The Mega Store Database

1. Overview

This document describes a database that a Mega Store (MS) could use to record customers' orders. Most assignments in this course will be based on this database, so please study it carefully.

2. The Mega Store Management System

You are a small consulting company specializing in database development. You have just been awarded a contract to develop a database application system for a small retail store called Mega Store (MS).

The Maga Store serves the entire surrounding community and sells a variety of products. Each product is classified as being in a category such as Housewares, Pet Supplies, or Sporting Goods. The products are stored in different warehouses; a product may be stored in more than one warehouse.

Business Rules:

- Customers can purchase products from the categories.
- Customers' purchases are stored as orders in the database.
- Each product must be on a category.
- Each category may include one or more products.
- Each customer may place one or more orders.
- Each order must be placed by a customer.
- Each order must include one or more products.
- Each product may be part of one or more orders.

Assume that the Mega Store designs a database with the following tables:

1. **PRODUCTS**: The PRODUCTS table contains a list of the items that can be sold. To identify each item, there is a product ID, product name, description, category ID, color, and list price.
2. **CUSTOMERS**: The CUSTOMERS table is a list of customers. For each customer, we store a customer ID (unique), customer name (last name, first name), and credit limit.
3. **CUST_ADDRESS:** The CUST_ADDRESS table is a list of addresses where customers reside. For each customer, we store an address ID (unique), city, zip code, and customer ID.
4. **CATEGORIES**: The CATEGORIES table is used to limit the values that can be entered as a category for a product. Each product is classified as being in a category such as Housewares, Pet Supplies, and Sporting Goods.
5. **ORDERS**: The ORDERS table contains information about the orders of all customers. A customer can place several orders. For each order, we store the order ID (unique), customer ID, shipping mode, order status, and date of order.
6. **ORDER_DETAILS**: The ORDER_DETAILS table contains the details of each order. A customer may order many different items (and several units of each item) in the same order. No item is ordered twice in the same order. Instead, the quantity of each item ordered is listed along with the selling price of each item.

7. **WAREHOUSE**: The WAREHOUSE table stores the location of different warehouses. Products are stored in different warehouses. A product may be stored in more than one warehouse. The loc_id for the warehouses is associated with the LOCATIONS table.
8. **LOCATIONS**: The LOCATIONS table stores the locations for the company sites. We store the address information for each location.
9. **INVENTORY**: The INVENTORY table keeps track of how many of each item we store at each warehouse.
10. **CREDIT_RATING**: The CREDIT_RATING table is unusual in that it is not directly related to any other table. This includes a descriptive term and a lower and upper limit. If a customer has a credit rating between 5001 and 10000, we will say that this customer has an "Excellent" rating.
11. **SHIPPING_MODE**: The SHIPPING_MODE table is like the product categories table. It lists the various types of shipping modes we use. Each order is limited to one of these shipping modes.
12. **JOBS**: The JOBS table is a list of jobs. For jobs, the database keeps the job ID, job title, minimum salary, and maximum salary stored in the JOBS table.
13. **EMPLOYEES**: The EMPLOYEES table is a list of working employees. The store keeps the employee ID, first name, last name, email, phone, hire date, job ID, salary, commission, manager ID, department ID, and bonus of its employees in the EMPLOYEES table.
14. **DEPARTMENTS**: The DEPARTMENTS table is a list of departments at the store. For each department, we store a department name and a single location in the DEPARTMENTS table.

3. SCHEMA

LOCATIONS (loc_id , loc_postal_code, loc_street_address, loc_city, loc_state_province , loc_country_id, loc_type)

DEPARTMENTS (dept_id, dept_name, manager_id, loc_id)

JOBS (job_id, job_title, min_salary, max_salary)

EMPLOYEES (emp_id, last_name, first_name, email , phone_number, hire_date, job_id, salary, commission_pct, manager_id, dept_id, bonus)

CATEGORIES (catg_id, catg_desc)

PRODUCTS (prod_id, prod_name, prod_desc, prod_list_price, catg_id)

WAREHOUSES (warehouse_id, loc_id)

INVENTORY (prod_id, warehouse_id, quantity_on_hand)

CREDIT_RATINGS (low_limit, high_limit , rating)

CUSTOMERS (cust_id, last_name, first_name, credit_limit)

CUST_ADDRESS (id, address_line_1, address_line_2, city, zip_code, customer_id)

SHIPPING_MODES (shipping_mode_id, shipping_mode_desc)

ORDERS (ord_id, ord_date, cust_id, ord_mode, shipping_mode, ord_status, sales_rep_id)

ORDER_DETAILS (ord_id, line_item_id, prod_id , quoted_price, quantity_ordered)

4. Tables for the Mega Store Database

Table Name	LOCATIONS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	loc_id	VARCHAR	12
	loc_postal_code	VARCHAR	25
	loc_street_address	VARCHAR	25
	loc_city	VARCHAR	25
	loc_state_province	VARCHAR	25
	loc_country_id	CHAR	2
	loc_type	VARCHAR	25

Table Name	DEPARTMENTS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	dept_id	DECIMAL	4,0
	manager_id	DECIMAL	6,0
	dept_name	VARCHAR	30
fk	loc_id	INT	

Table Name	JOBS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	job_id	VARCHAR	10
	job_title	VARCHAR	35
	min_salary	DECIMAL	6,0
	max_salary	DECIMAL	6,0

Table Name	EMPLOYEES		
Key Type	**Column Name**	**Data Type**	**Size**
pk	emp_id	INT	
	last_name	VARCHAR	25
	first_name	VARCHAR	20
	email	VARCHAR	25
	phone_number	VARCHAR	20
	commission_pct	DECIMAL	2,2
	manager_id	INT	
	dept_id	DECIMAL	4,0
	hire_date	DATE	
	salary	DECIMAL	8,2
fk	job_id	VARCHAR	10
	bonus	VARCHAR	5

Table Name	CATEGORIES		
Key Type	**Column Name**	**Data Type**	**Size**
pk	catg_id	VARCHAR	6
	catg_desc	VARCHAR	25

Table Name	PRODUCTS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	prod_id	INT	4
	prod_name	VARCHAR	25
	prod_desc	VARCHAR	50
	prod_list_price	DECIMAL	6,2
fk	catg_id	VARCHAR	6

Table Name	WAREHOUSES		
Key Type	**Column Name**	**Data Type**	**Size**
pk	warehouse_id	INT	
fk	loc_id	INT	

Table Name	INVENTORY		
Key Type	**Column Name**	**Data Type**	**Size**
pk	prod_id	INT	
fk	warehouse_id	INT	
	quantity_on_hand	INT	

Table Name	CREDIT_RATINGS		
Key Type	**Column Name**	**Data Type**	**Size**
	low_limit	INT	
	high_limit	INT	
	rating	VARCHAR	15

Table Name	SHIPPING_MODES		
Key Type	**Column Name**	**Data Type**	**Size**
pk	shipping_mode_id	CHAR	6
	shipping_mode_desc	VARCHAR	25

Table Name	CUSTOMERS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	cust_id	INT	
	last_name	VARCHAR	25
	first_name	VARCHAR	25
	credit_limit	INT	

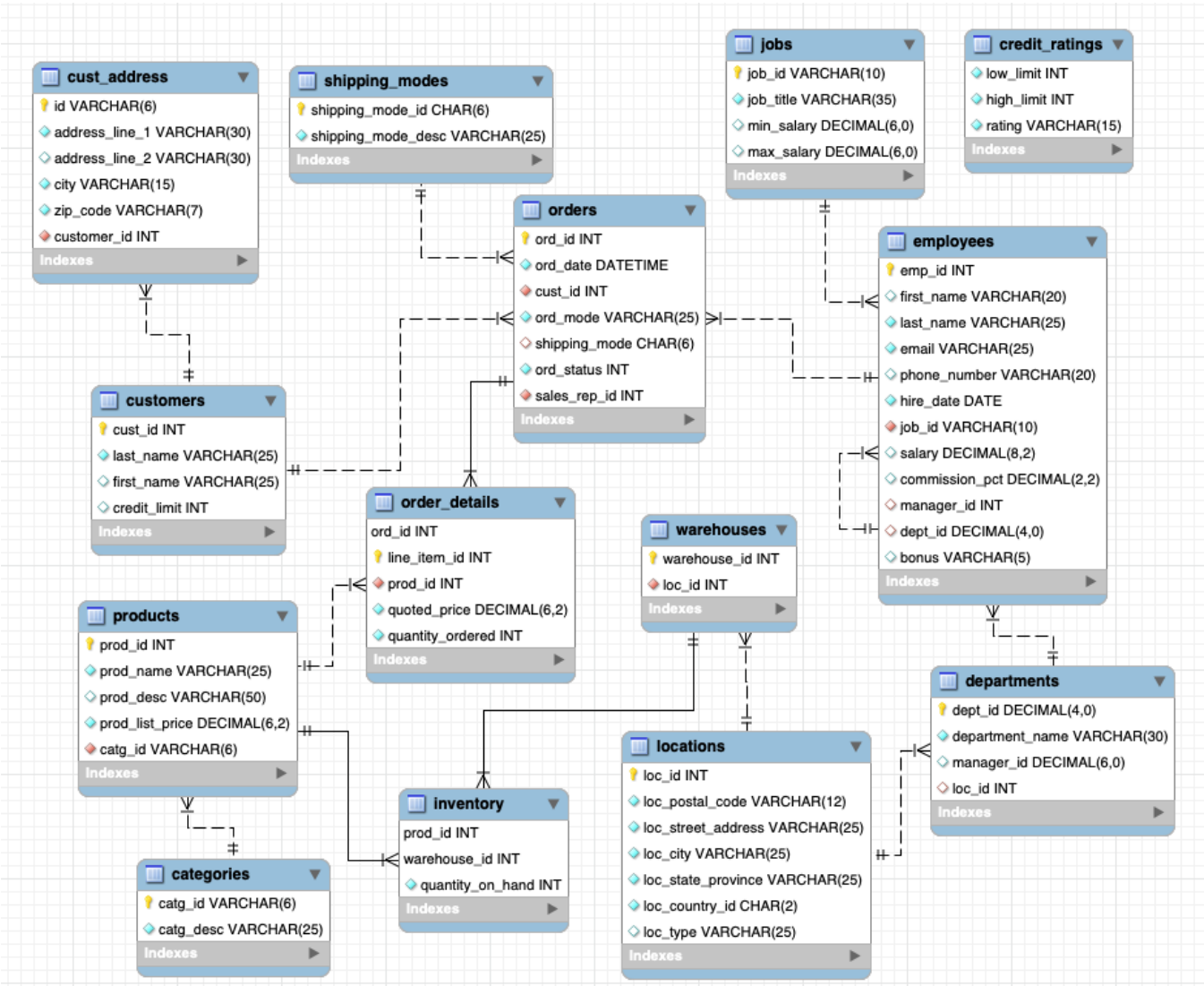
Table Name	CUST_ADDRESS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	id	VARCHAR	6
	address_line_1	VARCHAR	30
	address_line_2	VARCHAR	30
	city	VARCHAR	15
	zip_code	VARCHAR	7
fk	customer_id	INT	

Table Name	ORDERS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	ord_id	INT	
	ord_date	DATETIME	
fk	cust_id	INT	
	ord_mode	VARCHAR	25
fk	shipping_mode	CHAR	6
	ord_status	INT	
fk	sales_rep_id	INT	

Table Name	ORDER_DETAILS		
Key Type	**Column Name**	**Data Type**	**Size**
pk	ord_id	INT	
	line_item_id	INT	
	prod_id	INT	
	quoted_price	DECIMAL	6,2
	quantity_ordered	INT	

5. The E-R diagram

The next E-R diagram shows the relations between all of the tables.



E-R Schema Diagram for The Mega Store Database