1. **Write done the justification for the PK’s, FK’s, UNIQUE constraints, and CHECK constraints.**

The PK should be the unique and can’t be null, which can distinguish each row. As that reason, I choose SSN, employment\_id, order\_id and merchandise to be PK. Normally, FK should be PK of other tables, so I just generate them automatically. I only set one unique constraint for customer telephone, because each customer’s cellphone should be different and could be null. I define Check constraint on temperature, height, weight, phone\_number, all of them should vary in a normal range, for example, the temperature of sensor normally can’t reach 100 centidegree, the check constraint can help to check import.

1. **INSERT DATA**

**Table CUSTOMER:**

INSERT INTO CUSTOMER VALUES('111111110','m','2301Estreet',1234567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111111','m','2302Estreet',4312567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111112','f','2303Estreet',1234432190,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111113','m','2304Estreet',1234567830,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111114','m','2305Estreet',1214367890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111115','m','2306Estreet',1234512250,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111116','f','2307Estreet',1230943890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111117','m','2308Estreet',1235266890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111118','f','2309Estreet',1232179890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111119','f','2310Estreet',6554567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111120','f','2311Estreet',8096567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111121','m','2312Estreet',1233567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111122','f','2313Estreet',3215567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111123','m','2301Estreet',6554567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

INSERT INTO CUSTOMER VALUES('111111124','f','2301Estreet',9943567890,timestamp '2013-04-18 01:30:00' at time zone 'us/pacific',null);

**MERCHANDISE TABLE**

INSERT INTO MERCHANDISE VALUES(' 100000000', null, null, 20, 30, timestamp '2013-04-18 01:30:00' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000001', null, null, 21, 31, timestamp '2013-04-18 01:30:01' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000002', null, null, 22, 32, timestamp '2013-04-18 01:30:02' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000003', null, null, 23, 33, timestamp '2013-04-18 01:30:03' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000004', null, null, 24, 34, timestamp '2013-04-18 01:30:04' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000005', null, null, 25, 35, timestamp '2013-04-18 01:30:05' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000006', null, null, 26, 36, timestamp '2013-04-18 01:30:06' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000007', null, null, 27, 37, timestamp '2013-04-18 01:30:07' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000008', null, null, 28, 38, timestamp '2013-04-18 01:30:08' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000009', null, null, 29, 39, timestamp '2013-04-18 01:30:09' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000010', null, null, 30, 40, timestamp '2013-04-18 01:30:10' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000011', null, null, 31, 41, timestamp '2013-04-18 01:30:11' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000012', null, null, 32, 42, timestamp '2013-04-18 01:30:12' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000013', null, null, 33, 43, timestamp '2013-04-18 01:30:13' at time zone 'us/pacific' )

INSERT INTO MERCHANDISE VALUES(' 100000014', null, null, 34, 44, timestamp '2013-04-18 01:30:14' at time zone 'us/pacific' )

**Table Order\_list**

INSERT INTO "order\_list" VALUES(null,'120000000', null, timestamp '2009-10-29 01:30:00' at time zone 'us/pacific',timestamp '2009-10-29 01:30:00' at time zone 'us/pacific','Jasson','2400 Virginia AVE','2134592305');

INSERT INTO "order\_list" VALUES(null,'120000001', null, timestamp '2009-10-29 01:30:01' at time zone 'us/pacific', timestamp '2009-10-29 01:30:01' at time zone 'us/pacific','Jasson','2401 Virginia AVE','2134592306');

INSERT INTO "order\_list" VALUES(null,'120000002', null, timestamp '2009-10-29 01:30:02' at time zone 'us/pacific', timestamp '2009-10-29 01:30:02' at time zone 'us/pacific','Jasson','2402 Virginia AVE','2134592307');

INSERT INTO "order\_list" VALUES(null,'120000003', null, timestamp '2009-10-29 01:30:03' at time zone 'us/pacific', timestamp '2009-10-29 01:30:03' at time zone 'us/pacific','Jasson','2403 Virginia AVE','2134592308');

INSERT INTO "order\_list" VALUES(null,'120000004', null, timestamp '2009-10-29 01:30:04' at time zone 'us/pacific', timestamp '2009-10-29 01:30:04' at time zone 'us/pacific','Jasson','2404 Virginia AVE','2134592309');

INSERT INTO "order\_list" VALUES(null,'120000005', null, timestamp '2009-10-29 01:30:05' at time zone 'us/pacific', timestamp '2009-10-29 01:30:05' at time zone 'us/pacific','Jasson','2405 Virginia AVE','2134592310');

INSERT INTO "order\_list" VALUES(null,'120000006', null, timestamp '2009-10-29 01:30:06' at time zone 'us/pacific', timestamp '2009-10-29 01:30:06' at time zone 'us/pacific','Jasson','2406 Virginia AVE','2134592311');

INSERT INTO "order\_list" VALUES(null,'120000007', null, timestamp '2009-10-29 01:30:07' at time zone 'us/pacific', timestamp '2009-10-29 01:30:07' at time zone 'us/pacific','Jasson','2407 Virginia AVE','2134592312');

INSERT INTO "order\_list" VALUES(null,'120000008', null, timestamp '2009-10-29 01:30:08' at time zone 'us/pacific', timestamp '2009-10-29 01:30:08' at time zone 'us/pacific','Jasson','2408 Virginia AVE','2134592313');

INSERT INTO "order\_list" VALUES(null,'120000009', null, timestamp '2009-10-29 01:30:09' at time zone 'us/pacific', timestamp '2009-10-29 01:30:09' at time zone 'us/pacific','Jasson','2409 Virginia AVE','2134592314');

INSERT INTO "order\_list" VALUES(null,'120000010', null, timestamp '2009-10-29 01:30:10' at time zone 'us/pacific', timestamp '2009-10-29 01:30:10' at time zone 'us/pacific','Jasson','2410 Virginia AVE','2134592315');

INSERT INTO "order\_list" VALUES(null,'120000011', null, timestamp '2009-10-29 01:30:11' at time zone 'us/pacific', timestamp '2009-10-29 01:30:11' at time zone 'us/pacific','Jasson','2411 Virginia AVE','2134592316');

INSERT INTO "order\_list" VALUES(null,'120000012', null, timestamp '2009-10-29 01:30:12' at time zone 'us/pacific', timestamp '2009-10-29 01:30:12' at time zone 'us/pacific','Jasson','2412 Virginia AVE','2134592317');

INSERT INTO "order\_list" VALUES(null,'120000013', null, timestamp '2009-10-29 01:30:13' at time zone 'us/pacific', timestamp '2009-10-29 01:30:13' at time zone 'us/pacific','Jasson','2413 Virginia AVE','2134592318');

**Table PRO\_EQUIP TABLE**

INSERT INTO PRO\_EQUIP VALUES('140000000', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000001', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000002', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000003', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000004', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000005', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000006', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000007', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000008', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000009', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000010', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000011', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000012', null, null, null, null);

INSERT INTO PRO\_EQUIP VALUES('140000013', null, null, null, null);

**Table STE\_EQUIP TABLE**

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000001', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000002', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000003', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000004', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000005', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000006', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000007', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000008', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000009', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000010', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000011', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000012', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000013', '192.168.1.1a', null, null);

INSERT INTO STE\_EQUIP VALUES('2400 STREET','200000014', '192.168.1.1a', null, null);

**TAG TABLE**

INSERT INTO TAG VALUES('TAG1000001',null,null,null,'100000000',null,null);

INSERT INTO TAG VALUES('TAG1000002',null,null,null,'100000001',null,null);

INSERT INTO TAG VALUES('TAG1000003',null,null,null,'100000002',null,null);

INSERT INTO TAG VALUES('TAG1000004',null,null,null,'100000003',null,null);

INSERT INTO TAG VALUES('TAG1000005',null,null,null,'100000004',null,null);

INSERT INTO TAG VALUES('TAG1000006',null,null,null,'100000005',null,null);

INSERT INTO TAG VALUES('TAG1000007',null,null,null,'100000006',null,null);

INSERT INTO TAG VALUES('TAG1000008',null,null,null,'100000007',null,null);

INSERT INTO TAG VALUES('TAG1000009',null,null,null,'100000008',null,null);

INSERT INTO TAG VALUES('TAG1000010',null,null,null,'100000009',null,null);

INSERT INTO TAG VALUES('TAG1000011',null,null,null,'100000010',null,null);

INSERT INTO TAG VALUES('TAG1000012',null,null,null,'100000011',null,null);

INSERT INTO TAG VALUES('TAG1000013',null,null,null,'100000012',null,null);

INSERT INTO TAG VALUES('TAG1000014',null,null,null,'100000013',null,null);

INSERT INTO TAG VALUES('TAG1000015',null,null,null,'100000014',null,null);

1. **SELECT EXAMPLE**

Select CUSTOMER\_SSN from order\_list

Select SEX,SSN, PHONE\_NUM from CUSTOMER

Select CUSTOMER\_SSN, NUM FROM "order\_list"

NATIONAL JOIN CUSTOMER

Using (CUSTOMER\_SSN);

Select MERCHAN\_NUM, receiver name FROM "order\_list"

NATIONAL JOIN MERCHANDISE

Using (MERCHAN\_NUM);

Select SSN, address FROM CUSTOMER

NATIONAL JOIN “order\_list”

Using (SSN);

Select address from CUSTOMER

Where SSN >

(SELETE customer\_SSN

From “order\_list”

Where NUM = 120000006

);

Select phone\_num from CUSTOMER

Where SSN >

(SELETE customer\_SSN

From “order\_list”

Where NUM = 120000010

);

Select weight, height from MERCHANDISE

Where SSN >

(SELETE customer\_SSN

From “order\_list”

Where NUM = 120000011

);

SELECT CUSTOMER\_SSN

FROM Order\_list

GROUP BY receiver\_name

SELECT destination address

FROM Order\_list

GROUP BY receiver\_name