Computer Science Department

COMP333

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Section:1

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project scope and description:

The three branches of مجوهرات الأميرةoperate under the same name and are located next to each other (at دوار المنارة شارع الوحدة عمارة اللؤلؤة). Each branch has its own separate storage, independent of the others. There is unique identification numbers assigned to individual pieces of jewelry. Each branch employs multiple staff member. The jewelry is primarily categorized by gold purity (**24, 22, 21, 14, 9 karats**) and then further classified based on craftsmanship (**local or foreign**), with local craftsmanship fees varying (e.g., **1 dinar, 3 dinars**, etc.).

Regarding accounting, employees are paid directly by management monthly, with detailed records maintained by the accountant. Revenue is audited monthly by reviewing sales and purchases, calculating net profit or loss, and reporting the results to the accountant. Additionally.Each certain period the manager can see the report of the sales to determine the net profit by this period. The Management oversees the company's financial matters, and general expenses.

responsible some queries:

1. Get a list of all jewelry items in the store.
2. Find all jewelry items that cost more than $500.
3. List all orders placed in the last 30 days.
4. Count the total number of customers.
5. List all orders that include at least one piece of diamond jewelry.
6. Find customers who have spent more than $1,000 in total.
7. List the top 5 best-selling jewelry items.
8. Find the most commonly used karate in jewelry.
9. List all orders that contain more than 3 items.
10. Find the Highest Rated Products.
11. Display Customer Reviews on Product Pages.
12. Apply Discount to Checkout.
13. Retrieve Employee Salaries for a Specific Month.
14. Generate a Monthly Financial Report.

Project Technology:

For our **Project Technology**, we will be developing a web application consisting of two main parts: the **front end** and the **back end**.

For the **front end**, we will use **HTML, CSS, and JavaScript**, along with libraries such as **Bootstrap**.

For the **back end**, we will use **Python**. To handle API endpoints and communication, we will use **FastAPI**, and for the database, we will use **MySQL**, along with the necessary libraries to connect the front end to the back end and the back end to the database.

some of these are temporarily it may change with time if anything needs a change.

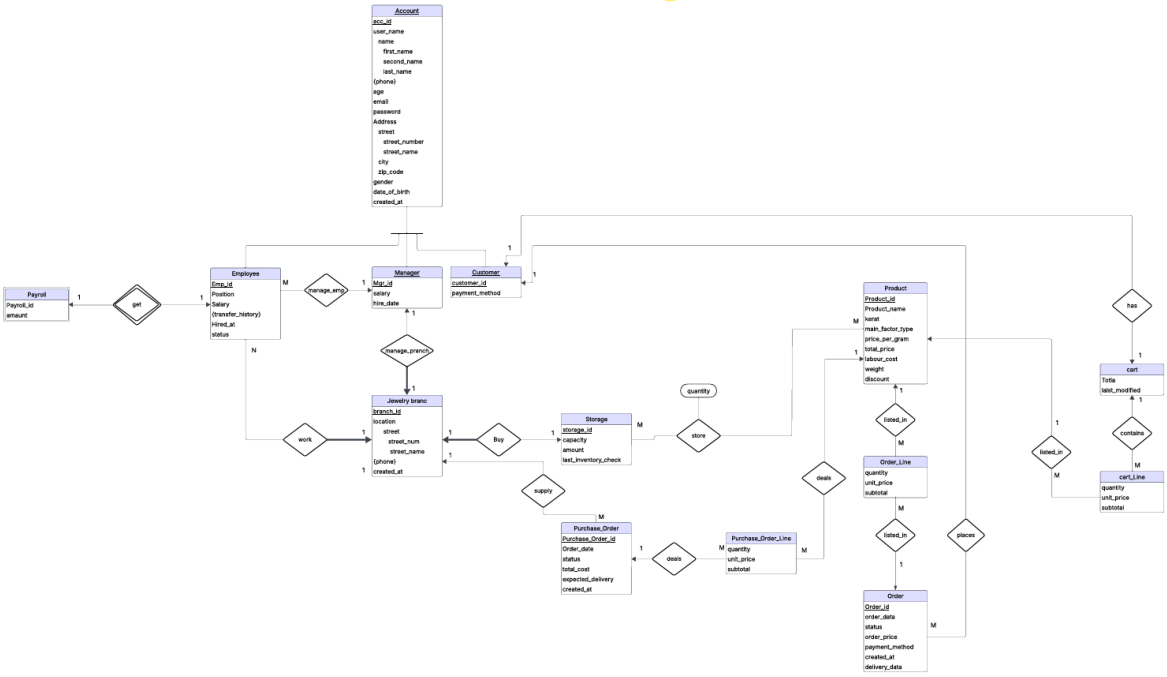
Phase 2:

- For Jewelry branch is identified by Branch ID, location with street number and street name, phone, and the date created.
- Each branch can have multiple phone numbers.
- Employee entity is defined with Emp ID, employee position, the date employee hired, and the status) and all other account properties. The employee can work in at least one branch.
- For Manager entity there are Manager ID, salary, date hired and all account properties. The Manager must manage all branches.
- To store all staff there must be a storage that is identified with ID, the capacity, amount of staff stored, and last time this inventory checked. The storage must be for one branch.
- For the customer role that is define with the ID,points, and all other account properties.
- Customer, Manager, Employee must be registered for an account with ID, username, name, phone, email, password, address (city, street number, street name, zip code), date the account created, and gender.
- All products are registered in Product entity with own serial number, name, product_type, kerat, main_factor_type, price_per_gram, total_price, labour_cost, weight.
- Customer can add products to the cart, and customer can only have one cart with cart_id, customer_id,order_status, total_price, last_modified, payment_method.
- For the cart line all products in the same cart are located there and each product will have its own key connected with the cart, and has attributes cart_item_id, cart_id, product_id, quantity, unit_price, subtotal.
- All orders replaced by customer is known by its ID, date, status (pending, cancelled, processing,Delivered), total price, payment method used
- Each order is exported to sales entity to have an ID, weight sold, whether it's (Gold, stainless steel, or Diamond). Unit price, total price, payment method, date when order is

created. Each selling operation must have an invoice with total price, date issued, and whether it is achieved or not.

- The order_line entity to combine all orders for the customer, and has a order_id, product_id, quantity, subtotal, unit_price, rating.
- There must be a staff supplier who known with ID, name, phone, email, address (street name, street num, city, zip code).
- Each employee must have a certain payroll which is stored with amount each month, and bonus. The payroll is connected with employee and can not be exist without it.

- Branch can have many employees, and the employ can work in his main branch (branch employed).
- Customer can place many orders, and the certain order can belong to one customer.
- Customer can have only one cart at an order, and the Cart belog to one customer.
- Storage can have many products with their types and details, and each product can be stored in many storages.
- The Order can have many products, and the certain type of products can be included in many orders.
- Each branch can store all products in it, in one storage. And each storage is built for one branch.
- The Manager is responsible to manage All branch, and each branch in managed by one manager.
- Single Employee can have paid one time, and the payroll can be for one employee.
- Each branch can contact with many suppliers, each supplier can deal with one or more branches.
- Manager supervises many Employees, Each Employee is supervised by one manager


Account
acc_id
user_name
name
first_name
second_name
last_name
(phone)
age
email
password
Address
street
street_number
street_name
city
zip_code
gender
data_of_birth
created_at
Payroll
Payroll_id
amount
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Employee
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Position
Salary
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Mgr_id
salary
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Customer
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Buy
Storage
storage_id
capacity
amount
last_inventory_check
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Purchase_Order
Purchase_Order_id
Order_date
status
total_cost
expected_delivery
created_at
deals
Purchase_Order_Line
quantity
unit_price
subtotal
Product
Product_id
Product_name
karat
main_factor_type
price_per_gram
total_price
labour_cost
weight
discount
listed_in
deals
Order_Line
quantity
unit_price
subtotal
listed_in
places
Order
Order_id
order_data
status
order_price
payment_method
created_at
delivery_data
has
cart
Tota
last_modified
contains
cart_Line
quantity
unit_price
subtotal
listed_in

Normalization:

- **For the phone number, each account have multiple phone numbers, instead of adding them as an attribute which will not satisfy the 1NF we created a new table called phone_number and stored the phone_id, acc_id, phone_num then will give us an access to add more than one phone number for the same acc_id and satisfying 1NF.**
- **For the order_line since we have product_id, order_id as a primary key, we have a constrains that the table does not satisfy 2NF. And non-primary attribute are not fully dependent on the primary key then the table does not satisfy 2NF, to solve this we can divide the table with attributes quantities, subtotal, unitprice in a new table called product_price.**
- **For the store_product it has primary key of both product_id, storage_id but since all non primary key attributes are fully dependent on the primary key, then the table satisfies 2NF.**
- **In the order_line first it made to have the product details such as product_id, product_name but since the primary key is order_id, product_id then the product_name is partially dependent on the primary key then it does satisfy 2NF, and 3NF but when create a new table called product this make it satisfy both 3NF and 2NF.**
- **In employee table the manager name was added to define the manager but this will not satisfy the 3NF because manager_name depends on the manager_id which is not a primary key then only the manager_id added and manager_name is inserted to the manager table.**
- **For the product table the image path for the product was added to the product and image_path is fully dependent on the primary key but if the product have more than one image then it keeping it in the product will not satisfy 1NF, 2NF, 3NF then we created product_image table to satisfy them all.**