	PROVINCE
	COUNTRY

BRANCH

PK	BRANCH_ID
	BRANCH_NAME
	BRANCH_PHONE

MANAGER

PK, FK	EMPLOYEE_ID
FK	BRANCH_ID
	INAUGRATION_DATE
	RESIGNATION_DATE

EMPLOYEE

PK	EMPLOYEE_ID
	TITLE
	FIRSTNAME
	LASTNAME
	PHONE
	EMAIL
	DATE_OF_BIRTH
	SALARY
	MODIFIED_DATE

LOCATION_EMPLOYEE

PK	LOCATION_NO
FK	EMPLOYEE_ID
	SUB_DISTRICT
	VILLAGE
	HOUSE_NO
	ROAD
	DISTRICT
	PROVINCE
	COUNTRY

Step 5: Binary 1:N Relationship Type R

LOCATION_CUSTOMER

PK	LOCATION_NO
FK	CUSTOMER_ID
	SUB_DISTRICT
	VILLAGE
	HOUSE_NO
	ROAD
	DISTRICT
	PROVINCE
	COUNTRY

CUSTOMER

PK	USER_ID
	USERNAME
	TITLE
	FIRSTNAME
	LASTNAME
	PHONE
	EMAIL
	DATE_OF_BIRTH
	PICTURE_PROFILE
	MODIFIED_DATE

SENDER

PK, FK	EMPLOYEE_ID
	LICENCE_PLATE

ORDER

PK	ORDER_ID
	PAYMENT
	ORDER_NOTE
	TOTAL_UNIT
	DATE

CUSTOMER

PK	USER_ID
	USERNAME
	TITLE
	FIRSTNAME
	LASTNAME
	PHONE
	EMAIL
	DATE_OF_BIRTH
	PICTURE_PROFILE
	MODIFIED_DATE

LOCATION_EMPLOYEE

PK	LOCATION_NO
FK	EMPLOYEE_ID
	SUB_DISTRICT
	VILLAGE
	HOUSE_NO
	ROAD
	DISTRICT
	PROVINCE
	COUNTRY

EMPLOYEE

PK	EMPLOYEE_ID
	TITLE
	FIRSTNAME
	LASTNAME
	PHONE
	EMAIL
	DATE_OF_BIRTH
	SALARY
	ROLE

ORDER

PK	ORDER_ID
FK	CUSTOMER_ID
FK	SENDER_ID
	PAYMENT
	ORDER_NOTE
	TOTAL_UNIT
	DATE

Step 6: Binary M:N Relationship Type R

CALL_CENTER	
PK, FK	EMPLOYEE_ID
	LANGUAGE
	SHIFT_IN
	SHIFT_OUT

CALL_HISTORY	
PK, FK	EMPLOYEE_ID
PK, FK	CUSTOMER_ID
	PROBLEM_TOPIC
	DESCRIPTION

CUSTOMER	
PK	USER_ID
	USERNAME
	TITLE
	FIRSTNAME
	LASTNAME
	PHONE
	EMAIL
	DATE_OF_BIRTH
	PICTURE_PROFILE
	MODIFIED_DATE

BRANCH	
PK	BRANCH_ID
	BRANCH_NAME
	BRANCH_PHONE

PRODUCT	
PK	PRODUCT_ID
	NAME_OF_PRODUCT
	MEMBER_POINT
	PRICE

STOCK	
PK,FK	BRANCH_ID
PK,FK	PRODUCT_ID
	REMAINING_AMOUNT
	LOT_DATE

PRODUCT	
PK	PRODUCT_ID
FK	INFORMATION_NO
	NAME_OF_PRODUCT
	MEMBER_POINT
	PRICE

ORDER_LINE	
PK, FK	ORDER_ID
PK, FK	PRODUCT_ID
	AMOUNT
	TOTAL_PRICE

ORDER	
PK	ORDER_ID
FK	CUSTOMER_ID
FK	SENDER_ID
	PAYMENT
	ORDER_NOTE
	TOTAL_UNIT
	DATE

Step 7: Multi-Valued Attribute

We do not have this step because we do not have multi-valued attribute.

Step 8: N-ary Relationship

We do not have this step because we do not have N-ary relationship.

Final Relational Schema

Final Relational Schema
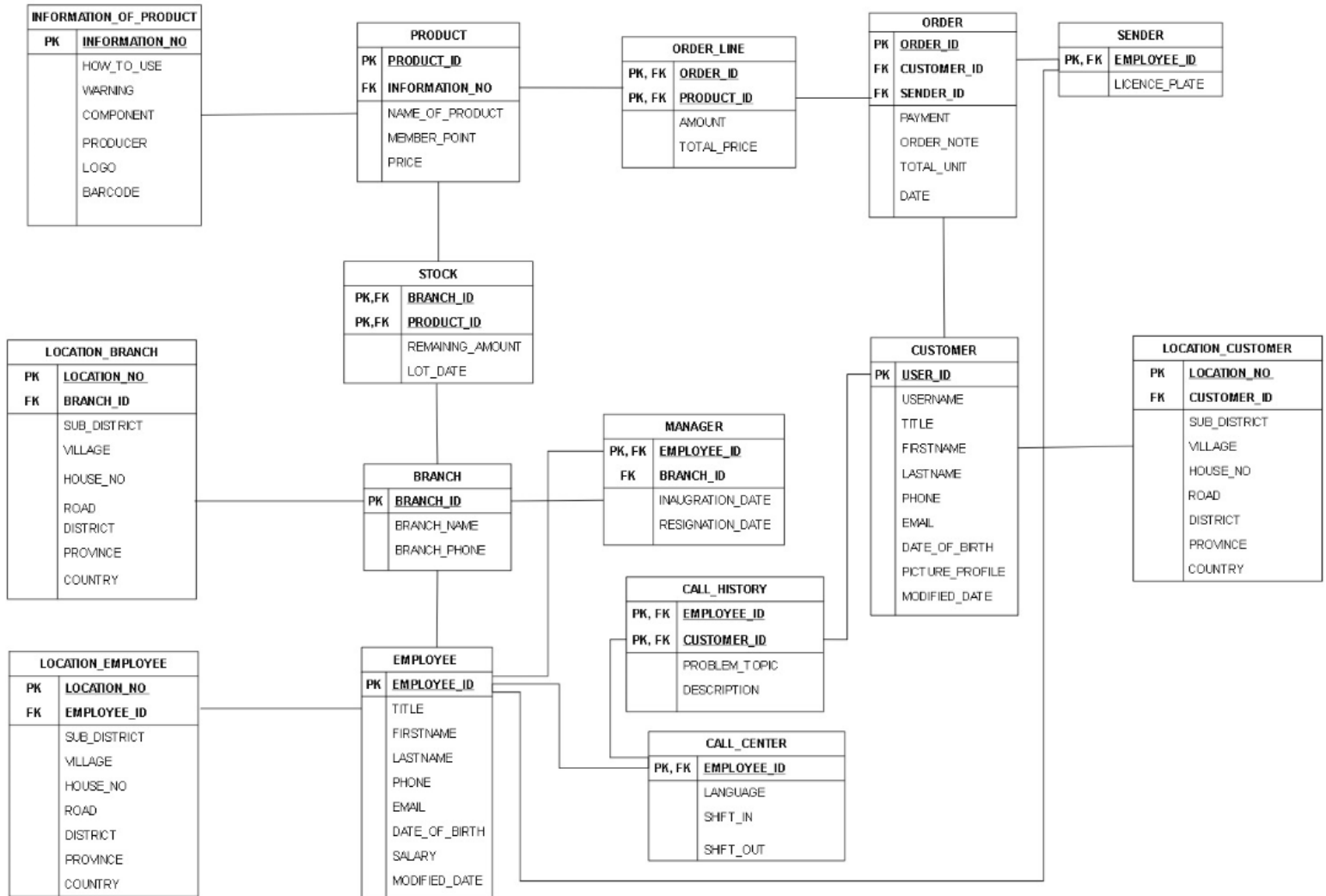
References of pictures

Information of Product
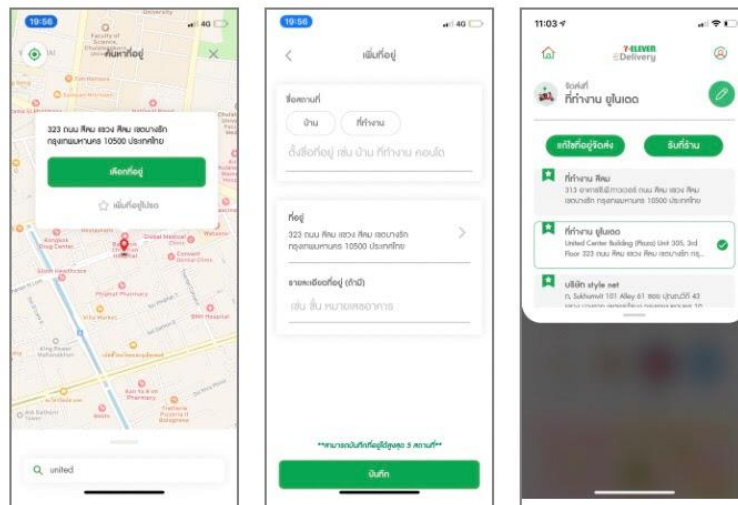
The customer location in 7-11 Application

How to register in 7-11 application
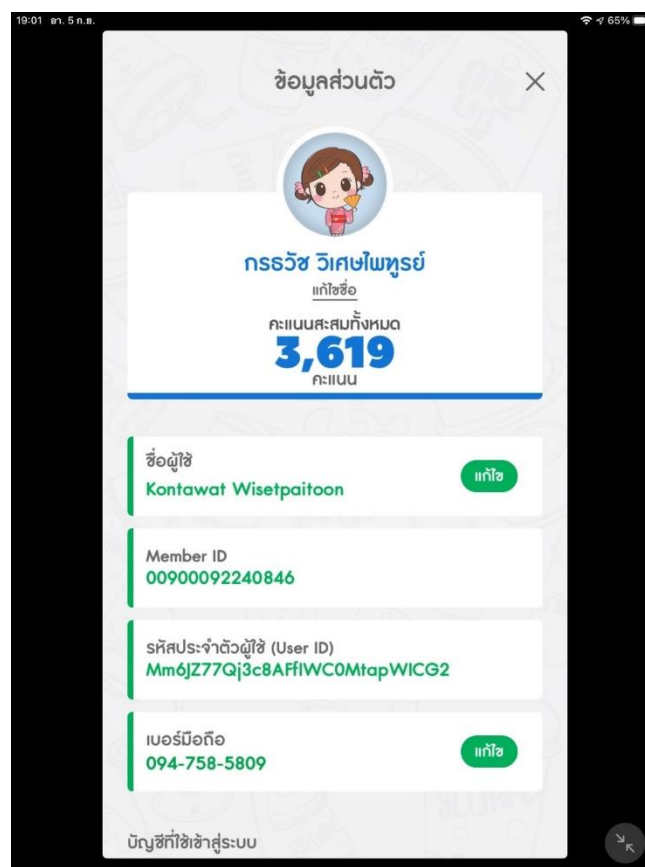
The customer information in 7-11 Applications.
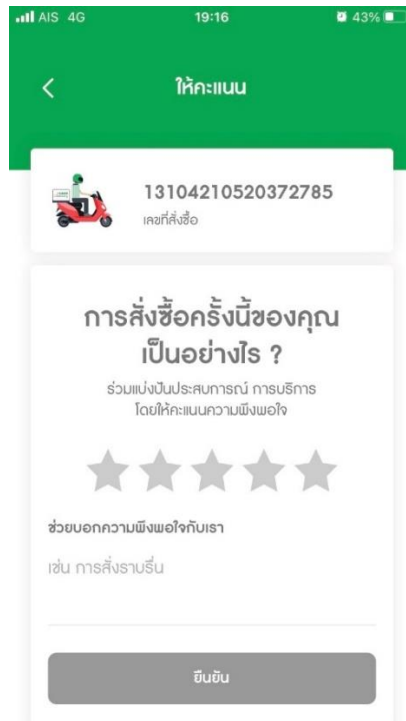
Review and Comment

Coupon and Promotion

Order status

Package Form

Certificate (halal)

1031152350460 🔍

สถานะ	คงอยู่
ประเภทผลิตภัณฑ์	อาหาร (สบ.5/สบ.7)
ใบสำคัญ/เลขที่อนุญาต	10-3-11523-5-0460
ชื่อผลิตภัณฑ์ (TH)	โปเตโต้ คริปส์ ซาว ครีม แอนด์ ออเนียน (มันฝรั่งทอดกรอบ รสซาวครีม และหัวหอม) (ตรา พริงเกิลส์)
ชื่อผลิตภัณฑ์ (EN)	POTATO CRISPS SOUR CREAM AND ONION (PRINGLES (R))
ชื่อผู้รับอนุญาต	บริษัท ซีโน-แปซิฟิคเทรดดิ้ง (ไทยแลนด์) จำกัด
สถานที่ผลิต	บริษัท ซีโน-แปซิฟิคเทรดดิ้ง (ไทยแลนด์) จำกัด
ที่อยู่สถานที่ผลิต	บ้านเลขที่ 122/2-3 ถนนนนทรี แขวงช่องนนทรี เขตยานนาวา จังหวัดกรุงเทพมหานคร รหัสไปรษณีย์ 10120 โทรศัพท์บ้าน 0 2681 5081
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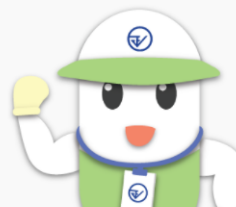
Certificate (the Thai Food and Drug Administration)

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