

Database Design

(CBD 2303)

Final Project Report



Lambton
College

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- Overview of Company and Products:

Cherry on Top

Here at Cherry on To Bakery inc, Baking is our obsession, represent considerable authority in Canadian and Indian Bakery items. We utilize just the best and freshest ingredients to make baked goods that will fill your paunch and make you feel great inside. Come and visit. Your taste buds will much obliged!

The Products:

Baguettes

Loaves

Buns and Rolls

Bagels

Crisps

Toasts

Croutons

Granolas

Froze

- Customer Invoice:

```
select * from Invoices where Invoice_ID=222
```

100 % <

Results Messages

	Invoice_ID	Order_ID	Product_Name	Customer_ID	Date_Invoice	Grand_Total
1	222	1	Baguettes	101	2019-11-16	60.30

Invoice ID: 222

Order ID: 1

Product Name: Baguettes

Customer ID: 101

Date: 16-11-2019

Grand Total: \$60.30

- Entity and Attribute Identification:

<u>COMPANY</u>			
<u>Attribute</u>	<u>Data Type</u>	<u>Constraint</u>	<u>Details</u>
Comp_ID	Int	PK	Code of company
Comp_Name	Varchar(25)	Not Null	Name of company
Comp_Address	Varchar(30)	Not Null	Address of company
Contact_Details	Varchar(10)	Check Constraint	Details of company
Website	Varchar(20)	Check Constraint	Website of company
Email_Address	Varchar(30)	Check Constraint	Email of company

<u>PRODUCT</u>			
<u>Attribute</u>	<u>Data Type</u>	<u>Constraint</u>	<u>Details</u>
Product_ID	Int	Primary key	Product ID
Product_Name	Varchar(25)	Not Null	Name of Product
Description	Varchar(40)	Not Null	Description of Product
Price	Decimal(5,2)	Not Null	Price of Product

<u>CUSTOMER</u>			
<u>Attribute</u>	<u>Data Type</u>	<u>Constraint</u>	<u>Details</u>
Customer_ID	Int	Primary key	Customer ID
Cust_FName	Varchar(20)	Not Null	First Name of Customer
Cust_LName	Varchar(20)		Last Name of Customer
Email_ID	Varchar(20)	Check and Unique Constraint	Email of Customer
Cust_Contact	Varchar(10)	Check and Unique Constraint	Contact details of Customer
Payment_Method	Varchar(6)	Check Constraint	Payment type Cash/Credit/Debit

<u>ORDER</u>			
<u>Attribute</u>	<u>Data Type</u>	<u>Constraint</u>	<u>Details</u>
Order_ID	Int	PK	Code of Order
Product_ID	Int	FK, Not Null	Code of Product
Quantity	Int	Not Null	Quantity of Order

<u>INVOICE</u>			
<u>Attribute</u>	<u>Data Type</u>	<u>Constraint</u>	<u>Details</u>
Invoice_ID	Int	PK	Code of Invoice
Order_ID	Int	FK, Not Null	Code of Order
Cust_ID	Int	FK, Not Null	Code of Customer
Date	Date	Not Null	Date of Invoice
Product_ID	Int	Not Null	Code of Product
Grand_Total	Int	Not Null	Total Amount

◦ Conceptual Model:

Entities:

1. Company
2. Product
3. Customer
4. Order
5. Invoice

COMPANY

- Comp_ID
- Comp_Name
- Comp_Address
- Contact_Details
- Website
- Email_Address

Product

- Product_ID
- Product_Name
- Description
- Price

Customer

- Cust_ID
- Cust_FName
- Cust_LName
- Email_ID
- Cust_Contact
- Payment_Method

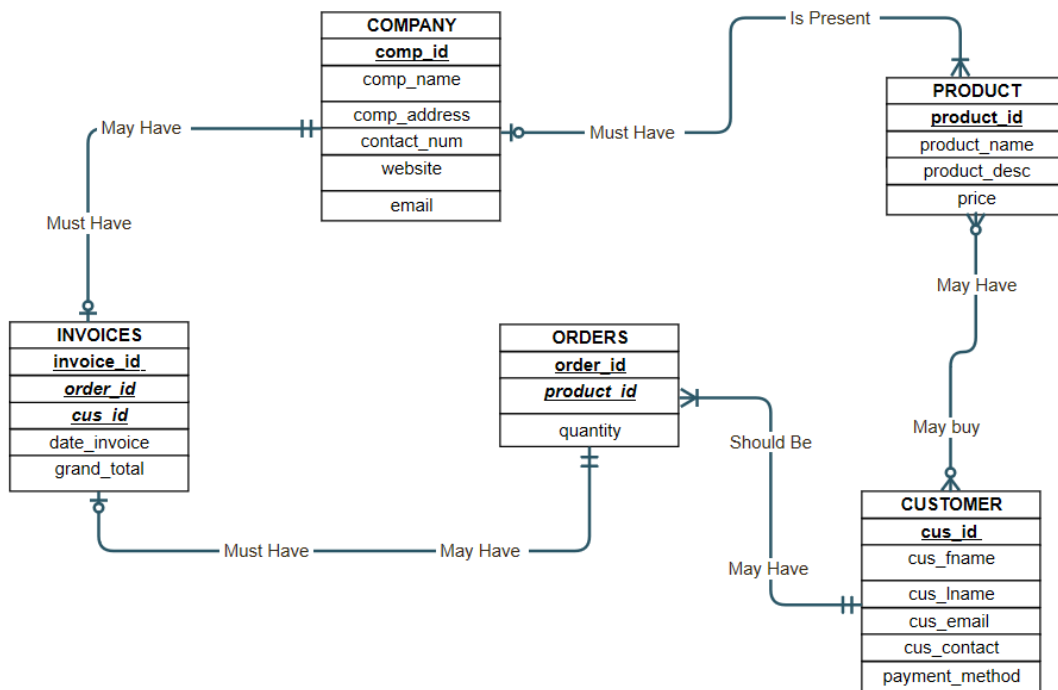
Order

- Order_ID
- Product_ID
- Quantity

Invoice

- Invoice_ID
- Order_ID
- Cust_ID
- Invoice_Date
- Grand_Total

○ ER DIAGRAM:



◦ Normalization:

Comp_ID	Comp_Name	Comp_Address	Contact_Details	Website	Email_Address
101	Cherry On Top	252,Lanark Circle	4163598745	www.cherryontop.com	cherryontop@gmail.com

Product_id	Product_Name	product_desc	price
1001	Baguettes	a long loaf of French bread	20.95
1002	Loaves	a long rounded bread	12.75
1003	Buns and Rolls	small, sweet, bread-based item	14.55
1004	Bagels	ring bread of yeast dough	6.25
1005	Crisps	thin slices of fried potato	4.5
1006	Toasts	Toasted bread slices with veg fillings	5.25
1007	Croutons	is a piece of rebaked bread	7.15
1008	Granolas	snacks consist of rolled oats	6.75
1009	Frozen	potato bites prepared on order	5.25

Customer_ID	Cust_FName	Cust_LName	Email_ID	Cust_Contact	Payment_Method
101	Divyansh	Bharat	div.321@gmail.com	6475461245	Cash
102	Navdeep	Kaur	nav78495@gmail.com	4165461245	Credit
103	Harmanpreet	Kaur	harmanpreet@gmail.com	7175461245	Debit
104	Manpreet	Kaur	Manpreet.7123@gmail.com	4155461245	Credit
105	Parvesh	Sharma	parvesh123@gmail.com	4555461245	Debit

Order_ID	Product_id	Quantity
1	1002	5
2	1001	4
3	1003	6
4	1004	7
5	1005	8

Invoice_ID	Order_ID	Product Name	Customer_ID	Date_Invoice	Grand_Total
222	1	Baguettes	101	11/16/2019	60.3
223	2	Loaves	102	7/17/2018	45.2
224	3	Buns and Rolls	103	6/18/2016	34.6
225	4	Bagels	104	5/19/2015	56.8
226	5	Crisps	105	4/20/2014	43.9

◦ Physical Model:

```
create database Database1;
```

```
use Database1;
```

```
create table Company(
```

```
Comp_ID INT Primary Key, CHECK(comp_id >0),
```

```
Comp_Name VARCHAR(25) NOT NULL,
```

```
Comp_Address VARCHAR(30) NOT NULL,
```

```
Contact_Details VARCHAR(10) default ' Phone Number is Unavailable' unique,
```

```
CHECK(Contact_Details not like '%[^0-9]%),
```

```
Website VARCHAR(20),
```

```
CHECK(Website LIKE '%___._%'),
```

```
Email_Address VARCHAR(30),
```

```
CHECK(Email_Address LIKE '%__@__%._%'));
```

```
insert into Company values (101,'Cherry On Top','252,Lanark
```

```
Circle','4163598745','www.cherryontop.com','cherryontop@gmail.com')
```

```
create table Product(
```

```
Product_id INT Primary Key NOT NULL, CHECK(Product_ID >0),
```

```
Product_Name VARCHAR(25) not null,
```

```
product_desc VARCHAR(40) not null ,
```

```
price DECIMAL(5,2));
```

```
insert into Product values(1001,'Baguettes','a long loaf of French bread',20.95)
```

```
insert into Product values(1002,'Loaves','a long rounded bread',12.75)
```

insert into Product values(1003,'Buns and Rolls','small, sweet, bread-based item',14.55)

insert into Product values(1004,'Bagels','ring bread of yeast dough',6.25)

insert into Product values(1005,'Crisps','thin slices of fried potato',4.50)

insert into Product values(1006,'Toasts','Toasted bread slices with veg fillings',5.25)

insert into Product values(1007,'Croutons','is a piece of rebaked bread',7.15)

insert into Product values(1008,'Granolas','snacks consist of rolled oats',6.75)

insert into Product values(1009,'Frozen','potato bites prepared on order',5.25)

Create table Customer(

Customer_ID INT Primary Key,

Cust_FName VARCHAR(20) not null,

Cust_LName VARCHAR(20),

Email_ID VARCHAR(50) unique,

CHECK(Email_ID LIKE '%__@__%.__%'),

Cust_Contact VARCHAR(10) default ' Phone Number is Unavailable' unique,

CHECK(Cust_Contact not like '%[^0-9]%),

Payment_Method VARCHAR(20)

check(Payment_Method like 'Credit' or Payment_Method like 'CREDIT' or Payment_Method like 'credit' or Payment_Method like 'Debit' or Payment_Method like 'DEBIT' or

Payment_Method like 'debit' or Payment_Method like 'Cash' or Payment_Method like 'cash' or Payment_Method like 'CASH'));

insert into Customer values

(101,'Divyansh','Bharat','div.321@gmail.com','6475461245','Cash')

insert into Customer values

(102,'Navdeep','Kaur','nav78495@gmail.com','4165461245','Credit')

insert into Customer values

(103,'Harmanpreet','Kaur','harmanpreet@gmail.com','7175461245','Debit')

insert into Customer values

(104,'Manpreet','Kaur','Manpreet.7123@gmail.com','4155461245','Credit')

insert into Customer values

(105,'Parvesh','Sharma','parvesh123@gmail.com','4555461245','Debit')

Create table Orders1(

Order_ID INT primary key not null,

Product_id INT not null,

Foreign key (product_id)

references Product (product_id),

Quantity INT not null

CHECK (quantity>0));

insert into Orders1 values(002,1001,4);

insert into Orders1 values(001,1002,5);

insert into Orders1 values(003,1003,6);

insert into Orders1 values(004,1004,7);

insert into Orders1 values(005,1005,8);

```
create table Invoices
(Invoice_ID int Primary Key not null,
CHECK(invoice_id >0),
Order_ID int not null,
foreign key (Order_ID)
References Orders1 (Order_ID),
Product_Name varchar(20) not null,
Customer_ID int not null,
foreign key (Customer_ID)
references Customer (Customer_ID),
Date_Invoice date,
Grand_Total decimal(6,2)
);

insert into Invoices values (222,001,'Baguettes',101,'2019-11-16',60.3)
insert into Invoices values (223,002,'Loaves',102,'2018-07-17',45.2)
insert into Invoices values (224,003,'Buns and Rolls',103,'2016-06-18',34.6)
insert into Invoices values (225,004,'Bagels',104,'2015-05-19',56.8)
insert into Invoices values (226,005,'Crisps',105,'2014-04-20',43.9)
```

- Output of Tables:

```
insert into Company values (101,'Cherry On Top','252,Lanark Circle',4163598745,'www.cherryontop.com','cherryontop@gmail.com')
```

100 %

Results Messages

	Comp_ID	Comp_Name	Comp_Address	Contact_Details	Website	Email_Address
1	101	Cherry On Top	252,Lanark Circle	4163598745	www.cherryontop.com	cherryontop@gmail.com

```
select * from Product
```

100 %

Results Messages

	Product_id	Product_Name	product_desc	price
1	1001	Baguettes	a long loaf of French bread	20.95
2	1002	Loaves	a long rounded bread	12.75
3	1003	Buns and Rolls	small, sweet, bread-based item	14.55
4	1004	Bagels	ring bread of yeast dough	6.25
5	1005	Crisps	thin slices of fried potato	4.50
6	1006	Toasts	Toasted bread slices with veg fillings	5.25
7	1007	Croutons	is a piece of rebaked bread	7.15
8	1008	Granolas	snacks consist of rolled oats	6.75
9	1009	Frozen	potato bites prepared on order	5.25

```
select * from Customer
```

100 %

Results Messages

	Customer_ID	Cust_FName	Cust_LName	Email_ID	Cust_Contact	Payment_Method
1	101	Divyansh	Bharat	div.321@gmail.com	6475461245	Cash
2	102	Navdeep	Kaur	nav78495@gmail.com	4165461245	Credit
3	103	Hamanpreet	Kaur	hamanpreet@gmail.com	7175461245	Debit
4	104	Manpreet	Kaur	Manpreet.7123@gmail.com	4155461245	Credit
5	105	Parvesh	Shama	parvesh123@gmail.com	4555461245	Debit

```
select * from Orders1
```

100 %

Results Messages

	Order_ID	Product_id	Quantity
1	1	1002	5
2	2	1001	4
3	3	1003	6
4	4	1004	7
5	5	1005	8

```
select * from Invoices
```

100 %

Results Messages

	Invoice_ID	Order_ID	Product_Name	Customer_ID	Date_Invoice	Grand_Total
1	222	1	Baguettes	101	2019-11-16	60.30
2	223	2	Loaves	102	2018-07-17	45.20
3	224	3	Buns and Rolls	103	2016-06-18	34.60
4	225	4	Bagels	104	2015-05-19	56.80
5	226	5	Crisps	105	2014-04-20	43.90

○ Constraint Testing:

▪ Primary Key

```
insert into Customer values (106,'Kavya','Sharma','kavyasharma@gmail.com','2475461245','Debit')
```

100 %

Messages

Msg 2627, Level 14, State 1, Line 1
Violation of PRIMARY KEY constraint 'PK__Customer__8CB286B945AA0AA4'. Cannot insert duplicate key in object 'dbo.Customer'. The duplicate key value is (106).
The statement has been terminated.

▪ Check for Numeric Value

```
insert into Customer values (107,'AK','Sharma','aksharma@gmail.com','7001s002','Debit')
```

100 %

Messages

Msg 547, Level 16, State 0, Line 1
The INSERT statement conflicted with the CHECK constraint "CK__Customer__Cust_C__1ED99882". The conflict occurred in database "Database1", table "dbo.Customer", column 'Cust_Contact'.
The statement has been terminated.

▪ Foreign Key

```
insert into Orders1 values(007,1010,9);
```

100 %

Messages

Msg 547, Level 16, State 0, Line 1
The INSERT statement conflicted with the FOREIGN KEY constraint "FK__Orders1__Product__3C69F899". The conflict occurred in database "Database1", table "dbo.Product", column 'Product_id'.
The statement has been terminated.

- Unique Value

```
insert into Customer values (107,'P','Sharma','par@gmail.com','4165461245','Debit')|
```

00 %

Messages

Msg 2627, Level 14, State 1, Line 1
Violation of UNIQUE KEY constraint 'UQ__Customer__6CA45DD06691A5DA'. Cannot insert duplicate key in object 'dbo.Customer'. The duplicate key value is (4165461245).
The statement has been terminated.

- Check for Negative Values

```
insert into Invoices values (-1,006,100,'2014-04-20',43.9)|
```

100 %

Messages

Msg 547, Level 16, State 0, Line 1
The INSERT statement conflicted with the CHECK constraint "CK__Invoices__Invoic__403A8C7D". The conflict occurred in database "Database1", table "dbo.Invoices", column 'Invoice_ID'.
The statement has been terminated.

- Check for Payment Method

```
insert into Customer values (187,'AK','Sharma','aksharma@gmail.com','70018002','Money')
```

100 %

Messages

Msg 547, Level 16, State 0, Line 2

The INSERT statement conflicted with the CHECK constraint "CK__Customer__Paymen__IFCDBCEB". The conflict occurred in database "Database1", table "dbo.Customer", column "Payment_Method".
The statement has been terminated.