## COSC344 Assignment 2

Team: 8

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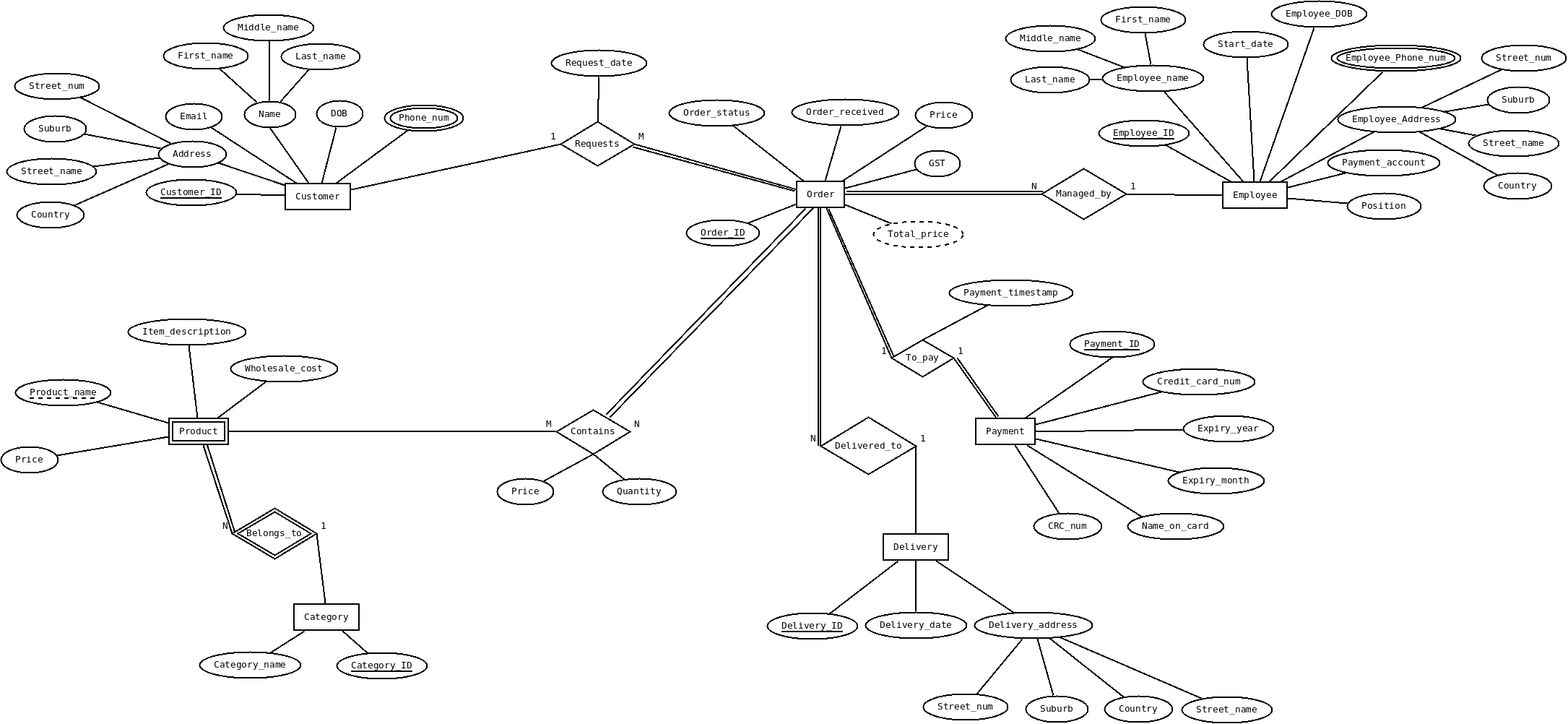
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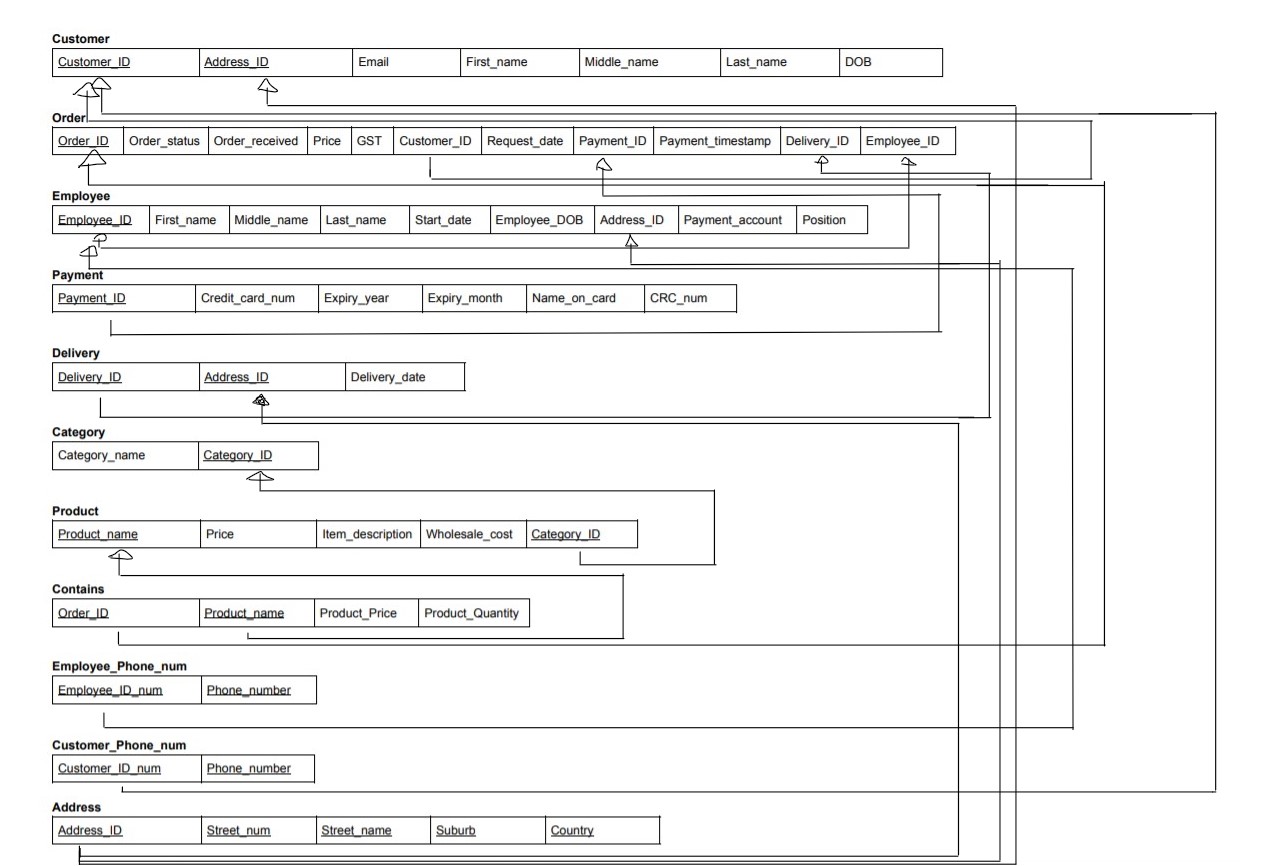
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**Revised ER diagram**

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Based on the feedback we received we changed quite a few aspects of our diagram. We removed the order\_lines weak entity because it did not accurately represent the relationship of products in an order. Based on the feedback we made the products entity the weak entity, we changed the products identification from product\_ID to product\_name, and created the relationship orders ‘contains’ products. We also changed the relationship type to M:N because a product can be part of many orders and an order can have many products. Another change we made was to change our delivery address to a composite attribute because we already had the customer address and employee address as a composite values, and wanted to have a uniform format for the addresses. The relationship between product and category was changed to a weak relationship.

**Relational Schema**

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**Normalization**

1NF: Our relation schema is at 1NF because all the attributes of each relation are atomic, the multivalued attributes (employ\_phone\_num and customer\_phone\_num) were removed and put into their own relation. The composite attributes were also removed and put into their own relation (Address), the composite attributes were, customer address, delivery address and employee address.

2NF: Our relations meet the requirements for 2NF because all the attributes in each relation only depend on a single primary key. Our relation was already at 2NF without any editing.

3MF: We meet the requirements for 3NF as there are no transitive dependencies thus there are no non-prime attributes that depend on non primary key attributes

BCNF: We meet the requirements for BCNF as there are no dependencies where a super key (primary key) relies on a non-prime attribute in any of the tables.

**load.sql**

DROP TABLE employee\_phone\_num;

DROP TABLE customer\_phone\_num;

DROP TABLE contains;

DROP TABLE orders;

DROP TABLE products;

DROP TABLE categorys;

DROP TABLE payment;

DROP TABLE delivery;

DROP TABLE employees;

DROP TABLE customer;

DROP TABLE address;

CREATE TABLE address

(address\_ID INT PRIMARY KEY,

street\_num VARCHAR(30) NOT NULL,

street\_name VARCHAR(30) NOT NULL,

suburb VARCHAR(30) NOT NULL,

country VARCHAR(30) NOT NULL);

INSERT INTO address(address\_ID, street\_num, street\_name, suburb, country)

VALUES(34, '660', 'castle', 'north dunedin', 'new zealand');

INSERT INTO address(address\_ID, street\_num, street\_name, suburb, country)

VALUES(29, '616', 'castle', 'north dunedin', 'new zealand');

INSERT INTO address(address\_ID, street\_num, street\_name, suburb, country)

VALUES(68, '59', 'union', 'north dunedin', 'new zealand');

COMMIT;

CREATE TABLE customer

(customer\_ID INT PRIMARY KEY,

address\_ID INT REFERENCES address(address\_ID),

fname VARCHAR(25) NOT NULL,

mname VARCHAR(25),

lname VARCHAR(25) NOT NULL,

dob DATE NOT NULL,

email VARCHAR(25) NOT NULL

);

INSERT INTO customer(customer\_ID, address\_ID, fname, mname, lname, dob, email)

VALUES(582, 34, 'john', 'william', 'smith', to\_date('04/01/2001', 'DD/MM/YYYY'), 'john@email.com');

INSERT INTO customer(customer\_ID, address\_ID, fname, mname, lname, dob, email)

VALUES(684, 29, 'henry', 'alan', 'robb', to\_date('08/12/1995', 'DD/MM/YYYY'), 'henry@email.com');

INSERT INTO customer(customer\_ID, address\_ID, fname, mname, lname, dob, email)

VALUES(194, 68, 'sarah', 'georgia', 'cole', to\_date('31/03/1987', 'DD/MM/YYYY'), 'georgia@email.com');

COMMIT;

CREATE TABLE delivery

(delivery\_ID INT PRIMARY KEY,

delivery\_date DATE NOT NULL,

address\_ID INT REFERENCES address(address\_ID));

INSERT INTO delivery(delivery\_ID, delivery\_date, address\_ID)

VALUES(98, to\_date('31/10/2020', 'DD/MM/YYYY'), 34);

INSERT INTO delivery(delivery\_ID, delivery\_date, address\_ID)

VALUES(87, to\_date('27/11/2020', 'DD/MM/YYYY'), 29);

INSERT INTO delivery(delivery\_ID, delivery\_date, address\_ID)

VALUES(13, to\_date('4/10/2020', 'DD/MM/YYYY'), 68);

COMMIT;

CREATE TABLE categorys

(category\_ID INT PRIMARY KEY,

category\_name VARCHAR(15) NOT NULL);

INSERT INTO categorys(category\_ID, category\_name)

VALUES(5, 'hoodies');

INSERT INTO categorys(category\_ID, category\_name)

VALUES(8, 'pants');

INSERT INTO categorys(category\_ID, category\_name)

VALUES(2, 'shorts');

COMMIT;

CREATE TABLE products

(product\_name VARCHAR(25) PRIMARY KEY,

category\_ID INT REFERENCES categorys(category\_ID),

item\_description VARCHAR(20),

price NUMERIC(15,2) NOT NULL,

wholesale\_cost NUMERIC(15,2) NOT NULL);

INSERT INTO products(product\_name, category\_ID, item\_description, price, wholesale\_cost)

VALUES('cool hoodie', 5, 'black hoodie', 24.9, 12.5);

INSERT INTO products(product\_name, category\_ID, item\_description, price, wholesale\_cost)

VALUES('branded pants', 8, 'warm pants', 19.9, 9.7);

INSERT INTO products(product\_name, category\_ID, item\_description, price, wholesale\_cost)

VALUES('soccer shorts', 2, 'sports shorts', 22.9, 11.3);

COMMIT;

CREATE TABLE payment

(payment\_ID INT PRIMARY KEY,

credit\_card\_num INT NOT NULL,

name\_on\_card VARCHAR(25) NOT NULL,

expiry\_month INT NOT NULL,

expiry\_year INT NOT NULL,

crc\_num INT NOT NULL);

INSERT INTO payment(payment\_ID, credit\_card\_num, name\_on\_card, expiry\_month, expiry\_year, crc\_num)

VALUES(32485, 1111222233334444, 'J W Smith', 11, 24, 000);

INSERT INTO payment(payment\_ID, credit\_card\_num, name\_on\_card, expiry\_month, expiry\_year, crc\_num)

VALUES(23987, 1111222233334444, 'H A Robb', 02, 23, 000);

INSERT INTO payment(payment\_ID, credit\_card\_num, name\_on\_card, expiry\_month, expiry\_year, crc\_num)

VALUES(89133, 1111222233334444, 'S A Cole', 07, 23, 000);

COMMIT;

CREATE TABLE employees

(employee\_ID INT PRIMARY KEY,

employee\_fname VARCHAR(30) NOT NULL,

employee\_mname VARCHAR(30),

employee\_lname VARCHAR(30) NOT NULL,

employee\_DOB DATE NOT NULL,

start\_date DATE NOT NULL,

payment\_account VARCHAR(20) NOT NULL,

address\_ID INT REFERENCES address(address\_ID),

employee\_position VARCHAR(15) NOT NULL);

INSERT INTO employees(employee\_ID, employee\_fname, employee\_mname, employee\_lname, employee\_DOB, start\_date, payment\_account, address\_ID, employee\_position)

VALUES(98405, 'brodie', 'scott', 'bosceke', to\_date('27/11/1983', 'DD/MM/YYYY'), to\_date('21/10/2018', 'DD/MM/YYYY'), '0348570948356-00', 34, 'manager');

COMMIT;

CREATE TABLE orders

(order\_ID INT Primary KEY,

order\_Status VARCHAR(20) NOT NULL,

order\_Received DATE NOT NULL,

price NUMERIC(15,2) NOT NULL,

GST NUMERIC(15,2) NOT NULL,

customer\_ID INT REFERENCES customer(customer\_ID),

request\_date DATE NOT NULL,

payment\_ID INT REFERENCES payment(payment\_ID),

payment\_timestamp TIMESTAMP DEFAULT CURRENT\_TIMESTAMP,

delivery\_ID INT REFERENCES delivery(delivery\_ID),

employee\_ID INT REFERENCES employees(employee\_ID)

);

INSERT INTO orders(order\_ID, order\_status, order\_Received, price, GST, customer\_ID, request\_date, payment\_ID, payment\_timestamp, delivery\_ID, employee\_ID)

VALUES(02835, 'packing', to\_date('27/07/2020', 'DD/MM/YYYY'), 49.9, 11.4, 582, to\_date('26/07/2020', 'DD/MM/YYYY'), 32485, CURRENT\_TIMESTAMP, 98, 98405);

COMMIT;

CREATE TABLE contains

(order\_ID INT REFERENCES orders,

product\_name VARCHAR(25) REFERENCES products(product\_name),

product\_price INT NOT NULL,

product\_quantity INT NOT NULL);

INSERT INTO contains(order\_ID, product\_name, product\_price, product\_quantity)

VALUES(02835, 'soccer shorts', 22.9, 2);

COMMIT;

CREATE TABLE employee\_phone\_num

(employee\_ID INT REFERENCES employees(employee\_ID),

phone\_number INT NOT NULL);

INSERT INTO employee\_phone\_num(employee\_ID, phone\_number)

VALUES(98405, 02405423940);

INSERT INTO employee\_phone\_num(employee\_ID, phone\_number)

VALUES(98405, 06105433650);

INSERT INTO employee\_phone\_num(employee\_ID, phone\_number)

VALUES(98405, 02430542365);

COMMIT

CREATE TABLE customer\_phone\_num

(customer\_ID INT REFERENCES customer(customer\_ID),

phone\_number INT NOT NULL);

INSERT INTO customer\_phone\_num(customer\_ID, phone\_number)

VALUES(582, 02105323950);

INSERT INTO customer\_phone\_num(customer\_ID, phone\_number)

VALUES(684, 03105423650);

INSERT INTO customer\_phone\_num(customer\_ID, phone\_number)

VALUES(194, 0230542355);

COMMIT;

**Teamwork Summary**

All members of the group contributed to each section in this assignment. We each mapped an entity type and relation type separately before combining our work together into a single relation schema. The normalization was discussed by all group members so we all understood the process before each member checked to see if their relation tables were normalised or not. We then had another meeting to discuss what we achieved and put our results into a shared document. The load.sql file was created throughout the assignment with each member contributing individually. Prior to submission, each member proof-read to make sure they were happy before submitting the final copy of the assignment.