

CS 425 - COURSE PROJECT

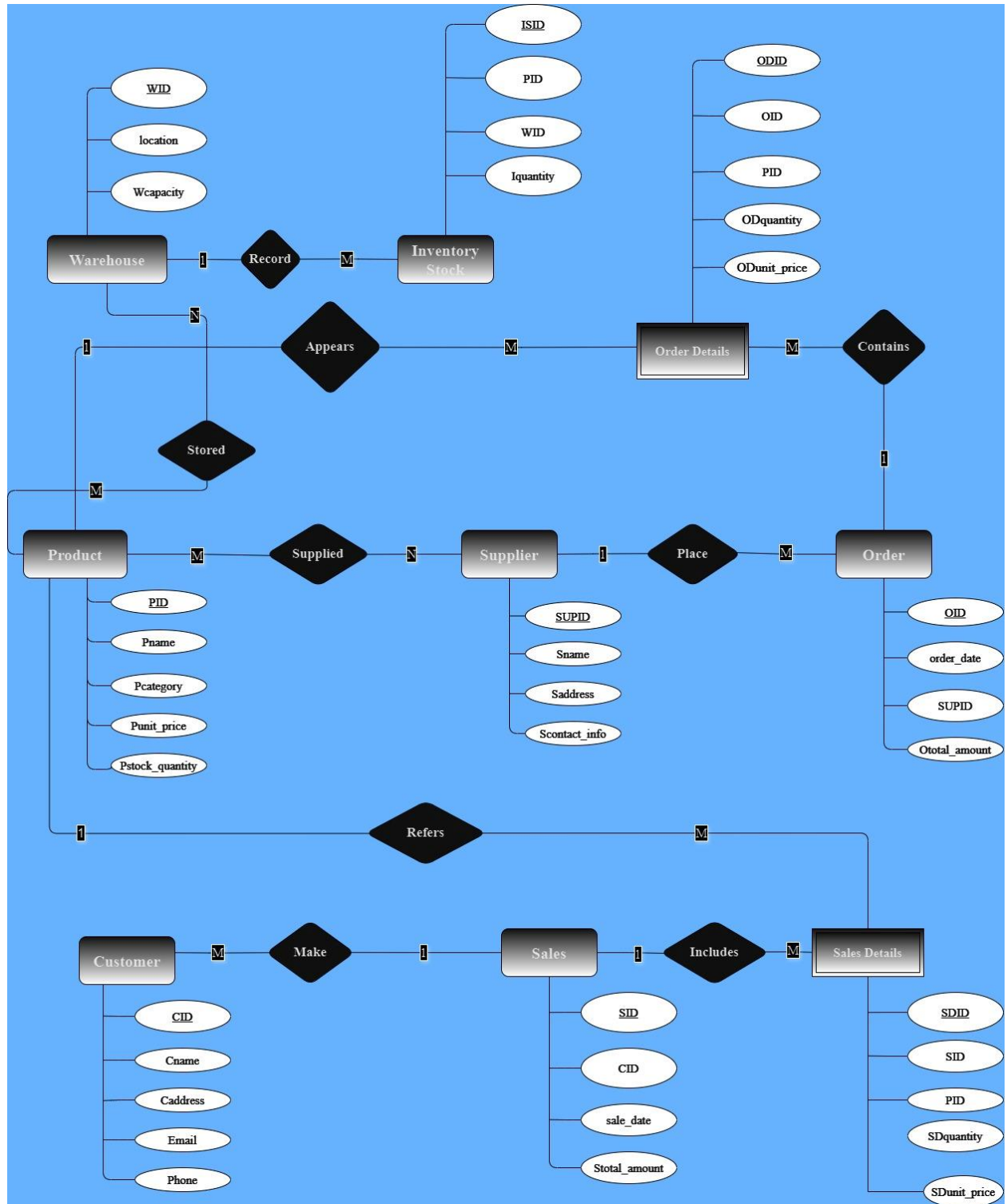
DATABASE ORGANIZATION: FALL 2024

1st Deliverable (Design a relational database)

Inventory Management System -

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Entity Relationship Diagram (ERD):



Abbreviations:

PID – Product ID

Pname – Product name

Pcategory – Product category

Punit_price – Product unit price

Pstock_quantity – Product stock quantity

WID – Warehouse ID

Wcapacity - Warehouse Capacity

ISID – Inventory Stock ID

Iquantity – Inventory Stock quantity

ODID – Order Details ID

ODquantity – Order details quantity

ODunit_price – Order details unit price

SUPID – Supplier ID

Sname – Supplier name

Saddress – Supplier Address

Scontact_info – Supplier contacting information

OID – Order ID

Ototal_amount – Order total amount

CID – Customer ID

Cname – Customer name

Caddress – Customer Address

SID – Sales ID

Stotal_amount – Sales total amount

SDID – Sales details ID

SDquantity – Sales details quantity

SDunit_price – Sales Details Unit price

ERD Representation: Relation schema (showing relations/entities and attributes –

- Product (PID, Pname, Pcategory, Punit_price, Pstock_quantity)
- Supplier (SID, Sname, Saddress, Scontact_info)
- Order (OID, order_date, SUPID, Ototal_amount)
- Order Details (ODID, OID, PID, ODquantity, ODunit_price)
- Customer (CID, Cname, Caddress, Email, Phone)
- Sale (SID, CID, sale_date, Stotal_amount)
- Sale Details (SDID, SID, PID, SDquantity)
- Warehouse (WID, location, Wcapacity)
- Inventory Stock (ISID, PID, WID, Iquantity)

Business Rules

Here are the business rules governing the interactions and constraints of the system:

- A product can be supplied by multiple suppliers, and each supplier can supply multiple products.
- Each order must contain at least one product and must be associated with one supplier.
- A customer can place multiple sales, but each sale belongs to only one customer.
- A product can be stored in multiple warehouses, and each warehouse can store multiple products.
- A sale can contain multiple products, and each product can be part of multiple sales.
- The total amount for orders and sales is computed based on the product price and the quantity ordered or sold.
- Stock levels for each product must be updated after every sale or order.
- A warehouse can contain multiple products, and each product's quantity is tracked in the inventory.

Use Case Scenarios

1. **Ordering from Suppliers:** A purchasing manager creates an order for products from a supplier. The order includes details such as product quantities and unit prices. The system updates the inventory levels upon receiving the products.
2. **Selling to Customers:** A sales representative creates a sales transaction with customers, selecting products and specifying quantities. The sale is recorded, and the inventory stock is updated.
3. **Tracking Inventory:** The warehouse manager monitors stock levels in different warehouses. When stock levels are low, the system triggers orders to suppliers.
4. **Viewing Customer Purchase History:** A customer service representative views a customer's purchase history, enabling better service and personalized promotions.