Database and Management Systems End Semester Project Evaluation

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Scope of the project:

Since Covid-19 struck the world, most businesses, jobs and services have gone online. Even though we can say that we've successfully tackled this Covid hurdle today, we won't be able to go back to what we were before the pandemic. Keeping this in mind, we are developing an online retail store service where people can browse and order products they need. The billing and payment will be made electronically. The prices will be fixed with the only exception of applying coupons to reduce the cost of the order and therefore cutting the need for a third person hence decreasing the risk of theft/black marketing. It also keeps track of all the customers as well as suppliers along with the shippers. The suppliers are basically the sellers who are listing their products on this service system with the help of an admin. The admin manages the entire retail store. It can change the listed prices of the products and add or remove coupons, and many more controls. The shippers are the ones who deliver the products from the suppliers to the customers in a given expected interval of time. This system keeps track of all the orders ordered by the customer and products that the sellers/shipping are selling/shipping as well as the admins.

Stakeholder:

Upon conducting some informal research and discussions by the team members, we have identified some of the stakeholders/ target audience of the project as:

- People who like to shop online
- People who want to buy in bulk
- Big and Small Businessmen (Suppliers/ Sellers)
- Shipping/Transportation service providers
- Management Staff (Admin Controls)

Features to various Stakeholders:

Our project acts as an interface between the customers and the suppliers. The login page consists of three types of users and the grants to each of them have been provided separately. The entities and what functions each of these possess have been mentioned below:

- Customer:
- A customer can sign up feature for new account where they can provide their personal information and create a new account for themselves.
- Selecting products to be added to cart.
- ❖ A customer can apply coupons (if possible) to avail discount.
- ❖ A customer can choose to update the information provided and also add multiple addresses so as to get products at different locations or order for someone else.
- ❖ A customer can add/delete reviews for each product.
- ❖ A customer can view products based on categories as well.
- ❖ A customer can choose to remove items from the cart and not proceed with the order.
- ❖ A customer can pay using different payment methods to suit needs.
- ❖ A customer can view the previous orders placed by him/her.
- Employee:
- ❖ An employee can add new products to the list belonging to different categories.
- ❖ An employee can delete the existing products, deletion can occur using product name, product ID or product category.

- ❖ An employee can update the fields of a particular product such as product name, product quantity, product price, product weight, product discount and product category ID.
- ❖ An employee can view the information about customers, suppliers, shippers and products in the form of a table.
- ❖ An employee can view the orders placed by different customers from a particular start date to a particular end date or can also search by customer ID.
- ❖ An employee can update the values of different entities like add coupons to the pre-existing ones, add a new category, change information about a particular supplier, change a supplier related to a particular product, add a new shipper, etc.
- Administrator:
- ❖ An administrator can perform all the above-mentioned roles done by the employee.
- ❖ An administrator can add new employees to the organisation.
- ❖ An administrator can update information about other employees and also give admin access to pre-existing employees.
- ❖ An administrator can remove the employees which have left the company.

Some Assumptions:

- ❖ When a customer adds products to a cart, the coupon will only be valid after a certain number of items selected (a threshold of transaction amount for a purchase).
- ❖ When an administrator/employee places an order for supplies, it is assumed that the quantity of product is automatically increased.

E-R Diagram:

Link to E-R Diagram:

 $\underline{https://lucid.app/lucidchart/24105b34-9ca0-456a-ac8c-06bceac62cf5/edit?invitationId=\underline{inv_ace2a9ab-b45c-4a2f-8c9b-b8344eff0864}$

Entities:

- 1) Customer
- 2) Product
- 3) Supplier
- 4) Category
- 5) Administrator
- 6) Cart
- 7) Orders
- 8) Coupons
- 9) Shipper

Weak Entities:

- 1) Order Details: Order details doesn't exist without placing the Order. Therefore, Order Details is dependent on Order. Hence, it's a weak entity.
- 2) Bills: Bills can't be generated without placing the order. Therefore, Bills can't be generated without placing an Order. Hence, it's a weak entity.
- 3) Personal Information: Personal Information only exists when a Customer exists. Hence, it's a weak entity.
- 4) Supplier Information: Supplier Information only exists when a Supplier exists. Hence, it's a weak entity.
- 5) Review: A review can only be given on a product. Therefore, it depends on the existence of a product. Hence, it's a weak entity.
- 6) Payment: Payment cannot be made until an order has been placed. Hence, it's a weak entity.

Relationships:

- 1) Customer has Personal Information
- 2) Customer places Orders
- 3) Customer adds Products to cart
- 4) Order has Order Details
- 5) Order has Bill
- 6) Cart shows Coupons
- 7) Administrator adds product
- 8) Product belongs to Category
- 9) Supplier supplies product
- 10) Supplier has Personal Information
- 11) Order shipped by Shipper

Ternary Relationship:

- 1) Customer adds Products to cart
- -> A binary relationship would not be able to accurately fulfil the semantics of the relationship between the Customer, Product and Cart.

-> As all of the above entities are inter-connected to each other, therefore a ternary relationship is appropriate in this case.

Relational Schema along with primary keys and valid constraints:

Link:

https://docs.google.com/spreadsheets/d/1shdlGC4zyjXVXN4HNL4FNLNrs8IhiD1h5lPBaOEtFls/edit?usp=sharing

The primary and foreign keys for different tables are mentioned below:

- **Customer:**
 - (Primary Key Customer_ID)
- **Customer Information:**
 - (Foreign Key Customer_ID)
- Supplier:
 - (Primary Key Supplier_ID)
- **Supplier Information:**
 - (Foreign Key Supplier_ID)
- Product:
 - (Primary Key Product_ID), (Foreign Key Category_ID)
- **A** Category:
 - (Primary Key Category_ID)
- **\$** Shipper:
 - (Primary Key Shipper_ID)
- ***** Employee:
 - (Primary Key Employee_ID)

(ON DELETE CASCADE has been used to cascade the entries when some attribute which is a foreign key for a particular table has been deleted from it's original table.)

The constraints added to various Tables are mentioned below:

Tables:

The tables which have been used are mentioned as follows:

Tables_in_retailstore

- 'adds_product'
- 'administrator'
- 'applied_coup'
- ❖ 'bills'
- ❖ 'cart'
- ❖ 'cart details'
- 'category'
- ❖ 'coupons'
- ❖ 'customer'
- 'customer_details'
- 'customer information'

- 'employee'
- 'order_details'
- ❖ 'orders'
- ❖ 'payment'
- 'places_order'
- ❖ 'product'
- 'product_1'
- 'product_2'
- 'product_details'
- 'product_view'
- 'products_categoric'
- 'review'
- ❖ 'shipper'
- 'shipper_details'
- ❖ 'supplier'
- 'supplier_details'
- 'supplier_information

These tables also contain views.

Indexes:

- CREATE INDEX customer_id_index ON customer(cust_id);
- CREATE INDEX product_id_index ON product(product_id);
- CREATE INDEX product_category_id_index ON product(category_id);
- CREATE INDEX product_id_index ON product(product_id);
- CREATE INDEX order_id_index ON orders(order_id);
- CREATE INDEX order_id_index ON orders(customer_id);
- CREATE INDEX order_details_index ON order_detais(customer_id);

- CREATE INDEX supplier_id_index ON supplier(supp_id);
- CREATE INDEX shipper_id_index ON shipper(ship_id);

Range Constraints:

Some constraints used on the fields are as follows:

```
CREATE TABLE SUPPLIER(
SUPP_ID CHAR(4) PRIMARY KEY,
EMAIL_ID VARCHAR(50) NOT NULL,
COMPANY_NAME VARCHAR(50) NOT NULL,
CHECK (SUPP ID LIKE 'S%'),
CHECK (EMAIL_ID LIKE '%@%.%'));
CREATE TABLE CUSTOMER(
CUST_ID CHAR(4) PRIMARY KEY,
EMAIL_ID VARCHAR(50) NOT NULL ,
FIRST NAME VARCHAR(20) NOT NULL,
LAST NAME VARCHAR(20) NOT NULL,
C_PASSWORD VARCHAR(30) NOT NULL,
CHECK (EMAIL_ID LIKE '%%.%'),
CHECK (LENGTH(C_PASSWORD)>1 ),
CHECK (CUST_ID LIKE 'C%'));
DISCOUNT INTEGER NOT NULL,
CATEGORY_ID CHAR(5),
IN_STOCK BOOLEAN NOT NULL,
CHECK (PRODUCT_ID LIKE 'P%'),
CHECK (PRODUCT_QUANTITY > 0),
CHECK (UNIT_WEIGHT > 0),
CHECK (UNIT_PRICE > 0));
EMAIL_ID VARCHAR(50) NOT NULL,
A_PASSWORD VARCHAR(30) NOT NULL,
ADMIN ROLES BOOLEAN not NULL,
CHECK (ADMIN_ID LIKE 'E%'),
CHECK (LENGTH(A_PASSWORD)>1 ));
TOTAL QUANTITY INTEGER NOT NULL,
COUPON_APPLIED BOOLEAN,
CHECK (TOTAL PRICE >= 0 AND TOTAL QUANTITY >= 0),
CHECK (CART_ID LIKE 'CA%'));
QUANTITY INTEGER NOT NULL,
DISCOUNT INTEGER NOT NULL,
CHECK (UNIT_PRICE > 0 AND QUANTITY > 0 AND DISCOUNT >= 0));
```

SQL Queries:

SELECT distinct * FROM Supplier_information,supplier Where supplier_information.personal_id = supplier.supp_id;

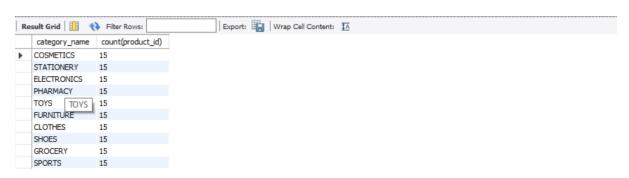


Select Cust_ID

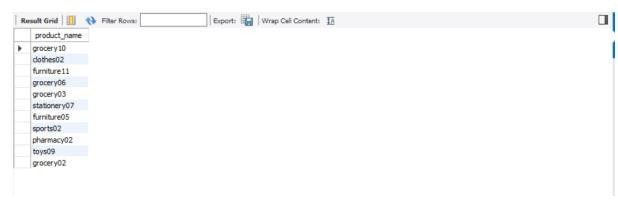
From Customer join Customer_Information
Where Customer_Information.state = "Washington" and Cust_ID = Customer_Information.Personal_ID;



- Select product_idFrom productWhere discount > 10;
- Select category_name, count(product_id)
 From category join product
 Where category_category_id = product.category_id
 Group By category_name;



Select product_product_name from order_details,product Where order_details.order_id = 'o100' and product.product_id = order_details.product_id;



Select product_id,avg(rating) as average_rating

From review

Group by product_id;

	product_id	average_rating
•	P121	2.4286
	P125	3.6000
	P206	3.8333
	P160	3.0000
	P154	2.2500
	P214	2.6667
	P105	3.0000
	P238	3.2222
	P236	2.8333
	P159	2.2000
	P132	4.0000
	P230	3.0000
	P106	2.7500
	DICA	2 5000

❖ ALTER TABLE ORDERS

ADD FOREIGN KEY (BILL_ID) REFERENCES BILLS(BILL_ID) ON DELETE CASCADE;

❖ CREATE TABLE ORDERS(

ORDER_ID CHAR(4) PRIMARY KEY,

CUST_ID CHAR(4),

SUPP_ID CHAR(4),

BILL ID CHAR(4),

SHIPPING_ID CHAR(5),

CONSIGNMENT_NUMBER CHAR(5) NOT NULL,

SHIPPED_DATE DATE NOT NULL,

ORDER_DATE DATE NOT NULL,

FOREIGN KEY (CUST_ID) REFERENCES CUSTOMER(CUST_ID) ON DELETE CASCADE,

FOREIGN KEY (SUPP_ID) REFERENCES SUPPLIER(SUPP_ID) ON DELETE CASCADE,

FOREIGN KEY (SHIPPING_ID) REFERENCES SHIPPER(SHIP_ID) ON DELETE CASCADE,

CHECK (CONSIGNMENT_NUMBER LIKE 'CW%'));

❖ SELECT CUST_ID,SUM(PAYMENT.AMOUNT_PAID)

FROM PAYMENT

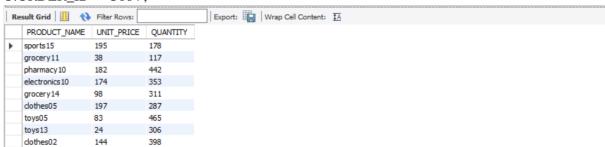
GROUP BY CUST_ID

	CUST_ID	SUM(PAYMENT.AMOUNT_PAID)
•	C100	912
	C101	456
	C102	1873
	C103	2182
	C104	2218
	C105	2029
	C106	783

- ❖ INSERT INTO product values('P149', 'Turkey ', 100, 31, 112, 9, 'CT100');
- ❖ SELECT DISTINCT CA.PRODUCT_ID, PRODUCT_NAME, CA.UNIT_PRICE, CA.QUANTITY, C.TOTAL_PRICE, P.DISCOUNT FROM PRODUCT P, CART_DETAILS CA, CART C WHERE C.CART_ID = CA.CART_ID AND C.CUST_ID = (SELECT CUST_ID FROM CUSTOMER C2 WHERE C2.EMAIL_ID = ('vielkawoodard@icloud.net')) AND P.PRODUCT_ID = CA.PRODUCT_ID;

				_		
	PRODUCT_ID	PRODUCT_NAME	UNIT_PRICE	QUANTITY	TOTAL_PRICE	DISCOUNT
•	P101	cosmetics02	172	341	192160	0
	P120	stationery06	91	179	192160	0
	P130	electronics01	13	390	192160	0
	P170	toys11	133	279	192160	0
	P249	sports15	198	379	192160	0

- ❖ CREATE VIEW PRODUCT_VIEW AS SELECT PRODUCT_NAME,CATEGORY_ID FROM PRODUCT WHERE PRODUCT_QUANTITY<20;</p>
- ❖ DELETE FROM REVIEW R WHERE PRODUCT_ID = ('P129') AND R.CUST_ID = (SELECT CUST_ID FROM CUSTOMER C1 WHERE C1.EMAIL_ID = ('vielkawoodard@icloud.net'));
- SELECT DISTINCT PRODUCT_NAME, O.UNIT_PRICE, QUANTITY FROM PRODUCT P, ORDER_DETAILS O WHERE P.PRODUCT_ID = O.PRODUCT_ID AND O.ORDER_ID = 'O184';



❖ SELECT distinct ORDER_ID,ORDER_TIME FROM PLACES_ORDER, CUSTOMER WHERE PLACES_ORDER.CUST_ID = (SELECT CUST_ID FROM CUSTOMER C1 WHERE C1.EMAIL_ID = ('vielkawoodard@icloud.net'));

	ORDER_ID	ORDER_TIME
•	0184	14:52:57
	O140	18:43:35
	O136	23:02:50

Embedded SQL Queries:

*

*

```
try:

| Select Product_ID, Product_NAME, Product_QUANTITY, UNIT_PRICE, DISCOUNT, UNIT_WEIGHT, IN_STOCK, CATEGORY_NAME
| From Category C, Product P where P.CATEGORY_ID = (%s) AND C.CATEGORY_ID = P.CATEGORY_ID
| ORDER BY PRODUCT_ID'''
| Cur.execute(sql1_id)
```

```
frames = {}
dict_customers = {}
dict_employee = {}
sql1 = '''SELECT EMAIL_ID, C_PASSWORD FROM CUSTOMER;'''
cur.execute(sql1)
rows = cur.fetchall()
for i in rows:
    dict_customers[i[0]] = i[1]
mydb.commit()
sql1 = '''SELECT EMAIL_ID, A_PASSWORD FROM EMPLOYEE;'''
cur.execute(sql1)
rows = cur.fetchall()
for i in rows:
    dict_employee[i[0]] = i[1]
mydb.commit()
print(dict_customers)
print(dict_employee)
```

*

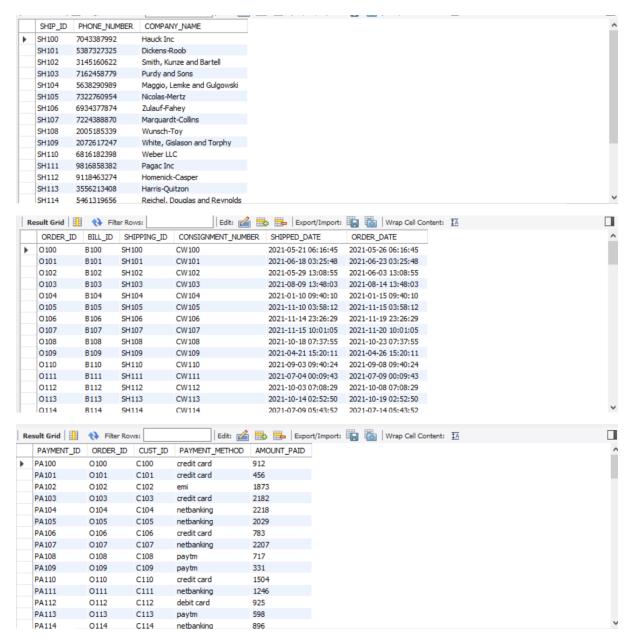
```
for i in l:
    id = i[1]
    y+=1
    pid = i[2]
    quantity = int(i[4])
    price = int(i[3])
    discount = int(i[5])
    sql = 'INSERT INTO cart_details values(%s,%s,%s,%s,%s);'
    val = (id_pid_quantity_price_discount)
    print(val)
    cur.execute(sql, val)
    mydb.commit()
```

Data Population in Tables:

	CATEGORY_ID	CATEGORY_NAME
•	CT100	COSMETICS
	CT101	GROCERY
	CT102	CLOTHES
	CT103	SHOES
	CT104	TOYS
	CT105	FURNITURE
	CT106	ELECTRONICS
	CT107	SPORTS
	CT108	PHARMACY
	CT109	STATIONERY
	NULL	NULL

	CUST_ID	EMAIL_ID	FIRST_NAME	LAST_NAME	C_PASSWORD
•	C100	blythe_case7564@aol.net	Blythe	Case	NJJ74DHN7XA
	C101	c.erickson6969@outlook.edu	Chelsea	Erickson	IYL06VQE3DK
	C102	hebertcharity5210@yahoo.in	Charity	Hebert	BAY99IMX4JE
	C103	martin.sean2757@google.in	Sean	Martin	GQP87JCN4EE
	C104	a_powers@hotmail.coin	Andrew	Powers	QQS72DET6LH
	C105	ahumphrey5348@google.coin	Aidan	Humphrey	ZPP02FZQ7TV
	C106	mamber@yahoo.in	Amber	Mccullough	BYO 19JFG6CI
	C107	stricklandjeremy@outlook.org	Jeremy	Strickland	VCF76WIE6KX
	C108	brady.vaughan8212@outlook.in	Vaughan	Brady	VIL98QEH3RX
	C109	mreese@protonmail.net	Minerva	Reese	DMH10VKO8FQ
	C110	joyce.cedric9316@protonmail.c	Cedric	Joyce	YXZ44OYF7LY
	C111	vielkawoodard@icloud.net	Vielka	Woodard	YQV56KKA5VF
	C112	simpson.armand@hotmail.org	Armand	Simpson	FLW83BGR0MR
	C113	wcurran@google.edu	Curran	Ware	SKQ85XXS3JZ
	C114	s-carev7228@google.net	Solomon	Carev	VAI53DGP8SE

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	S102					United :			8063798402		
	S103	811 Barnett Way		Plano	Texas	United		75074	4696165874		
	S104	6 New Castle Junct	ion	Bradenton	Florida	United		34282	9415390592		
	S105	3386 Susan Court		Fresno	California	United		93762	5595445302		
	S106	8679 Bultman Park		Washington	District of Colu			20337	2027748968		
	S107	7338 Scoville Trail		Philadelphia	Pennsylvania	United	States	19146	2672785872		
	S108	05 Dawn Crossing		Laredo	Texas	United:	States	78044	9562685217		
	S109	84530 Brickson Park	k Point	Atlanta	Georgia	United :	States	31136	4049011429		
	S110	35609 Briar Crest P	ass	Albuquerque	New Mexico	United:	States	87121	5057410368		
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	S114 PERSONAL_II C100 C101 C102 C103 C104 C105 C106 C107 C108 C109 C110 C111 C112	Filter Rows: D LOCALITY 66789 Emmet Way 208 Arizona Drive 7104 Kings Circle 9216 Monica Alley 352 Melby Terrace 1 Drewry Hill 07 Kingsford Circle 49 Burning Wood Cir 80028 Vermont Circl 77 Calypso Crossing 2606 Springs Avenu 07493 Blaine Plaza 04 Rockefeller Lane	CO Are Pee Mil Ta Ra Ra Pu Peorde Lo le Dele La Ol Pit Per La Ol Pit Per La Col P	Charlotte Export CTTY naheim ecoria inneapolis ampa aleigh ueblo ortland os Angeles enver ort Lauderdale as Cruces iklahoma City ittsburgh	North Carolina tt Wrap Ca STATE California Illinois Minnesota Florida North Carolina Colorado Maine California Colorado Florida New Mexico Oklahoma Pennsylvania	United state	POS \$ 928: \$ 616: \$ 554: \$ 336: \$ 276: \$ 810: \$ 802: \$ 802: \$ 802: \$ 333: \$ 880: \$ 731: \$ 152:	28247 STAL_CODE PI 12 71 16 30 70 61 133 81 15 71 19 20 10 40 99 72 55 75 56 50 673 40 60 41	7046193715 HONE_NUMBER 47682665 94154507 23244810 38731934 94272589 93166493 74025007 81257209 05900846 44123991 51292719 53508713 27622072		
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Referential integrity constraints:

Table Name	Attributes	Data types	Constraints	Keys				
CUSTOMER	CUST_ID	CHAR(4)	NOT NULL	PRIMARY KEY				
	FIRST NAME	VARCHAR(20)	NOT NULL					
	LAST NAME	VARCHAR(20)	NOT NULL					
	EMAIL_ID	VARCHAR(30)	NOT NULL					
	C_PASSWORD	VARCHAR(30)	NOT NULL					
	PERSONAL_ID	CHAR(4)	NOT NULL	FOREIGN_KEY R	EFERENCES CUSTOME	R(CUST_ID) ON DELE	TE CASCADE	
	PHONE_NUMBER	CHAR(10)	NOT NULL					
	LOCALITY	VARCHAR(50)	NOT NULL					
CUSTOMER_INFORMATION	CITY	VARCHAR(20)	NOT NULL					
	STATE	VARCHAR(20)	NOT NULL					
	COUNTRY	VARCHAR(20)	NOT NULL					
	POSTAL_CODE	CHAR(5)	NOT NULL					
	PERSONAL_ID	CHAR(4)	NOT NULL	FOREIGN_KEY R	EFERENCES CUSTOME	R(CUST_ID) ON DELE	TE CASCADE	
	PHONE NUMBER	CHAR(10)	NOT NULL					
	LOCALITY	VARCHAR(50)	NOT NULL					
SUPPLIER_INFORMATION	CITY	VARCHAR(20)	NOT NULL					
	STATE	VARCHAR(20)	NOT NULL					
	COUNTRY	VARCHAR(20)	NOT NULL					
	POSTAL CODE	CHAR(5)	NOT NULL					
	_							
	SUPP_ID	CHAR(4)	NOT NULL	PRIMARY KEY				
SUPPLIER	COMPANY NAME	VARCHAR(30)	NOT NULL					
	EMAIL ID	VARCHAR(30)	NOT NULL					
	PRODUCT ID	CHAR(4)	NOT NULL	PRIMARY KEY				
	NAME	VARCHAR(20)	NOT NULL					
	PRODUCT QUANTITY	INT	NOT NULL					
PRODUCT	UNIT PRICE	INT	NOT NULL					
	UNIT WEIGHT	INT	NOT NULL					
	IN STOCK	BOOLEAN	NOT NULL					
	ADMIN ID	CHAR(4)	NOT NULL	PRIMARY KEY				
	FIRST_NAME	VARCHAR(20)	NOT NULL					
	LAST_NAME	VARCHAR(20)						
EMPLOYEE	ADMIN ROLES	BOOLEAN	NOT NULL					
	EMAIL ID	VARCHAR(30)	NOT NULL					
	A PASSWORD	VARCHAR(30)						

	A_I ACCITORD	WITTO INTEGOO	NOT NOLL					
	CART_ID	CHAR(5)	NOT NULL	PRIMARY KEY				
CART	TOTAL_PRICE	INTEGER	NOT NULL					
	TOTAL_QUANTITY	INTEGER	NOT NULL					
	ORDER_ID	CHAR(4)	NOT NULL	PRIMARY KEY				
	CUST_ID	CHAR(4)	NOT NULL	FOREIGN KEY (CUST_ID) REFERENCES CUSTO	MER(CUST_ID)	ON DELETE CAS	CADE
	SUPP_ID	CHAR(4)	NOT NULL	FOREIGN KEY (SUPP_ID) REFERENCES SUPPL	IER(SUPP_ID) OI	N DELETE CASC	ADE

ORDERS	BILL_ID	CHAR(4)	NOT NULL	FOREIGN KEY (BILL_ID) REFERENCES BILLS(BILL_ID) ON DELETE CASCADE
UNDERS	SHIPPING_ID	CHAR(5)		FOREIGN KEY (SHPPING_ID) REFERENCES SHIPPER(SHIP_ID) ON DELETE CASCADE
	ORDER_DATE	DATE	NOT NULL	
	SHIPPED_DATE	DATE		
	CONSIGNMENT_NUMBER	INT		
CATEGORY	CATEGORY_ID	CHAR(5)	NOT NULL	PRIMARY KEY
CATEGORY	CATEGORY_NAME	VARCHAR(30)	NOT NULL	
	BILL_ID	CHAR(4)	NOT NULL	PRIMARY KEY
	BILL_DATE	DATE	NOT NULL	
BILLS	CUST_ID	CHAR(4)	NOT NULL	FOREIGN KEY (CUST_ID) REFERENCES CUSTOMER(CUST_ID),
	COUPON_ID	CHAR(5)	NOT NULL	FOREIGN KEY (COUPON_ID) REFERENCES COUPONS(COUPON_ID),
	PAYMENT_ID	CHAR(4)	NOT NULL	FOREIGN KEY (PAYMENT_ID) REFERENCES PAYMENT(PAYMENT_ID));
	COUPON_ID	CHAR(5)	NOT NULL	PRIMARY KEY
COUPONS	PAYMENT_METHOD	VARCHAR(20)	NOT NULL	
	DISCOUNT	INTEGER	NOT NULL	
	ORDER_ID	CHAR(4)	NOT NULL	FOREIGN KEY (ORDER_ID) REFERENCES ORDERS(ORDER_ID),
	PRODUCT_ID	CHAR(4)	NOT NULL	FOREIGN KEY (PRODUCT_ID) REFERENCES PRODUCT(PRODUCT_ID));
ORDER_DETAILS	UNIT_PRICE	INTEGER	NOT NULL	
	QUANTITY	INTEGER	NOT NULL	
	DISCOUNT	INTEGER	NOT NULL	
	CUST_ID	CHAR(4)	NOT NULL	FOREIGN KEY (CUST_ID) REFERENCES CUSTOMER(CUST_ID) ON DELETE CASCADE
REVIEW	PRODUCT_ID	CHAR(4)	NOT NULL	FOREIGN KEY (PRODUCT_ID) REFERENCES PRODUCT(PRODUCT_ID)) ON DELETE CASCAD
	RATING	INTEGER	NOT NULL	
	PAYMENT_ID	CHAR(4)	NOT NULL	PRIMARY KEY
	ORDER_ID	CHAR(4)	NOT NULL	FOREIGN KEY (ORDER_ID) REFERENCES ORDERS(ORDER_ID)) ON DELETE CASCADE
PAYMENT	CUST_ID	CHAR(4),	NOT NULL	FOREIGN KEY (CUST_ID) REFERENCES CUSTOMER(CUST_ID) ON DELETE CASCADE
	PAYMENT_METHOD	VARCHAR(20)	NOT NULL	
	AMOUNT DAID	INTEGED	NOT NULL	

SUPPLIES	SUPP_ID	CHAR(4)	NOT NULL	FOREIGN KEY (SUPP_ID) REFERENCES SUPPLIER(SUPP_ID) ON DELETE CASCADE
SUFFLILS	PRODUCT_ID	CHAR(4)	NOT NULL	FOREIGN KEY (PRODUCT_ID) REFERENCES PRODUCT(PRODUCT_ID)) ON DELETE CASCADE
APPLIED_COUP	COUPON_ID	CHAR(4)	NOT NULL	FOREIGN KEY (COUPON_ID) REFERENCES COUPONS(COUPON_ID) ON DELETE CASCADE
APPLIED_COOP	CART_ID	CHAR(4)	NOT NULL	FOREIGN KEY (CART_ID) REFERENCES CART(CART_ID)) ON DELETE CASCADE
	ORDER_ID	CHAR(4),	NOT NULL	FOREIGN KEY (ORDER_ID) REFERENCES ORDERS(ORDER_ID)) ON DELETE CASCADE
PLACES_ORDER	CUST_ID	CHAR(4),	NOT NULL	FOREIGN KEY (CUST_ID) REFERENCES CUSTOMER(CUST_ID) ON DELETE CASCADE
	ORDER_TIME	TIME	NOT NULL,	
	SHIP_ID	CHAR(4)	NOT NULL	PRIMARY KEY
SHIPPER	PHONE_NUMBER	CHAR(10)	NOT NULL,	
	COMPANY_NAME	VARCHAR(20)	NOT NULL,	
	CART_ID	CHAR(4)	NOT NULL	FOREIGN KEY (CART_ID) REFERENCES ORDERS(ORDER_ID),
	PRODUCT_ID	CHAR(4)	NOT NULL	FOREIGN KEY (PRODUCT_ID) REFERENCES PRODUCT(PRODUCT_ID));
CART_DETAILS	UNIT_PRICE	INTEGER	NOT NULL	
	QUANTITY	INTEGER	NOT NULL	

DISCOUNT INTEGER NOT NULL

Views, Grants and Triggers:

Views

```
try:

sql1 = ''' DREATE VIEW SUPPLIER_DETAILS AS

SELECT SUPP_ID, COMPANY_NAME, EMAIL_ID, LOCALITY, CITY, STATE, COUNTRY, POSTAL_CODE, PHONE_NUMBER

FROM SUPPLIER, SUPPLIER_INFORMATION WHERE SUPPLIER.SUPP_ID = SUPPLIER_INFORMATION.PERSONAL_ID; '''

cur.execute(sql1)

except:

pass
```

```
try:

sql1 = '''CREATE VIEW SHIPPER_DETAILS AS

SELECT SHIP_ID,COMPANY_NAME,PHONE_NUMBER

FROM SHIPPER;'''

cur.execute(sql1)

except:
pass
```

```
try:

sql1 = '''CREATE VIEW PRODUCT_1 AS

SELECT distinct P.PRODUCT_ID,PRODUCT_NAME,PRODUCT_QUANTITY,UNIT_PRICE,UNIT_WEIGHT,
S.COMPANY_NAME, C.CATEGORY_NAME

FROM REVIEW AS R, SUPPLIER AS S, PRODUCT AS P, CATEGORY AS C, SUPPLIES AS Q

WHERE P.Product_ID = Q.product_ID and s.supp_id = q.supp_id AND C.CATEGORY_ID = P.CATEGORY_ID

order by p.product_id;

cur.execute(sql1)

sql2 = '''create view product_2 as

(Select p1.product_id, avg(rating) as reviews from review r1, product p1 where r1.product_id group by p1.product_id);

cur.execute(sql2)

sql3 = '''create view product_details as

select product_1.PRODUCT_ID,PRODUCT_NAME,PRODUCT_QUANTITY,UNIT_PRICE,UNIT_WEIGHT,
COMPANY_NAME, CATEGORY_MAME, reviews from product_1,product_2

where product_1.product_id = product_2.product_id
```

Grants

```
CREATE USER IF NOT EXISTS 'customer'@'localhost'
IDENTIFIED BY 'customer';
GRANT INSERT
ON retailstore.cart
TO 'customer'@'localhost';
```

```
SHOW GRANTS FOR 'customer'@'localhost';
REVOKE INSERT
ON retailstore.employee
FROM 'ars'@'localhost';
CREATE USER IF NOT EXISTS 'customer'@'localhost'
IDENTIFIED BY 'admin';
GRANT SELECT
ON customer
TO 'customer'@'localhost';
CREATE USER IF NOT EXISTS 'customer'@'localhost'
IDENTIFIED BY 'admin';
GRANT SELECT
on customer_information
TO 'customer'@'localhost';
CREATE USER IF NOT EXISTS 'customer'@'localhost'
IDENTIFIED BY 'admin';
GRANT SELECT
on cart
TO 'customer'@'localhost';
CREATE USER IF NOT EXISTS 'customer'@'localhost'
IDENTIFIED BY 'admin';
GRANT SELECT
on cart_details
TO 'customer'@'localhost';
CREATE USER IF NOT EXISTS 'employee'@'localhost'
IDENTIFIED BY 'admin';
GRANT insert
on product
TO 'employee'@'localhost';
grant select on orders TO 'customer'@'localhost';
grant select on order_details TO 'customer'@'localhost';
grant select on review TO 'customer'@'localhost';
```

```
grant select on customer TO 'employee'@'localhost';
grant select on customer information TO 'employee'@'localhost';
grant select on cart TO 'employee'@'localhost';
grant select on cart_details TO 'employee'@'localhost';
grant select on orders TO 'employee'@'localhost';
grant select on order details TO 'employee'@'localhost';
grant select on product TO 'employee'@'localhost';
  grant insert on customer TO 'employee'@'localhost';
  grant insert on customer_information TO 'employee'@'localhost';
  grant insert on cart TO 'employee'@'localhost';
  grant insert on cart_details TO 'employee'@'localhost';
  grant insert on orders TO 'employee'@'localhost';
  grant insert on order_details TO 'employee'@'localhost';
  grant insert on product TO 'employee'@'localhost';
grant insert on supplier TO 'employee'@'localhost';
grant insert on supplier_information TO 'employee'@'localhost';
grant insert on shipper TO 'employee'@'localhost';
grant insert on applied_coup TO 'employee'@'localhost';
grant insert on places_order TO 'employee'@'localhost';
grant insert on adds product TO 'employee'@'localhost';
grant insert on category TO 'employee'@'localhost';
   Triggers
DROP TRIGGER IF EXISTS 'retailstore'.'cart upd';
DELIMITER $$
USE `retailstore`$$
CREATE DEFINER = CURRENT_USER TRIGGER
'online banking system'.'cart upd' BEFORE INSERT
ON `cart_details` FOR EACH ROW
BEGIN
IF NEW.quantity >= NEW.product_quantity THEN
SET NEW.quantity = NEW.product quantity;
END IF;
END$$
DELIMITER;
```

```
BEGIN
          IE NEW.total_price > 10000 THEN
              SET NEW.total price = NEW.total price *0.9
          ELSEIF NEW.total_price > 20000 THEN
              SET NEW.total_price = NEW.total_price *0.85
          else SET NEW.total_price = NEW.total_price *0.8
              end if
END;
BEGIN
           IF NEW.quantity > 100 THEN
                SET NEW.total price = NEW.total price *0.9
           ELSEIF NEW.quantity < 10 THEN
                SET NEW.total_price = NEW.total_price + 100
                end if
END;
BEGIN
declare coupon_discount = 0.1
          IF NEW.coupon_applied==1 THEN
              SET NEW.total_price = NEW.total_price*coupon_discount
          ELSE
               SET NEW.total_price = NEW.total_price
               end if
END;
```

Relational Algebra:

C	Customer ID's of all customers with last name "Hero".	
	Mast id (O Last Name = "Hero" ((ustomer))	
2	All the products with unit price greater than 500 and unit weight less than 1.5 kg.	D Lis
	Toproduct_id, name, in stock (Ounit bice > 500 \ unit weight < (Product))	
3	Delete the record of composition ID = "SIOS"	
	Supplier - Supplier - Osupplier - id = "5105" (Supplier)	81
3	Delete the record of sapes Supplier 1D = "S103"	81
	Supplier - Supplier - Supplier - id = "5105" (Supplier)	
0 2	moult a new product with details!- ID="P109" Nume- Product_x	
	Overtity - 106. Unit price - 500	104
	Unit weight - 200	
	Product ← Product U S(GP1091), GProdutx", 106, 500, 200)}	91
	DATE DATE	=4,
6 EU	and the most expensive product in the product is I	-
	The products (Products) - Top production, name, Instack (products will price	2
	(com products X)	~
	(produts)	

(ii)	111
De List of all the customers after with postal code = "110020"	64
	1/1
Lody) Tost-id, Furthone, Last name (O Postal Code: "1002017 (Customer M Customer)) Lingo.	
de la company de	
into,	
(8) List of all the products that are instock with pulse greater than 1500.	
Thodust-id, Name, dwandatay (5 Instour = "True" (Product))	
To product i'd, Name, Quantility (O anit price > 1500 (Product))	
and all my for person or I as I me I me or T (3)	
g list of all the products in the modern in the	
g list of all the products in the met of all the	
I list of all the products in the automers.	
By range -	
Customers assist Customers out to = orders austro (Orders X customer	1)
Posteriore, assomer lasty Place astroner astrol Customers. art 10 = Orders. art 10 (Orders X customer product id product. name.	"
the production based product name.	
Debuts belonging to cotegory id = "CT102" or products as costing	-
Inde than 1000.	
	_
To product sid, Name, instale (Ocategory-side "CT for" (Product)) U	
Classmate	
PAGE Product - id. Name. in stock (or unit price = > 1000 (Phoduct))	

Front End Screens:

CSE-202 | DataBase Management Systems, Winter-2022

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To view the full application, click the button below!

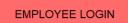
Click Me!

Welcome to Amazon:)

Click Me! f1



CUSTOMER LOGIN



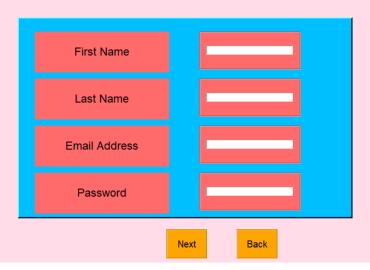




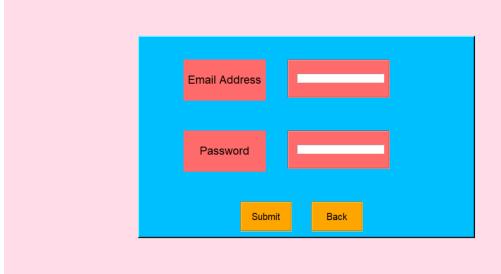
For new customers, sign up below!

SIGN UP!

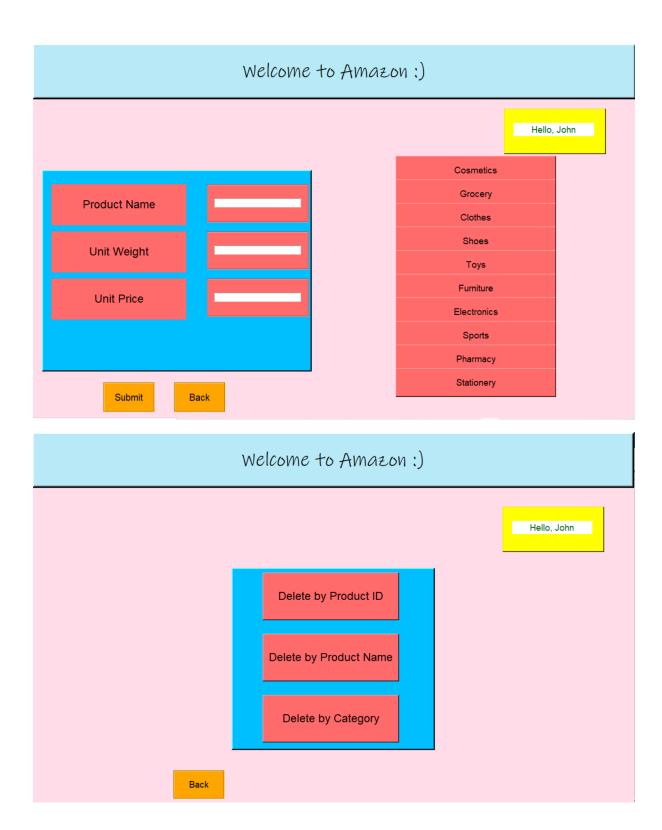
Welcome to Amazon:)

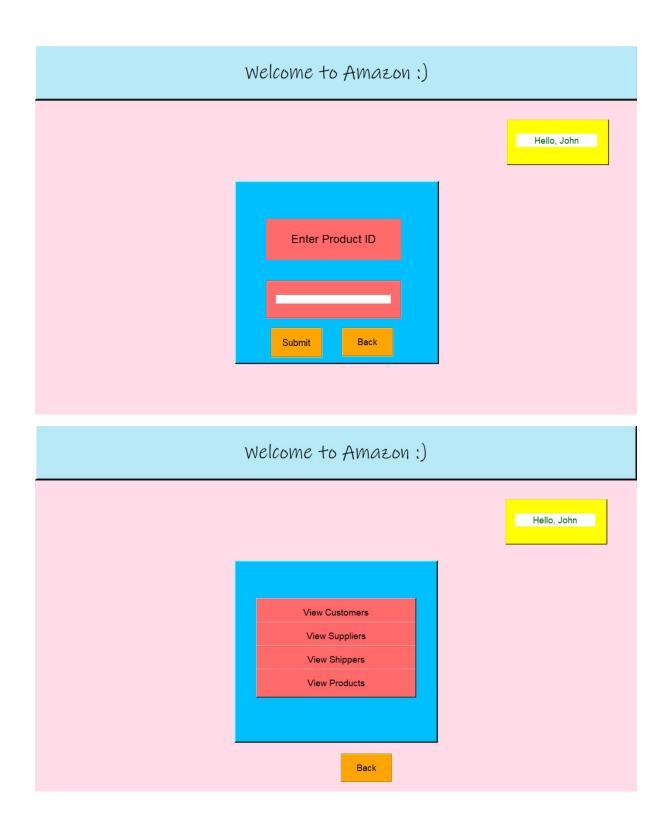


Welcome to Amazon:)











Work Distribution:

Since, it was impossible to mention all the csv files and the data population as well as the frontend code, we have provided the Github repository link for the same. It has been made private to avoid plagiarism.

Link to repository:

https://github.com/jayanpahuja20/RetailStore

Ayush Sharma - Scope of Project, Stakeholders, ER Diagram, Entities Relationships, Relation Schema, View and Grants (Minor Work), Query Optimisation, Indexing, Triggers, Relational Algeba, Data Population, Documentation,

Jayan Pahuja - ER Diagram, Entities and relationships, Views and grants (Major Work), Sql queries, Embedded SQL queries, Indexing, Triggers, Data population, Documentation, Frontend (Major Work)

Aaryendra - ER Diagram (Major Work), Entities and relationships, Views and grants (Minor Work), Sql queries, Triggers, Data Population, Documentation

Aayush Gakhar - ER Diagram, Entities and relationships, Relational schema, Views and grants (Minor Work), Sql queries, Embedded sql queries, Indexing, Triggers, Relational algebra, Frontend