UNIVERSITY OF BARISHAL

EDGE BU CSE Digital Skills Training

Project TOPIC: **Grocery Store Management System**

COURSE TITLE: **Database**

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Introduction:

An Entity-Relationship (ER) Diagram is a graphical representation that illustrates the relationships between entities (real-world objects or concepts) in a database system. It provides a visual blueprint for the database structure, making it easier to understand and design. Steps of Drawing ERD-

1. **Identify the Entities Required**
2. **Identify the Attributes and Primary key for each Entity**
3. **Identify the Relationship needed**
4. **Identify the Cardinality Ratio and Participation**
5. **Draw the Diagram**

Designing a database for **Grocery Store Management System** consider the following requirements-

Step-1&2: Identifying the Entities Required, the Attributes and Primary key for each Entity-

1. product (**product_id**, product_name, description, unit_price, quantity)
2. customer (**customer_id**, customer_name, phone, address)
3. supplier (**supplier_id**, supplier_name, address, phone, email)
4. employee (**employee_id**, employee_name, job_title, joining_date, phone, address)
5. bill (**bill_id**, quantity, sale_date, total_bill)
6. branch (**branch_id**, phone, address)
7. stockout_products (**stockout_products_id**, required_quantity)
8. dateexpired_products (**dateexpired_products_id**, expiry_date)
9. online_orders (**Online_orders_id**, quantity, order_date)
10. delivery_boy (**delivery_boy_id**, name, phone)
11. expenses (**expenses_id**, electricity_bill, water_bill, salary)
12. shift (**shift_id**, duty_time, employee_id)

Step-3: Identifying the Relationship needed-

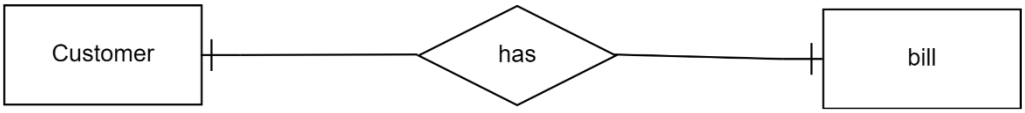
1. Product-belongs to- supplier
2. Customer-has- bill
3. Product-has- bill
4. Product-has- stockout_products
5. Product-has- dateexpired_products

6. Product-has- online_orders
7. Employee- assigned to- shift
8. Employee- assigned to- branch
9. Expenses-belongs to- branch

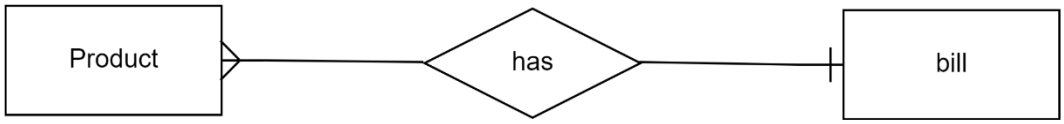
Step-4: Identifying the Cardinality Ratio and Participation-

1. Product-belongs to- supplier

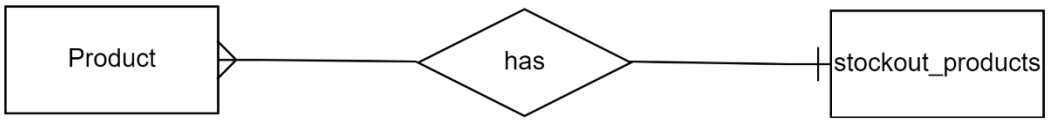
2. Customer-has- bill



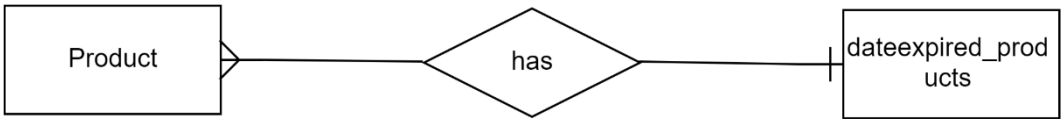
3. Product-has- bill



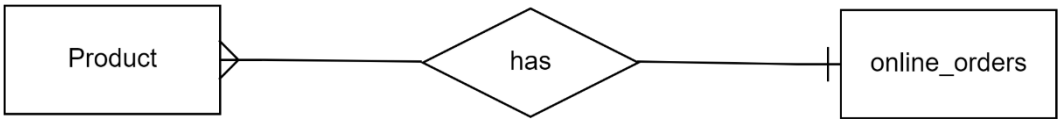
4. Product-has- stockout_products



5. Product-has- dateexpired_products



6. Product-has- online_orders

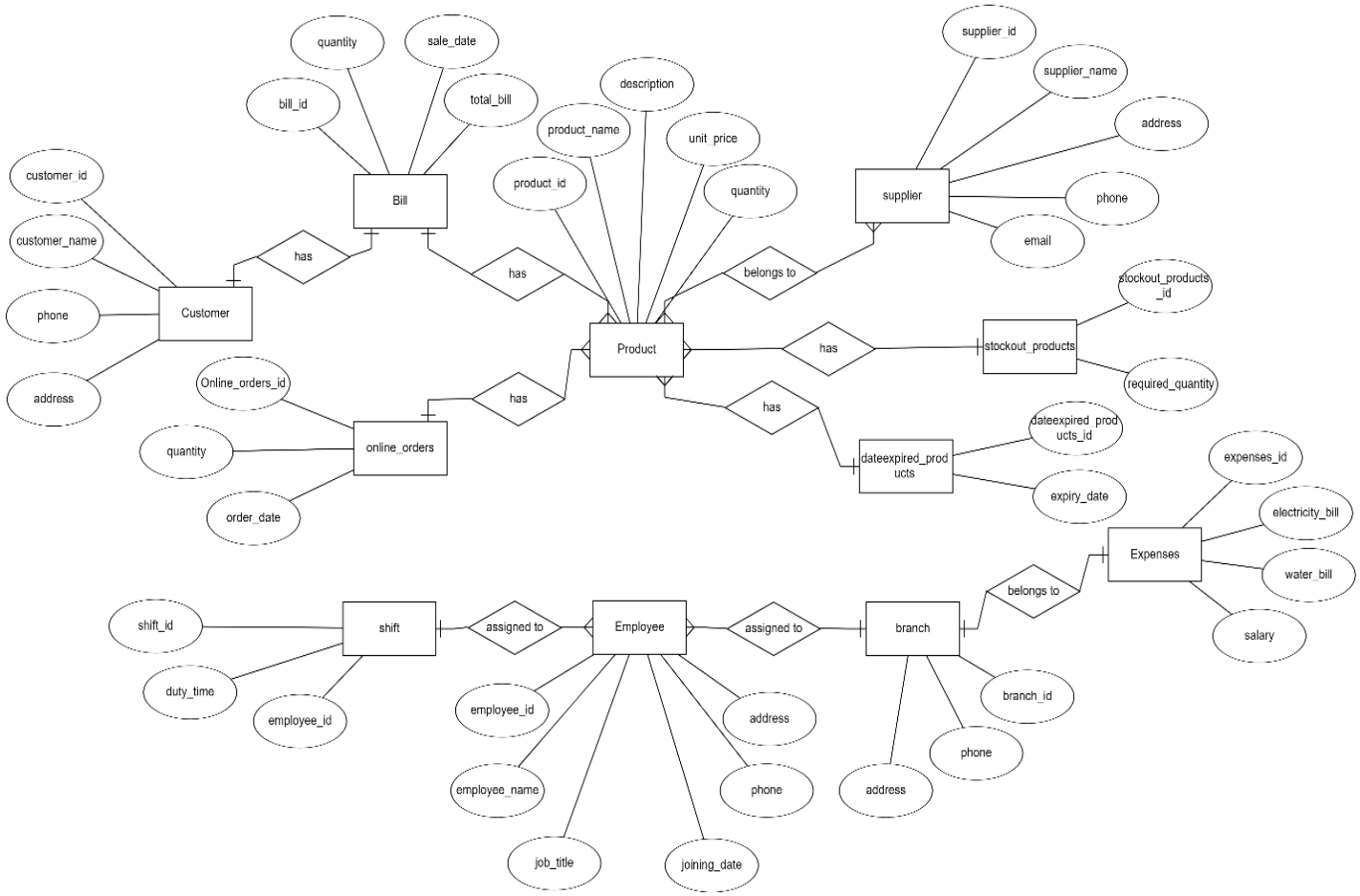


7. Employee- assigned to- shift

8. Employee- assigned to- branch

9. Expenses-belongs to- branch

Step-5: Drawing the Diagram-



Reduction to database schema-

1. product (**product_id**, product_name, description, unit_price, quantity)
2. customer (**customer_id**, customer_name, phone, address)
3. supplier (**supplier_id**, supplier_name, address, phone, email, product_id)
4. product_ supplier (ps_id, product_id, supplier_id)
5. employee (**employee_id**, employee_name, job_title, joining_date, phone, address, branch_id)
6. bill (**bill_id**, quantity, sale_date, total_bill, product_id, customer_id)
7. branch (**branch_id**, phone, address)
8. stockout_products (**stockout_products_id**, product_id, required_quantity)

9. dateexpired_products (**dateexpired_products_id**, product_id, expiry_date)
10. online_orders (**Online_orders_id**, quantity, order_date, product_id)
11. delivery_boy (**delivery_boy_id**, name, phone)
12. expenses (**expenses_id**, electricity_bill, water_bill, salary, branch_id)
13. shift (**shift_id**, duty_time, employee_id, branch_id)

Schema-