



Cairo University
Faculty of Engineering
CMPN202



CHS – Team #17

Introduction to Database Systems

Hypermarket System (HMS)

Project ER-Diagram Report

Team Number: #17

Team Members:

- | | |
|------------------------------|---------|
| - Khaled Gamal Sani El-Lethy | 1180264 |
| - Karim Ahmed Shawky | 1180484 |
| - Mohamed Khaled Shams | 1180552 |
| - Mariam Essam Mohamed | 1180027 |

Contact Info:

khaled.lethy00@eng-st.cu.edu.eg

kareem.ahmed00@eng-st.cu.edu.eg

Mohamed.Shams00@eng-st.cu.edu.eg

mariam.ghanem991@eng-st.cu.edu.eg

Problem Definition:

A Central Hypermarket wants to create a database that keeps track of its profit, employees working in each department, suppliers to the hypermarket and its customers. They currently use a manual system, but find it is hard to keep track of every single element sharing in the hypermarket. They would like to have the database loaded onto the computers present there for the use of managers of each department as well as the cashier employees for different transactions.

System Users:

1- IT Department

- a. Views different types of hired employees.
- b. Inserts a record for a new employee into the database after being hired.
- c. Modifies data of hired employees as salary and working hours.
- d. Deletes data of employees who are no longer working for the hypermarket.

2- Cashier

- a. Updates the sales of a product; modify the number of sales of a certain product.
- b. Inserts a new customer record into the database for new customers.
- c. Updates loyalty points to a customer record.
- d. Views the info of a customer for home delivery.

3- Inventory Department

- a. Views the current inventory of products. (to send for a product restock)
- b. Updates the inventory of products when products are taken from storage.
- c. Updates the inventory of products when a new shipment arrives from suppliers

4- Procurement Department

- a. Inserts new products into the database.
- b. Deletes products which the hypermarket no longer offers.

5- Sales Department

- a. Modifies the info of present products. (as the price of the product)
- b. Orders a query to calculate the net profit of the hypermarket per day.
- c. Orders a query to find the most/least sold products.
- d. Orders a query to calculate the profits or losses of a certain product.

Entities:

- 1- **IT Department Entity:** describes the staff that is responsible for the maintenance and upkeep of database in addition to all employee records' operations in the database
- 2- **Cashier:** describes the staff that deals that completes the transactions between hypermarket and its customers
- 3- **Procurement Department:** describes the staff that is responsible for finding and contacting suppliers to supply the products, the hypermarket sells.
- 4- **Sales Department:** describes the staff that sets selling price of products and conducts surveys from database data to further improve the market sales.
- 5- **Inventory Department:** describes the staff that deals with the extra products that are yet to be put on sale or just arrived.
- 6- **Supplier Entity:** represents the suppliers that the hypermarket deal with to obtain its products.
- 7- **Inventory Entity:** describes the quantity of products in the hypermarket storage or not yet up for sale.

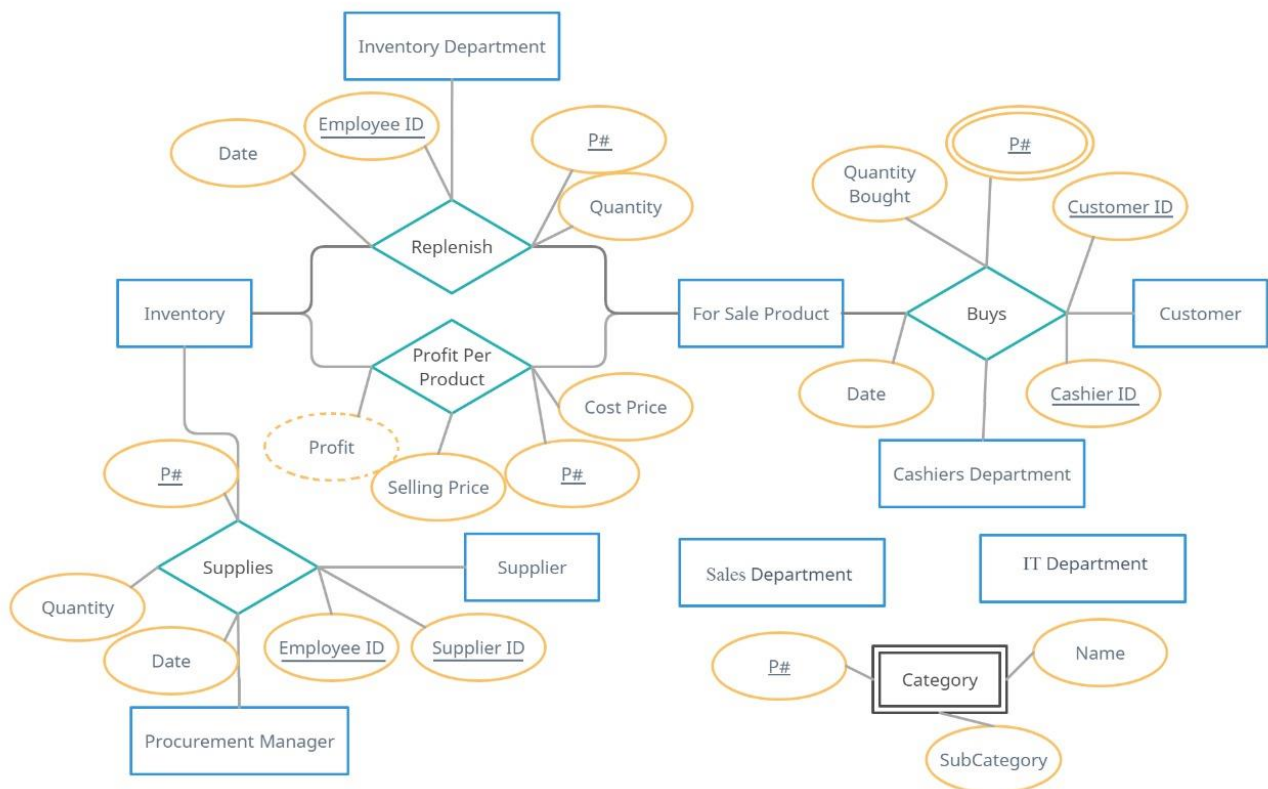
*****Note: these products are still not up for sale since Quantity in products entity describe quantity that is currently up for sale and the inventory quantity is called when the product quantity starts to drop.***
- 8- **For-sale Product Entity:** describes the current products that are up for sale.
- 9- **Customer Entity:** describes the customers that buy the products of the hypermarket.

10- **Category:** describes the different types of products the hypermarket sells.

Relationships:

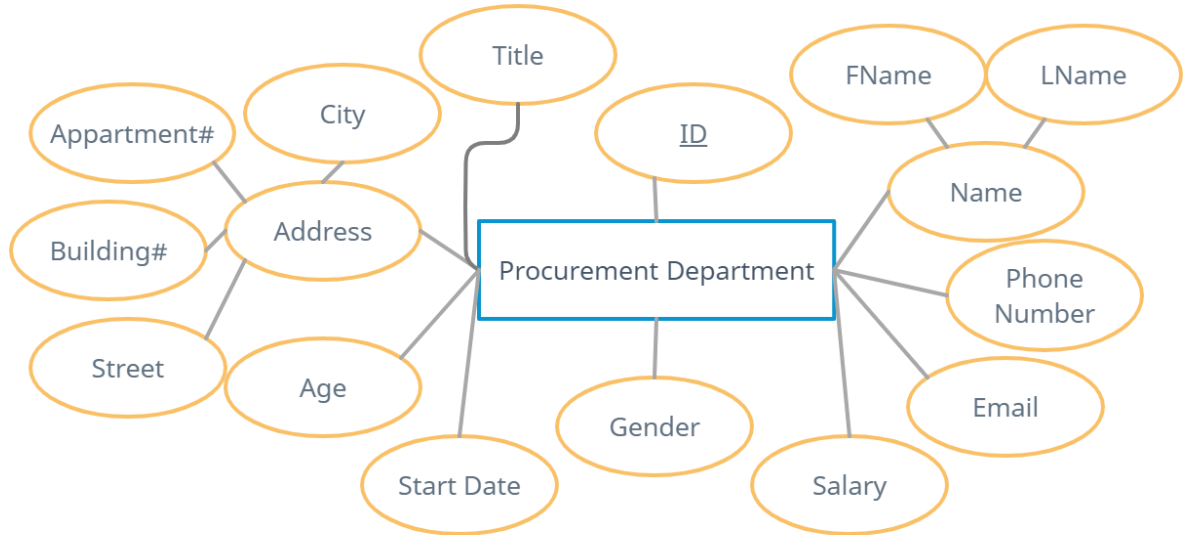
1. **Supplies:** describes the act of the suppliers supplying products to inventory of the hypermarket.
2. **Replenish Relationship:** describes the act of the inventory resupplying quantity of products that are up for sale.
3. **Profit per Product Relationship:** describes the profit made by the hypermarket when the sale of one of its products is completed. It will be used with bought to calculate the total profit of hypermarket.
4. **Buys Relationship:** describes the act of the customer purchasing the products and what quantities of products where purchased.

ER-Diagram:

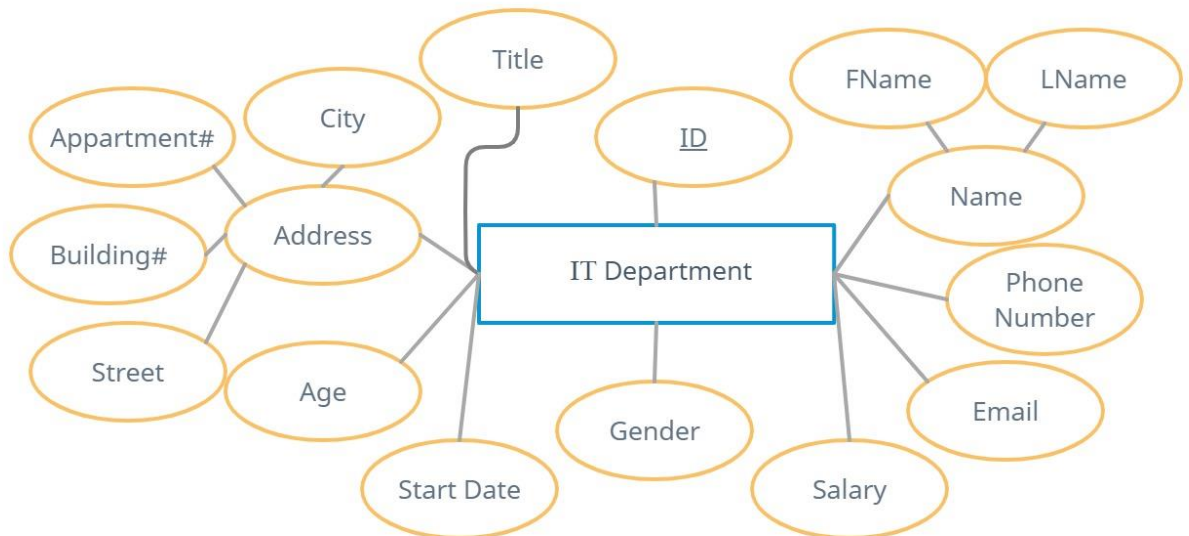


Entities:

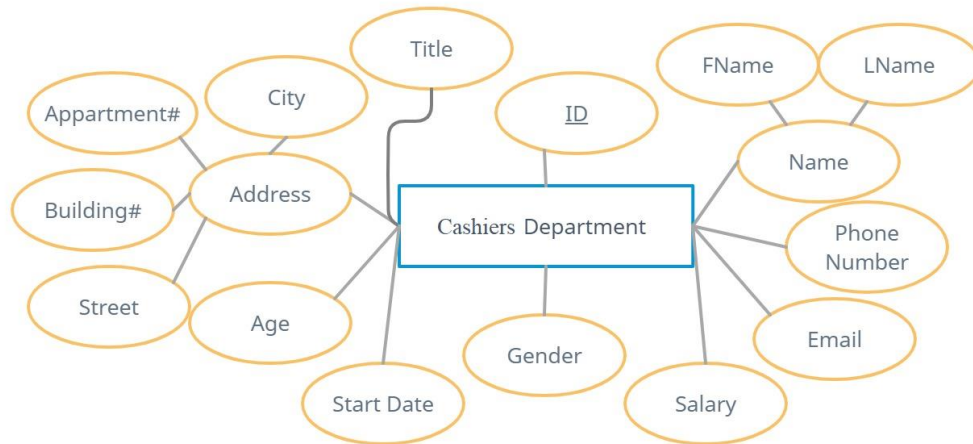
1- Procurement Department Entity:



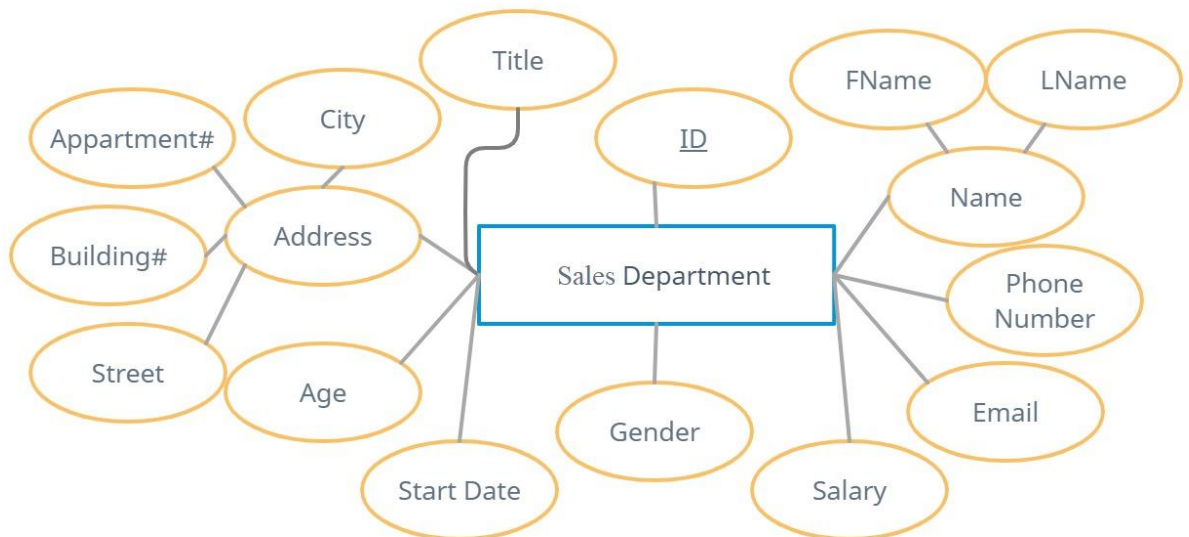
2- IT Department:



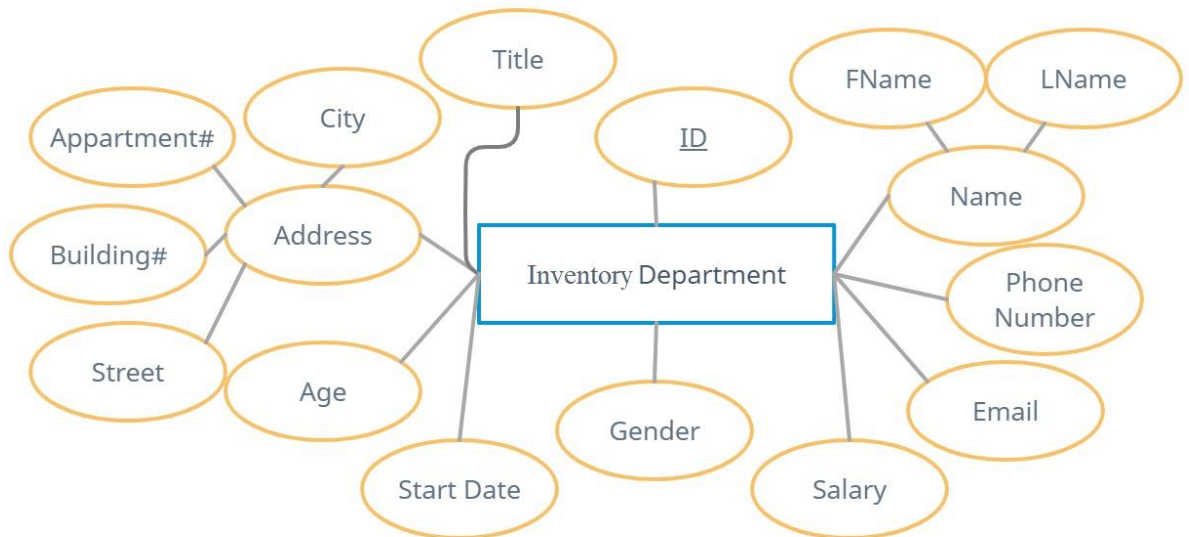
3- Cashiers:



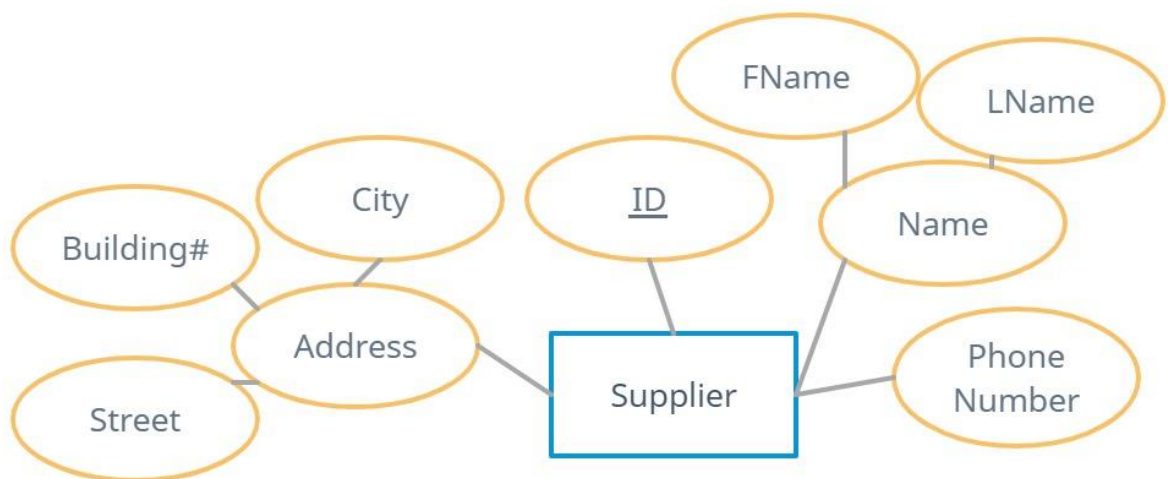
4- Sales Department:



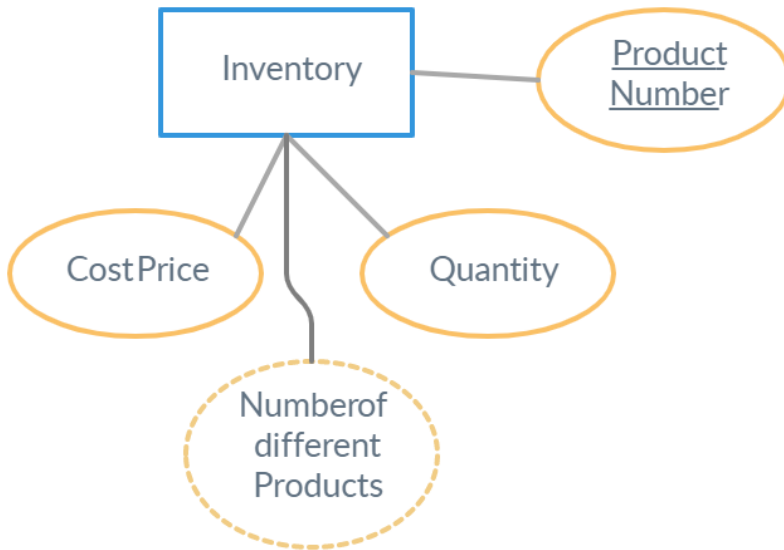
5- Inventory Department:



6- Supplier Entity:



7- Inventory Entity:



8- On sale Product Entity:



9- Customer Entity:

