

Screaming Beckers: Daniel Stanev, Harry Tran

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Schema Dictionary

Name: Article

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

- **Primary Key:** Media_ID [references Media\(Media_ID\)](#)
- **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:** Media_ID [references Media\(Media_ID\)](#)
- **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:** Media_ID **references Media(Media_ID)**
- **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:** Media_ID
- **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
- **Total_Stock:** Int, Maximum amount available to be borrowed
- **Available_Stock:** Int, Remaining amount available to be borrowed

Name: Movie

Description: A movie available to be borrowed at the library

- **Primary Key:** Media_ID **references Media(Media_ID)**
- **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:** Media_ID **references Media(Media_ID)**
- **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:** Varbinary(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

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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: Media_ID

- 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: Media_ID

- 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: Media_ID

- Genre, VARCHAR(100)
- Title, VARCHAR(100)
- Media_ID, INT
- Stock
 - Total_Stock, INT
 - Available_Stock, INT
- Publisher, VARCHAR(100)

Entity: Movie

Description:

Subclass of media, a DVD available to be rented out

Attributes:

Primary Key: Media_ID

- Movie_Length, TIME
- Production_Co, VARCHAR(100)

Entity: Music

Description:

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

Attributes:

Primary Key: Media_ID

- 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, VARBINARY(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(32100)

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(32100)

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



