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Project 1A

Scope

XYZ Textbooks is a local math textbook publisher that works with universities and community colleges across the country to sell content from their math textbook catalog. Institutions will order textbooks from the company that are written by authors all over the country, and then XYZ Textbooks will ship them. Textbooks can cover one to many subjects. There are also licenses for e-books, and all students get a login to access the e-book. One subset of employees is the video tutors, who create solutions videos to aid students as they work on the practice problems, and each of the video tutors specializes in one or more math subjects. Individuals can also purchase a textbook instead of having access through a university or college.

Therefore, we decided to focus on the order and customer access aspects of the business for modeling.
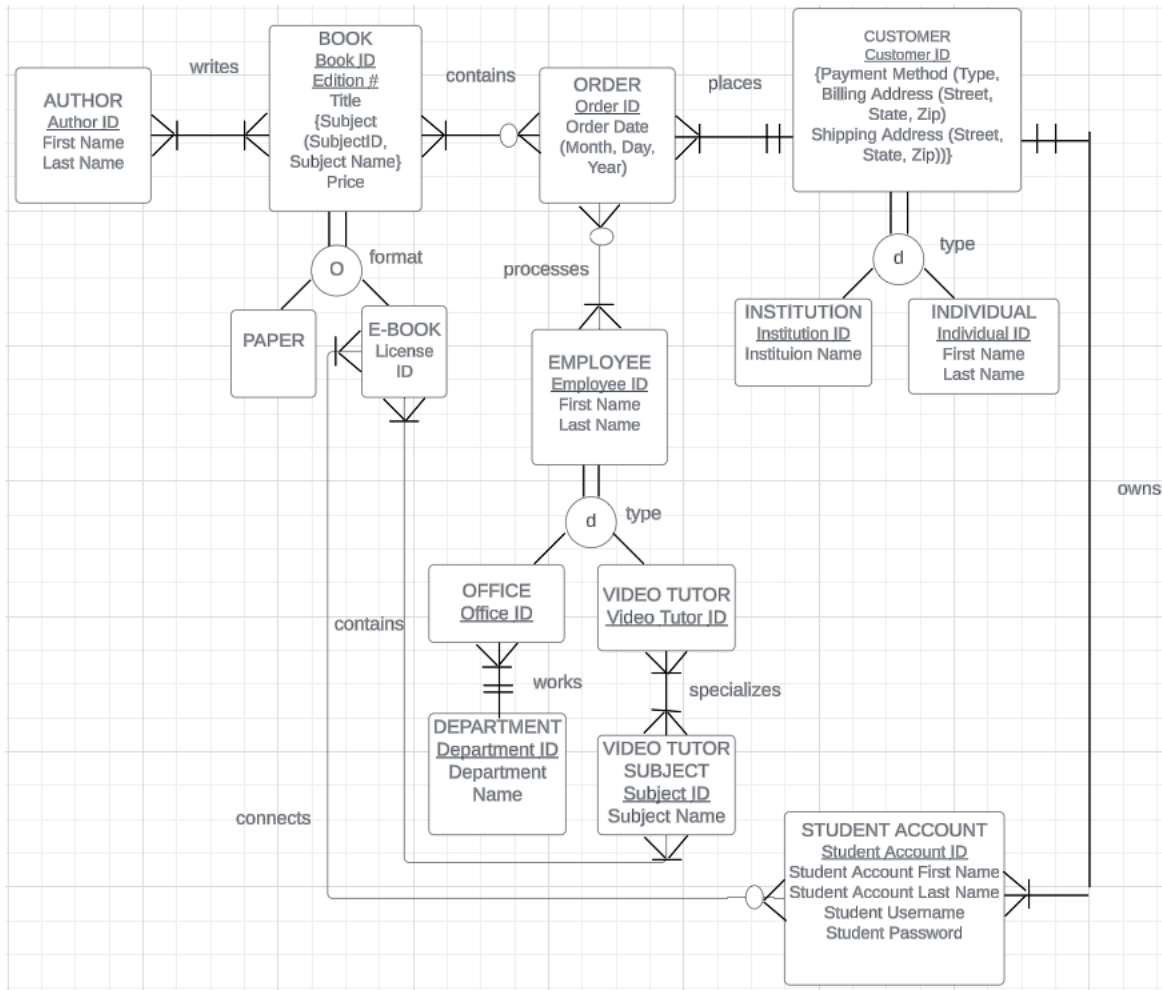
Business Rules

- An institution (university or community college) can place multiple orders.
- An order can include multiple books.
- Each book can be authored by one or more authors.
- An employee, whether office employee, consultant, or video tutor, can process multiple orders.
- An order must be associated with an institution.
- Books can have multiple editions, but each edition is uniquely identified.
- An employee, based on their type, may have additional attributes specific to their role (e.g., office employees may have a department, video tutors may have a subject expertise).
- A department may have multiple employees, and an employee can belong to one and only one department.

- Video tutors may specialize in multiple subjects, and a subject may be covered by multiple video tutors.
- An order must have a payment method associated with it.
- An order may have multiple shipping addresses (for different books, for instance), and a shipping address may be associated with multiple orders.

Definitions

- An Author is someone who writes and contributes to a book
- A Book is a math textbook published by XYZ Textbooks
    - o A Book can be both a Paper book and an E-Book
- An Employee is somebody who works for XYZ Textbooks and processes an order
    - o An Employee can either be an Office employee or a Video Tutor
- An Order is a textbook order placed
- A Customer is a person/group who places a textbook order
    - o A Customer can either be an Institution or an Individual
- A Department is a part of the company that an Office employee works in
- A Video Tutor Subject is a subject that a Video Tutor specializes in
- A Student Account is an online account that customers own upon purchase of an E-Book

E-R Diagram

Relationship Descriptions

- Customer connected to Order
  - Many-to-1 relationship
    - Customer can place 0 orders, or can place many
    - Order can be placed by 1 and only 1 customer

- Order connected to Book
  - Many-to-Many relationship
    - Book can be part of 0 orders, or many
    - Order can contain 1 book, or many
      - Assuming there's at least one book in every order

- Book connected to Author
  - Many-to-Many Relationship
    - Author can write 1 or many books
    - Books can be written by 1 or many Authors

- Employee connected to Order
  - Many-to-Many relationship
    - Employee can process 0 or many orders
    - Order can be processed by 1 or many employees

- Employee subtype Office employee connected to Department
  - Many-to-Many relationship
    - Office employee can be a part of 1 and only 1 department
    - Department can contain 1 or many Office employees
      - Assuming every department contains at least 1 Office employee

- Employee subtype Video Tutor connected to VideoTutorSubject
  - Many-to-Many relationship
    - A subject can be specialized by 1 or many video tutors
      - Assuming a subject is specialized by at least 1 video tutor
    - A video tutor can specialize in 1 or many subjects
      - Assuming a tutor specializes in at least 1 subject

- Student Account connected to Book subtype E-Book
  - 1-to-Many

- E-book can have 0 or many Student Accounts
- Student Account can be used for 1 or many E-Books