Assignment 4

5.14 (page 172)

Consider the following six relations for an order-processing database application in a company:

CUSTOMER(Cust#, Cname, City)

ORDER(Order#, Odate, Cust#, Ord\_amt)

ORDER\_ITEM(Order#, Item#, Qty)

ITEM(Item#, Unit\_price)

SHIPMENT(Order#, Warehouse#, Ship\_date)

WAREHOUSE(Warehouse#, City)

Here, **Ord\_amt** refers to total dollar amount of an order; **Odate** is the date the order was placed; and **Ship\_date** is the date an order (or part of an order) is shipped from the warehouse.

Assume that an order can be shipped from several warehouses.

Specify the foreign keys for this schema, stating any assumptions you make.

What other constraints can you think of for this database?

**Foreign Keys (assumptions in parentheses):**

**Order# (Same domain in ORDER and ORDER\_ITEM, a tuple in ORDER will reference a tuple in ORDER\_ITEM),**

**Item# (Same domain in ORDER\_ITEM and ITEM, a tuple in ORDER\_ITEM will reference a tuple in ITEM),**

**Warehouse# (Same domain in SHIPMENT and WAREHOUSE, a tuple in SHIPMENT will reference a tuple in WAREHOUSE),**

**Cust# (Same domain in ORDER and CUSTOMER, a tuple in ORDER will reference a tuple in CUSTOMER).**

**Other constraints:**

**Semantic integrity constraints:**

**- "Ord\_amt" and "Qty" can never be negative.**

5.16 (page 173)

Consider the following relations for a database that keeps track of student enrollment in courses and the books adopted for each course:

STUDENT(Ssn, Name, Major, Bdate)

COURSE(Course#, Cname, Dept)

ENROLL(Ssn, Course#, Quarter, Grade)

BOOK\_ADOPTION(Course#, Quarter, Book\_isbn)

TEXT(Book\_isbn, Book\_title, Publisher, Author)

Specify the foreign keys for this schema, stating any assumptions you make.

**Foreign Keys (assumptions in parentheses):**

**Ssn (Same domain in STUDENT and ENROLL, a tuple in STUDENT will reference a tuple in ENROLL),**

**Course# (Same domain in COURSE and ENROLL, a tuple in CUSTOMER will reference a tuple in ENROLL),**

**Quarter (Same domain in ENROLL and BOOK\_ADOPTION, a tuple in ENROLL will reference a tuple in BOOK\_ADOPTION),**

**Book\_isbn (Same domain in BOOK\_ADOPTION and TEXT, a tuple in BOOK\_ADOPTION will reference a tuple in TEXT).**

Text, letter

Description automatically generated

1. **INSERT INTO** STUDENT

**VALUES** (‘Johnson’, 25, 1, ‘MATH’);

1. **UPDATE** STUDENT

**SET** Class = 2

**WHERE** Name = ‘Smith’;

1. **INSERT INTO** COURSE

**VALUES** (‘Knowledge Engineering’, ‘cs4390’, 3, ‘cs’);

1. **DELETE FROM** STUDENT

**WHERE** Name = ‘Smith’

**AND** Student \_number = 17;

Text

Description automatically generated

**CREATE TABLE** SOCCER\_LEAGUE

( League\_id INT **NOT NULL**,

League\_name VARCHAR(50) **NOT NULL**,

**PRIMARY KEY** (League\_id),

);

**CREATE TABLE** TEAM

( Team\_id INT **NOT NULL**,

League\_id INT **NOT NULL**,

Country\_id INT **NOT NULL**,

Tname VARCHAR(50) **NOT NULL**,

Wins INT,

Losses INT,

Draws INT,

**PRIMARY KEY** (Team\_id),

**FOREIGN KEY** (League\_id) **REFERENCES** SOCCER\_LEAGUE (League\_id),

**FOREIGN KEY** (Country\_id) **REFERENCES** COUNTRY (Country\_id),

);

**CREATE TABLE** COUNTRY

( Country\_id INT **NOT NULL**,

Country\_name VARCHAR(50) **NOT NULL**,

**PRIMARY KEY** (Country\_id),

);

**CREATE TABLE** PLAYERS

( Player\_id INT **NOT NULL**,

League\_id INT **NOT NULL**,

Team\_id INT **NOT NULL**,

Country\_id INT **NOT NULL**,

Player\_name VARCHAR(50) **NOT NULL**,

Age INT,

Bdate DATE,

Position VARCHAR(50),

Jersey\_number INT,

**PRIMARY KEY** (Player\_id),

**FOREIGN KEY** (League\_id) **REFERENCES** SOCCER\_LEAGUE (League\_id),

**FOREIGN KEY** (Team \_id) **REFERENCES** TEAM (Team \_id),

**FOREIGN KEY** (Country\_id) **REFERENCES** COUNTRY (Country\_id),

);

Retrieve the team name, position, and jersey number of the player(s) whose name is ‘Lionel Messi’.

**SELECT** Tname, Position, and Jersey\_number

**FROM** PLAYER

**WHERE** Player\_name = ‘Lionel Messi’;

Retrieve the name and country of all teams playing in the league ‘Champion’s League’.

**SELECT** Tname, Country\_name

**FROM** TEAM, COUNTRY, SOCCER\_LEAGUE

**WHERE** League\_name = ‘Champion’s League’;

Retrieve all the attribute values of any TEAM who plays in the LEAGUE‘Champion’s League’

**SELECT** \*

**FROM**  TEAM

**WHERE** League\_name = ‘Champion’s League’;

1. The attributes **League\_name**, **Team\_name**, **Player\_name**, and **Position** are some attributes that should have indexes on them.