**1.**

**a.** It can give us business context as well as the optionality and cardinality of the specific identifier.

**b.**

- Direction

- Optionality

- Cardinality

**c.**

Optionality refers to whether a relationship is mandatory (must) or optional (may).

Examples:

All jobs must be occupied by an employee.

A person may or may not own a car.

**d.**

Cardinality refers to whether the relationship is singular or plural.

Examples:

A phone number can only be assigned to one person, but one person could have multiple phone numbers.

Similarly, a social media profile belongs to one person, but that person could have multiple (personal, business, etc.).

**2.**

**a.**

- ClientID

- DonationID

- ClientFirstName

- ClientLastName

- ClientPhoneNumber

- ClientEmail

- DonationDate

- DonationAmount

**b.**

ClientID is the PK for the Clients table

DonationID is the FK that refers to the Donations table

**c.**

Clients (PK: ClientID, FK: DonationID, ClientFirstName, ClientLastName)

Donations (PK: DonationID, FK: ClientID, DonationDate, DonationAmount)

Clients Contact Information (FK: ClientID, PK: ClientPhoneNumber, ClientEmail)

**d.**

Clients

|  |  |  |  |
| --- | --- | --- | --- |
| ClientID | DonationID | ClientFirstName | ClientLastName |
| 001 | 123 | Lazaro | Martinez |
| 002 | 132 | Keyvon | Heravi |
| 003 | 124 | Chicho | Lopez |

Donations

|  |  |  |  |
| --- | --- | --- | --- |
| DonationID | ClientID | DonationDate | DonationAmount |
| 123 | 001 | 02/20/2024 | 100 |
| 132 | 002 | 02/20/2024 | 500 |
| 124 | 003 | 02/20/2024 | 1000 |

Clients Contact

|  |  |  |
| --- | --- | --- |
| ClientID | ClientPhoneNumber | ClientEmail |
| 001 | 1234567890 | lazaro.martinez@student.csn.edu |
| 002 | 2134567890 | kayvon.heravi@student.csn.edu |
| 003 | 3214569078 | chicho.lopez@student.csn.edu |

**3.**

**a.**

- ProductID

- ProductName

- ProductPrice

- ShopID

- ShopAddress

- ShopPhoneNumber

- EmployeeID

- EmployeeName

- EmployeePosition

- EmployeeSalary

**b.**

Products (PK: ProductID, ProductName, ProductPrice)

Shop Locations (PK: ShopID, ShopAddress, ShopPhoneNumber)

Employees (PK: EmployeeID, EmployeeName, EmployeePosition, EmployeeSalary)

**c.**

Products PK: ProductID

Shop Locations PK: ShopID

Employees PK: EmployeeID

**d.**

EmployeeName and EmployeePosition since it’s possible to have two employees with the same name but in different positions?

ProductID and ShopID since it’s possible to find the same product in different locations?

/\*

I’m not 100% sure on this one hence the question marks but this is my best understanding of it so far.

\*/

**4.**

**a.**

Products (PK: ProductID, ProductName, ProductPrice)

Shop Locations (PK: ShopID, ShopAddress, ShopPhoneNumber)

Employees (PK: EmployeeID, EmployeeName, EmployeePosition, EmployeeSalary)

/\* I had kind of already done it this way. I hope it’s acceptable. \*/

**5.**

**a.**

- CourseID

- CourseName

- BookID

- BookName

- BookAuthor

- InstructorID

- InstructorName

- Department

**b.**

Courses (PK: CourseID, CourseName, FK: BookName, FK: InstructorName)

Books (PK: BookID, BookName, BookAuthor, FK: CourseName)

Instructors (PK: InstructorID, InstructorName, FK: CourseName, Department)

**c.**

Courses PK: CourseID

Books PK: BookID

Instructors PK: InstructorID

**d.**

Courses FK: BookName refers to Books table and InstructorName refers to Instructors table

Books FK: CourseName refers to Courses table

Instructors FK: CourseName refers to Courses table