**OPIM 3221 Name: Daniel Lesh**

**Assignment #2 - Logical Design (100 points)**

**Problem 1 -**

Using the following relational database, **write out each relationship** between the tables below including primary and foreign key information. Make sure to include relationship type and cardinality for full credit. (Hint: There are 5 relationships you must list)

Grading Rubric: **(Total 40 points)**

* 8 points for correctly identifying each relationship from the tables
  + 2 points for listing the cardinality and modality of each relationship indicating the PK and FK along with names of entities involved

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Employee#** | **Name** | **Position** | **Year**  **Hired** | **Supervisor Number** | **Department Name** |

**OFFICE STAFF**

|  |  |  |  |
| --- | --- | --- | --- |
| **Department**  **Name** | **Unit**  **Number** | **Building\_Loc** | **Size** |

**DEPARTMENT**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **SalespersonID** | **Name** | **Office**  **Number** | **Telephone#** | **Department Name** | **BackupID** |

**SALESPERSON**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Buyer**  **Number** | **Buyer**  **Name** | **Age** | **Address** | **City** | **State** |

**BUYER**

|  |  |  |
| --- | --- | --- |
| **Lead**  **Name** | **Type** | **DateofContact** |

**LEADS**

**Buyer Number**

**Department Name**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | **SalespersonID** | **Sale\_Date** | **Price\_sold** | **Type\_of\_Loan** |

**CAR PURCHASE**

* The Office Staff table has a 1 – M unary relationship with itself using the Employee# as the primary key and Supervisor Number as the foreign key. Exactly one Employee can supervise one to many Employees.
* The Department table has a 1 – M binary relationship with the Office Staff table. The Department Name is the primary key on the 1 side (Department table) and the foreign key on the many side (Office Staff table). The Employee# is the primary key in the Office Staff table. Exactly one Department has one to many Office Staff assigned to it.
* The Department table has a 1 – M binary relationship with the Salesperson Table. Department name is the primary key on the 1 side (Department table) and the foreign key on the many side (Salesperson table). SalespersonID is the primary key in the Salesperson table. Exactly one Department has one to many Salespersons assigned to it.
* The Salesperson table has a 1 – 1 unary relationship with itself using the SalespersonID as the primary key and BackupID as the foreign key. Exactly one salesperson backs up exactly one other salesperson.
* The Salesperson table, Department table, and the Buyer table have a M – M ternary relationship with each other creating the Associative table of Car Purchase. Department Name, Buyer Number, and SalespersonID are all foreign keys in the Department, Buyer, and Salesperson tables. Together with Sale\_Date they are also the primary key of the Car Purchase table. One to many Departments can sell one to many cars. Exactly one buyer can purchase one to many cars. Exactly one salesperson can sell one to many cars.

**Problem 2 -**

Using the following Relational Diagram, convert this business environment into a well-structured database by drawing out all corresponding relational tables. **Make sure to indicate all primary and foreign key relationships**. Use proper notation for all values and make sure to include each table and field as shown for full credit.

Grading Rubric: **(Total 60 points)**

* 1 point for each correctly identified table name and fields listed
* 2 points for each correctly identified PK and FKs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Store\_ID | Address | City | State | Zip Code |

**LOCATIONS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Employee\_ID | Name | Position | Wage Rate | Start Date | Store\_ID |

**EMPLOYEES**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Supplier\_ID | Company Name | Address | Phone # | Shipping Rates |

**SUPPLIERS**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Customer\_ID | Name | Phone\_Number | Email | Loyalty\_Program# |

**CUSTOMERS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Product\_ID | Product\_name | Price | Cost | Expiration Date | Supplier\_ID |

**PRODUCTS**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Product\_ID | Customer\_ID | Employee\_ID | Order Time | Food Satisfaction | Cost |

**ORDERS**

Assigned

CUSTOMERS

LOCATIONS

EMPLOYEES

Orders

SUPPLIERS

PRODUCTS

\*Store\_ID

Address

City

State

Zip Code

\*Customer\_ID

Name

Phone\_Number

Email

Loyalty\_Program #

\*Employee\_ID

Name

Position

Wage Rate

Start Date

Food Satisfaction

Cost

Order Time

\*Supplier\_ID

Company\_Name

Address

Phone#

Shipping Rates

\*Product\_ID

Product\_name

Price

Cost

Expiration Date

Supplies