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CS 443

LAB 1

**Questions:**

1. **Just by observing the tables below, what would you choose the primary key of each table? Based on base the explanation of the attributes of the given below, write down all the foreign keys. For example, if you think that Rep\_Office is a foreign key in the Salesreps table, you should write:**

* **Rep\_Office is a foreign key in the Salesreps table because it refers to the primary key (office attribute) of the offices table.**

**Do the same for every foreign key that you find in the entire database.**

**Primary Keys**:

1. Empl\_Num is the primary key in the SalesRep table because it uniquely identifies each individual row of employees.
2. Order\_Num is the primary key in the Orders table because it uniquely identifies each individual row of orders.
3. Mfr\_ID and Product\_ID act as the composite primary key of the Products table because it uniquely identifies each individual row of products.
4. Cust\_Num is the primary key in the Customers table because it uniquely identifies each individual row of customers.
5. Office is the primary key in the Offices table because it uniquely identifies each individual row of offices.

**Foreign Keys**:

1. Rep\_Office is a foreign key in the SalesRep table because it refers to the primary key (Office attribute) of the Offices table.
2. Manager is a foreign key in the SalesRep table because it refers to the primary key (Empl\_Num attribute) of its own table (i.e. the SalesRep table).
3. Cust is a foreign key in the Orders table because it refers to the primary key (Cust\_Num attribute) of the Customers table.
4. Rep is a foreign key in the Orders table because it refers to the primary key (Empl\_Num attribute) of the SalesRep table.
5. Mfr and Product together act as a composite foreign key in the Orders table because they refer to the composite primary key (Mfr\_ID and Product\_ID attributes) of the Products table.
6. Cust\_Rep is a foreign key in the Customers table because it refers to the primary key (Empl\_Num attribute) of the SalesRep table.
7. Mgr is a foreign key in the Offices table because it refers to the primary key (Empl\_Num attribute) of the SalesRep table.
8. **Without looking at the product table, can the “Price” column in the products table be used as the primary key? Why? Why not? What assumption do you need to make for the price to be the primary key? Is your assumption realistic?**

Yes, although discouraged, the “Price” column in the products table may be used as the primary key. There are no technical restrictions to disallow one from choosing a specific attribute from being a primary key, only guidelines that can only suggests what a potentially good primary key may be.

In order for one to use price as their primary key, he/she would have to make sure each product sold are different prices; that is, he/she would have to make the assumption that not one product sold within the entire database must be of the same price.

With that in mind, this assumption is very unrealistic because in reality, it is very common for two totally different products to be of the same price. For example, a candy bar and a box of crayons may both be priced at $2.99. Thus, using price as a primary would be discouraged.

1. **Without looking at the Office table, if you were obligated to use “City” as the primary key of the offices table, what restrictions would you have to put in this column to make it work?**

Different potential restrictions to be in place to use City as the primary key of the Offices table:

1. Create a restriction only allowing that there be only one company office per street within a city. With that done, make the either combination of Street Name (a newly entered column) and City, or Zip Code (a newly entered column) and City, the composite primary key of the Offices table.
2. Make City and State the composite primary key of the Offices table
3. Make City and Zip Code the composite primary key of the Offices table.

**Salesreps**

**Empl\_Num Name Age Rep\_Office Title Hire\_Date Manager Quota Sales**

105 Bill Adams 37 13 Sales Rep 12-FEB-88 104 350000 367911

109 Mary Jones 31 11 Sales Rep 12-OCT-89 106 300000 392725

102 Sue Smith 48 21 Sales Rep 10-DEC-86 108 350000 474050

106 Sam Clark 52 11 VP Sales 14-JUN-88 275000 299912

104 Bob Smith 33 12 Sales Mgr 19-MAY-87 106 200000 142594

101 Dan Roberts 45 12 Sales Rep 20-OCT-86 104 300000 305673

110 Tom Synder 41 Sales Rep 13-JAN-90 101 75985

108 Larry Fitch 62 21 Sales Mgr 12-OCT-89 106 350000 361865

103 Paul Cruz 29 12 Sales Rep 01-MAR-87 104 275000 286775

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**Orders**

**Order\_Num Order\_Date Cust Rep Mfr Product QTY Amount**

112961 17-DEC-89 2117 106 REI 2A44L 7 31500

113012 11-JAN-90 2111 105 ACI 41003 35 3745

112989 03-JAN-90 2101 106 FEA 114 6 1458

113051 10-FEB-90 2118 108 QSA K47 4 1420

112968 12-OCT-89 2102 101 ACI 41004 34 3978

113036 30-JAN-90 2107 110 ACI 4100Z 9 22500

113045 02-FEB-90 2112 108 REI 2A44R 10 45000

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**Products**

**Mfr\_ID Product\_ID Description Price Qty\_On\_Hand**

REI 2A45C RATCHET LINK 79 210

ACI 4100Y WIDGET REMOVER 2750 25

QSA XK47 REDUCER 355 38

BIC 41672 PLATE 180 0

IMM 779C 900-LB BRACE 1875 9

**Key**:

**YELLOW = Primary Key**

**GREEN = Foreign Key**

ACI 41003 SIZE 3 WIDGET 107 207

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**Customers**

**Cust\_Num Company Cust\_Rep Credit\_Limit**

2111 JCP Inc 103 50000

2102 First Corp. 101 65000

2103 Acme Mfg. 105 50000

2123 Carter and Sons 102 40000

2107 Ace International 110 35000

2115 Smithson Corp. 101 20000

2117 J.P. Sinclair 106 35000

**Offices**

**Office City Region Mgr Target Sales**

22 Denver Western 108 300000 186042

11 New York Eastern 106 575000 692637

12 Chicago Eastern 104 800000 735042

13 Atlanta Eastern 105 350000 367911

21 Los Angeles Western 108 725000 835915