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## Entity and Relation Dictionaries

### Entity Dictionary:

Entity: Article

Description:

An academic paper or article that is available at the library

Attributes:

Primary Key: Item\_ID, INT

- Journal, VARCHAR(100), The name of the journal in which it was published
- Authors, VARCHAR(100), The names of all the authors
- Keywords, VARCHAR(100), The set of all keywords that apply to this article

Weak Entity: Audiobook

Description:

Some books have an audiobook format that may be rented out digitally

Attributes:

- Book\_Length, TIME

Entity: Book

Description:

Subclass of Media, a book available to be rented out

Attributes:

Primary Key: Item\_ID, INT

- Author, VARCHAR(100)
- ISBN, INT, International Standard Book Number

Entity: Clerk

Description:

Subclass of Employee, reserved for people checking in and out books

Attributes:

Primary Key: Person\_ID

- Register\_No, INT
- Training\_Complete, BOOL

Entity: Customer:

Description:

Subclass of person, reserved for customers of the library

Attributes:

Primary Key: Person\_ID, INT

- Num\_Borrowed, INT, Current amount of borrowed books
- Borrow\_Limit, INT, Amount of books available to be borrowed

Entity: Employee

Description:

Subclass of person, reserved for people employed by the library

Attributes:

- Primary Key: Person\_ID, INT
- Salary, INT

Entity: Librarian

Description:

Subclass of employee, reserved for librarians

Attributes:

- Primary Key: Person\_ID, INT
- Degree, VARCHAR(100), The degree librarian has, usually some type of masters
- Policy\_Develop, BOOL, True if the librarian is involved in policy development
- Associations, VARCHAR(100), Set of all associations the librarian is involved in

Entity: Media

Description:

A piece of media available to be rented out at the library

Attributes:

Primary Key: Item\_ID, INT

- Genre, VARCHAR(100)
- Title, VARCHAR(100)
- Item\_ID, INT
- Media\_ID, INT
- Publisher, VARCHAR(100)

Entity: Movie

Description:

Subclass of media, a DVD available to be rented out

Attributes:

Primary Key: Item\_ID, INT

- Movie\_Length, TIME
- Production\_Co, VARCHAR(100)

Entity: Music

Description:

Subclass of media, a music disk available to be rented out

Attributes:

Primary Key: Item\_ID, INT

- Artist, VARCHAR(100)
- Album, VARCHAR(100)
- Song\_Length, TIME

Entity: Person

Description:

Any human entered into the database for any reason

Attributes:

- Primary Key: Person\_ID, INT
- Person\_ID, Int
- Name:
  - First\_Name, VARCHAR(32)
  - Last\_Name, VARCHAR(32)
- Address:
  - Street\_Address, VARCHAR(100)
  - City, VARCHAR(100)
  - State, VARCHAR(2)
- Routing\_Num, INT

Entity: Private\_Room

Description:

A private room that is able to be rented out to a customer

Attributes:

- Primary Key: Room\_Num
- Max\_Occupancy, INT
- Has\_Whiteboard, BOOL, True if the room has a whiteboard
- Has\_Screen, BOOL, True if the room has a screen that the customer can use

Weak Entity: Schedule

Description;

Entity that tracks which of 14 weekly shifts an employee works and their wage

Attributes:

- Shifts, VARCHAR(14), 14 shifts per week, tracks which ones the employee works
- Wage, INT, Amount that is paid per shift

Entity: Supervisor

Description:

Subclass of Employee, reserved for supervisors of employees

Attributes:

- Primary Key: Person\_ID, INT
- Department, VARCHAR(100)
- Subordinates, INT, number of subordinates

Entity: Volunteer

Description:

Subclass of Employee, reserved for people volunteering at the library

Attributes:

- Primary Key: Person\_ID
- Court\_Mandated, BOOLEAN, Some volunteers are doing court-mandated service
- Department, VARCHAR(100)

## **Relation Dictionary:**

Relationship: Borrows

Description:

The act of a customer borrowing a piece of media

Entities: Customer, Media

Cardinality: \*: \* (many-to-many)

Participation: Partial : Partial

Attribute: Return\_Date, Date, The date which the media must be returned by

Relationship: Has\_Format

Description:

Books may be available as an audiobook

Entities: Book, Audiobook

Cardinality: 1:1 (one-to-one)

Participation: Partial : Total

Relationship: Rents

Description:

Customers may rent out private rooms

Entities: Customer, Private\_Room

Cardinality: 1:1 (one-to-one)

Participation: Partial : Partial

Attribute: Date, DATE, The date for which the private room is reserved

Relationship: Supervises

Description:

Every supervisor supervises some employees

Entities: Supervisor, Employee

Cardinality: 1:\* (one-to-many)

Participation: Total : Total

Relationship: Works

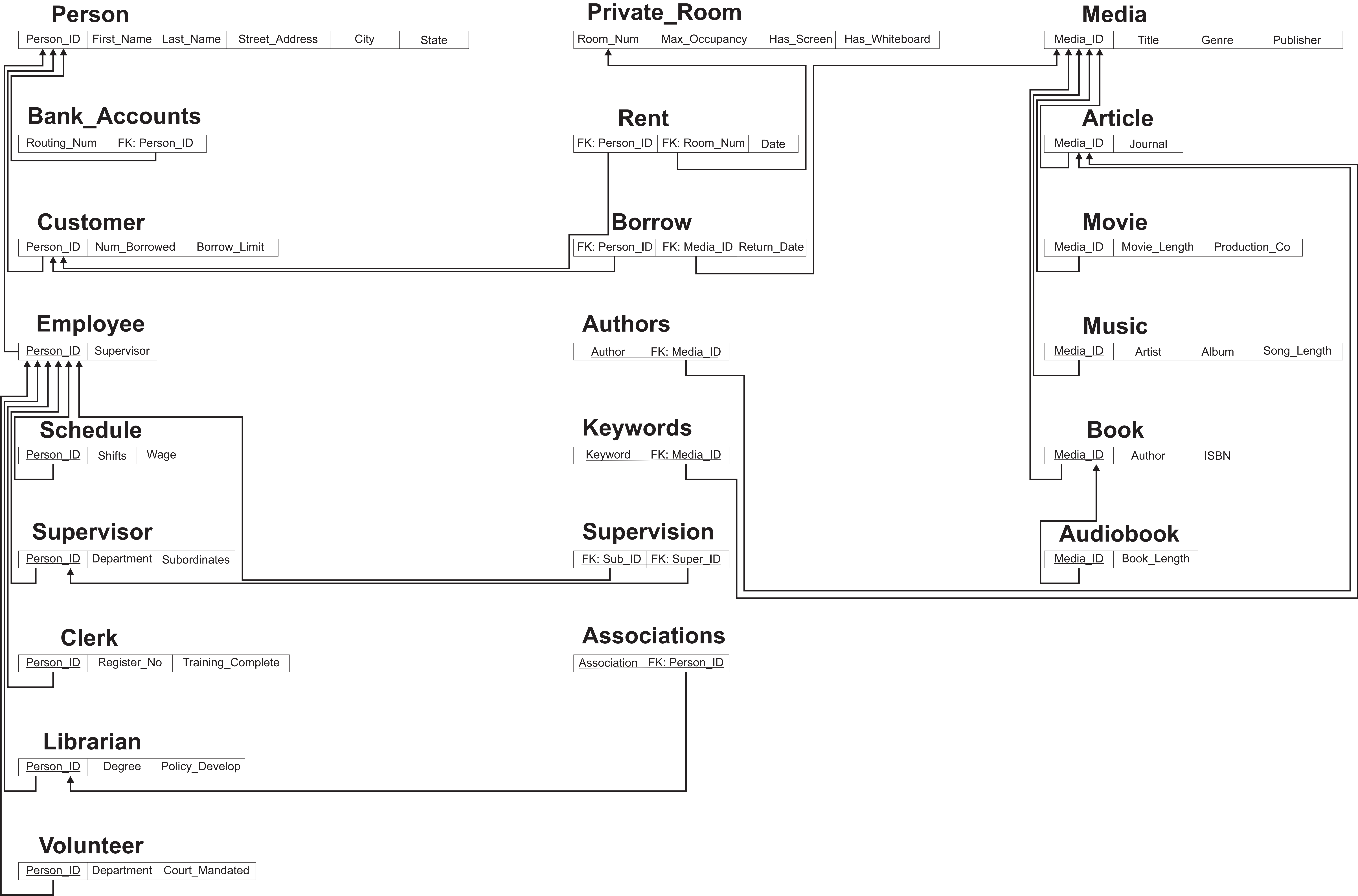
Description:

Every employee works their schedule

Entities: Employee, Schedule

Cardinality: 1:1 (one-to-one)

Participation: Total : Total





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## Schema Dictionary

**Name:** Article

**Description:** A copy of an academic article available to be borrowed

- **Primary Key:** Item\_ID references Media(Item\_ID)
- **Item\_ID:** An integer that uniquely identifies an instance of a media
- **Media\_ID:** An integer that uniquely identifies a piece of media
- **Journal:** Varchar(100), The journal in which the article is published in

**Name:** Associations

**Description:** Librarian association that a librarian is a part of

- **Primary Key:** Composite (Association, FK\_Person\_ID)
- **Association:** Varchar(100), Association that a librarian is part of
- **Foreign Key:** FK\_Person\_ID references Librarian(Person\_ID)

**Name:** Audiobook

**Description:** An audiobook that the library gives digital access to customers

- **Primary Key:** Item\_ID references Media(Item\_ID)
- **Item\_ID:** An integer that uniquely identifies an instance of a media
- **Media\_ID:** An integer that uniquely identifies a piece of media
- **Book\_Length:** Time, The total playback time of the audiobook

**Name:** Authors

**Description:** The Author(s) of an academic article

- **Primary Key:** Composite (Author, FK\_Media\_ID)
- **Author:** Varchar(100), Name of author
- **Foreign Key:** FK\_Media\_ID references Article(Media\_ID)

**Name:** Bank\_Accounts

**Description:** All bank accounts than belong to a person

- **Primary Key:** Routing\_Num
- **Routing\_Num:** Int, The routing number of the bank account
- **Foreign Key:** FK\_Person\_ID references Person(Person\_ID)

**Name:** Book

**Description:** A book available at the library

- **Primary Key:** Item\_ID references Media(Item\_ID)
- **Item\_ID:** An integer that uniquely identifies an instance of a media
- **Media\_ID:** An integer that uniquely identifies a piece of media
- **Author:** Varchar(100), Name of author
- **ISBN:** Int, The International Standards Book Number of the book

**Name:** Borrow

**Description:** The act of a person borrowing a piece of media

- **Primary Key:** Composite (FK\_Person\_ID, FK\_Media\_ID)
- **Return\_Date:** Date, The date which the media must be returned by
- **Foreign Key:** FK\_Person\_ID references Customer(Person\_ID)
- **Foreign Key:** FK\_Media\_ID references Media(Media\_ID)

**Name:** Clerk

**Description:** A library clerk

- **Primary Key:** Person\_ID references Employee(Person\_ID)
- **Person\_ID:** An integer that uniquely identifies a person
- **Register\_No:** Int, The register at which the clerk works
- **Training\_Complete:** Bool, Whether or not the clerk has completed their training

**Name:** Customer

**Description:** A person who is a library customer

- **Primary Key:** Person\_ID references Person(Person\_ID)
- **Person\_ID:** An integer that uniquely identifies a person
- **Num\_Borrowed:** Int, Number of media that the customer has borrowed
- **Borrow\_Limit:** Int, Max number of media that the customer may borrow

**Name:** Employee

**Description:** A person that is employed by the library

- **Primary Key:** Person\_ID references Person(Person\_ID)
- **Person\_ID:** An integer that uniquely identifies a person
- **Supervisor:** Varchar(100), Name of the employee's supervisor

**Name:** Keywords

**Description:** The keyword(s) of an academic article

- **Primary Key:** Composite (Keyword, FK\_Media\_ID)
- **Keyword:** Varchar(100), Keyword for the information in article
- **Foreign Key:** FK\_Media\_ID references Article(Media\_ID)

**Name:** Librarian

**Description:** An employee who is a librarian

- **Primary Key:** Person\_ID references Employee(Person\_ID)
- **Person\_ID:** An integer that uniquely identifies a person
- **Degree:** Varchar(32), The degree this librarian holds
- **Policy\_Develop:** Bool, Whether or not the librarian is involved in policy development

**Name:** Media

**Description:** A media available to be borrowed at the library

- **Primary Key:** Item\_ID
- **Item\_ID:** An integer that uniquely identifies an instance of a media
- **Media\_ID:** An integer that uniquely identifies a media
- **Title:** Varchar(100), Title of the media
- **Genre:** Varchar(100), Genre of media (if any)
- **Publisher:** Varchar(100), Publisher of the media

**Name:** Movie

**Description:** A movie available to be borrowed at the library

- **Primary Key:** Item\_ID references Media(Item\_ID)
- **Item\_ID:** An integer that uniquely identifies an instance of a media
- **Media\_ID:** An integer that uniquely identifies a media
- **Movie\_Length:** Time, Playback time of the movie
- **Production\_Co:** Varchar(100), The producer of the movie

**Name:** Music

**Description:** A music disc available to be borrowed at the library

- **Primary Key:** Item\_ID references Media(Item\_ID)
- **Item\_ID:** An integer that uniquely identifies an instance of a media
- **Media\_ID:** An integer that uniquely identifies a media
- **Song\_Length:** Time, Playback time of the song
- **Artist:** Varchar(100), The name of the song artist
- **Album:** Varchar(100), The name of the album of the song (if any)

**Name:** Person

**Description:** A person that is stored in the library's database

- **Primary Key:** Person\_ID
- **Person\_ID:** An integer that uniquely identifies a person
- **First\_Name:** Varchar(32), First name of the person
- **Last\_Name:** Varchar(32), Last name of the person
- **Street\_Address:** Varchar(100), House number and street of a person
- **City:** Varchar(100), Name of city where person lives
- **State:** Varchar(2), The 2-letter abbreviation of a person's state

**Name:** Private\_Room

**Description:** A private room that customers rent out

- **Primary Key:** Room\_Num
- **Room\_Num:** An integer that uniquely identifies a room
- **Max\_Occupancy:** Int, Maximum number of people that can fit in the room
- **Has\_Screen:** Bool, Whether or not the room has a screen
- **Has\_Whiteboard:** Bool, Whether or not the room has a whiteboard

**Name:** Rent

**Description:** The act of a person renting a private room

- **Primary Key:** Composite (FK\_Person\_ID, FK\_Room\_Num)
- **Date:** Date, The date which the room is rented out on
- **Foreign Key:** FK\_Person\_ID references Customer(Person\_ID)
- **Foreign Key:** FK\_Room\_Num references Private\_Room(Room\_Num)

**Name:** Schedule

**Description:** The schedule that a library employee works

- **Primary Key:** Person\_ID references Employee(Person\_ID)
- **Person\_ID:** An integer that uniquely identifies a person
- **Shifts:** Varchar(14), Which of 14 shifts an employee works
- **Wage:** Int, Amount that the employee earns per shift

**Name:** Supervision

**Description:** Relationship between supervisor and employee

- **Primary Key:** Composite (FK\_Sub\_ID, FK\_Super\_ID)
- **Foreign Key:** FK\_Sub\_ID references Employee(Person\_ID)
- **Foreign Key:** FK\_Super\_ID references Article(Media\_ID)

**Name:** Volunteer

**Description:** An employee who is a volunteer

- **Primary Key:** Person\_ID references Employee(Person\_ID)
- **Person\_ID:** An integer that uniquely identifies a person
- **Department:** Varchar(100), Department that the volunteer works for
- **Court\_Mandated:** Bool, Whether or not the person is volunteering on court orders