

Lab-7(b) ER to Relational Mapping

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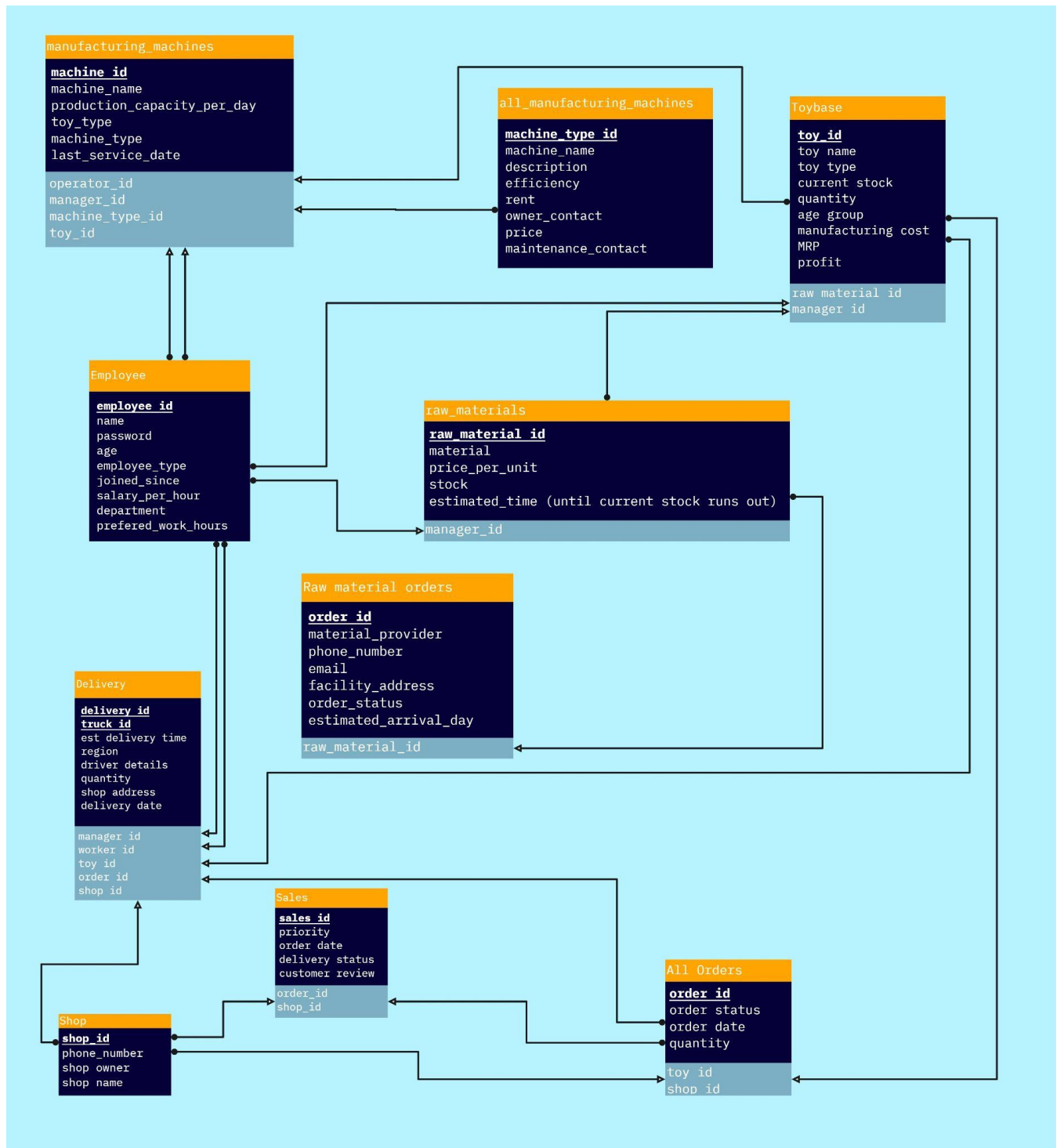
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Group 8, Section 8

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1. Mapping E-R Model to Relational Model

a. Relational Model



Underlined attributes - Primary key || Attributes in blue part - Foreign key

b. Relational schemas

- 1) Sales(**sales_id**, priority_order, date, delivery_status, customer_review, order_id, shop_id)
- 2) All Orders(**order_id**, order_status, order_date, quantity, toy_id, shop_id)
- 3) Shop(**shop_id**, phone_number, shop_owner, shop_name)
- 4) all_manufacturing_machines(**machine_type_id**, machine_name, description, efficiency, rent, owner_contact, price, maintenance_contact)
- 5) Manufacturing_machines(**machine_id**, machine_name, production_capacity_per_day, toy_type, machine_type, last_service_date, operator_id, manager_id, machine_type_id, toy_id)
- 6) Toybase(**toy_id**, toy_name, toy_type, current_stock, raw_mat_id[], quantity[], age_group, manufacturing_cost, MRP, profit)
- 7) Delivery(**delivery_id**, truck id, est delivery time, region, driver, details, quantity, shop address, delivery, date, manager id, worker id, toy id, order id, shop id)
- 8) Raw material orders(**order_id**, material_provider, phone_number, email, facility_address, order_status, estimated_arrival_day, raw_material_id)
- 9) raw_materials(**raw_material_id** material price_per_unit stock estimated_time until current stock runs out, manager_id, worker_id)
- 10) Employee(**employee_id**, name, password, age, employee_type, joined_since, salary_per_hour, department, preferred_work_hours)

2.DDL script

```
set search_path to toymanf;

-- all manufacturing machines
CREATE TABLE IF NOT EXISTS toymanf.all_manufacturing_machines
(
    machine_type_id bigint NOT NULL,
    efficiency bigint,
    rent bigint,
    price bigint,
    Machine_name "char"[],
    description "char"[],
    owner_contact "char"[],
    Maintenance_contact "char",
    PRIMARY KEY (machine_type_id)
);

-- employees
CREATE TABLE IF NOT EXISTS toymanf.employee
(
    employee_id bigint,
    emplyee_type "char"[],
    preferred_work_hours time with time zone,
    department "char"[],
    name "char"[],
    password "char"[],
    joined_since date,
    current_per_hour_salary bigint,
    PRIMARY KEY (employee_id)
);

-- toy base
CREATE TABLE IF NOT EXISTS toymanf.toy_base
(
    toy_id bigint,
    machine_type "char"[],
    production_capacity_per_day bigint,
    toy_type "char"[],
    toy_name "char"[],
    current_stock bigint,
    required_raw_mat_id bigint[],
    recipe_quantity bigint[],
    CONSTRAINT toy_pkey PRIMARY KEY (toy_id)
);

-- raw materials
CREATE TABLE IF NOT EXISTS toymanf.raw_material
(
    raw_material_id bigint,
    price_per_unit bigint,
    material_name "char"[],
    stock bigint,
    estimated_time_until_stock_runs_out date,
    manager_id bigint,
    department_name "char"[],
    CONSTRAINT raw_mat_pkey PRIMARY KEY (raw_material_id),
    UNIQUE (raw_material_id)
    INCLUDE(raw_material_id),
    CONSTRAINT manager_employee_fkey FOREIGN KEY (manager_id)
```

```

REFERENCES toymanf.employee (employee_id) MATCH SIMPLE
ON UPDATE CASCADE
ON DELETE CASCADE
NOT VALID
);

-- individual manufacturing machine
CREATE TABLE IF NOT EXISTS toymanf.manufacturin_machine
(
    machine_id bigint,
    machine_type_id bigint,
    toy_id bigint,
    toy_type "char"[],
    machine_name "char"[],
    production_capacity_per_day bigint,
    machine_type "char"[],
    last_service_date date,
    manager_id bigint,
    operator_id bigint,
    CONSTRAINT machine_pkey PRIMARY KEY (machine_id),
    CONSTRAINT toy_base_fkey FOREIGN KEY (toy_id)
        REFERENCES toymanf.toy_base (toy_id) MATCH SIMPLE
        ON UPDATE CASCADE
        ON DELETE CASCADE
        NOT VALID,
    CONSTRAINT machine_type_fkey FOREIGN KEY (machine_type_id)
        REFERENCES toymanf.all_manufacturing_machines (machine_type_id) MATCH SIMPLE
        ON UPDATE CASCADE
        ON DELETE CASCADE
        NOT VALID,
    CONSTRAINT manager_fkey FOREIGN KEY (manager_id)
        REFERENCES toymanf.employee (employee_id) MATCH SIMPLE
        ON UPDATE CASCADE
        ON DELETE CASCADE
        NOT VALID,
    CONSTRAINT operator_fkey FOREIGN KEY (operator_id)
        REFERENCES toymanf.employee (employee_id) MATCH SIMPLE
        ON UPDATE CASCADE
        ON DELETE CASCADE
        NOT VALID
);

-- raw material orders
CREATE TABLE IF NOT EXISTS toymanf.raw_material_orders
(
    order_id bigint,
    raw_material_id bigint,
    estimated_arrival date,
    recived boolean,
    provider_name "char"[],
    phone_number bigint,
    email "char"[],
    address "char"[],
    CONSTRAINT order_pkey PRIMARY KEY (order_id),
    CONSTRAINT raw_mat_fkey FOREIGN KEY (raw_material_id)
        REFERENCES toymanf.raw_material (raw_material_id) MATCH SIMPLE
        ON UPDATE NO ACTION
        ON DELETE NO ACTION
        NOT VALID
);

-- shop

```

```

CREATE TABLE IF NOT EXISTS toymanf."shop"
(
    shop_id bigint NOT NULL,
    phone_number text COLLATE pg_catalog."default",
    shop_owner text COLLATE pg_catalog."default",
    shop_name text COLLATE pg_catalog."default",
    CONSTRAINT "Shop_pkey" PRIMARY KEY (shop_id)
);

-- all orders
CREATE TABLE IF NOT EXISTS toymanf.all_orders
(
    order_id bigint NOT NULL,
    order_status boolean NOT NULL,
    order_date date,
    quantity bigint,
    toy_id bigint,
    shop_id bigint,
    CONSTRAINT all_orders_pkey PRIMARY KEY (order_id),
    CONSTRAINT shop_id FOREIGN KEY (shop_id)
        REFERENCES toymanf.shop (shop_id) MATCH SIMPLE
        ON UPDATE NO ACTION
        ON DELETE NO ACTION,
    CONSTRAINT toy_id FOREIGN KEY (toy_id)
        REFERENCES toymanf.toy_base (toy_id) MATCH SIMPLE
        ON UPDATE NO ACTION
        ON DELETE NO ACTION
);

-- sales
CREATE TABLE IF NOT EXISTS toymanf.sales
(
    sales_id bigint NOT NULL,
    priority bigint,
    delivery_status boolean,
    customer_review text COLLATE pg_catalog."default",
    order_id bigint,
    shop_id bigint,
    order_date date,
    CONSTRAINT order_id FOREIGN KEY (order_id)
        REFERENCES toymanf.all_orders (order_id) MATCH SIMPLE
        ON UPDATE NO ACTION
        ON DELETE NO ACTION,
    CONSTRAINT shop_id FOREIGN KEY (shop_id)
        REFERENCES toymanf.shop (shop_id) MATCH SIMPLE
        ON UPDATE NO ACTION
        ON DELETE NO ACTION
);

-- delivery
CREATE TABLE IF NOT EXISTS toymanf.delivery
(
    delivery_id bigint NOT NULL,
    truck_id bigint NOT NULL,
    est_delivery_time date,
    region text COLLATE pg_catalog."default",
    driver_contact text COLLATE pg_catalog."default",
    quantity text[] COLLATE pg_catalog."default",
    shop_address text[] COLLATE pg_catalog."default",
    delivery_date date[],
    toy_id bigint,
    order_id bigint,

```

```
shop_id bigint,  
CONSTRAINT delivery_pkey PRIMARY KEY (delivery_id, truck_id),  
CONSTRAINT order_id FOREIGN KEY (order_id)  
  REFERENCES toymanf.all_orders (order_id) MATCH SIMPLE  
  ON UPDATE NO ACTION  
  ON DELETE NO ACTION,  
CONSTRAINT shop_id FOREIGN KEY (shop_id)  
  REFERENCES toymanf.shop (shop_id) MATCH SIMPLE  
  ON UPDATE NO ACTION  
  ON DELETE NO ACTION,  
CONSTRAINT toy_id FOREIGN KEY (toy_id)  
  REFERENCES toymanf.toy_base (toy_id) MATCH SIMPLE  
  ON UPDATE NO ACTION  
  ON DELETE NO ACTION  
);
```

On Running this script, 10 tables are created. Name of the schema has to be “toymanf”.