ER discussion document

Introduction:

This document explains each piece of information in the database and how they relate to each other. By doing this, we can make sure the database works well and helps Fitness Fusion manage its online store smoothly. It's like laying out all the puzzle pieces so we can see the bigger picture clearly.

Entities:

1. Customer:

- Description: The Customer entity represents individuals who interact with Fitness Fusion by purchasing products or enrolling in courses. It stores information such as customer details, contact information, and payment preferences.
- Sample Data:
    - CustomerID: 101
    - Name: John Doe
    - Email: john@example.com
    - Address: 123 Main Street, City, State, ZIP
    - Phone Number: 123-456-7890
- Relationships:
    - One-to-Many with Order: Each customer can place multiple orders.
    - One-to-Many with Review: A customer can leave multiple reviews.
    - Many-to-Many with Course: A customer can enroll in multiple courses, and a course can have multiple enrolled customers.
    - Bridge Table: CustomerCourseEnrollment (CustomerID, CourseID, EnrollmentDate, Status).

2. Product:

- Description: The Product entity represents physical goods available for purchase on Fitness Fusion, including workout equipment, apparel, and supplements. It includes attributes such as product name, description, price, and brand.
- Sample Data:
    - ProductID: 201
    - Name: Dumbbells
    - Description: Set of adjustable dumbbells
    - Price: $99.99
    - Brand: Fitness Gear
- Relationships:

- Many-to-Many with Order: An order can contain multiple products, and a product can be part of multiple orders.
- One-to-Many with Review: A product can have multiple reviews.
- Many-to-One with ProductCategory: A product belongs to a specific category.

3. Course:

- Description: The Course entity represents online fitness courses offered by Fitness Fusion, covering various topics such as nutrition, workout routines, yoga, and meditation. It contains attributes such as course title, instructor, duration, and price.
- Sample Data:
  - CourseID: 301
  - Title: Beginner's Guide to Yoga
  - Instructor: Jane Smith
  - Duration: 4 weeks
  - Price: $49.99
- Relationships:
  - Many-to-Many with Order: An order can contain multiple courses, and a course can be part of multiple orders.
  - One-to-Many with Review: A course can have multiple reviews.
  - Many-to-One with Instructor: A course is taught by a specific instructor.

4. Order:

- Description: The Order entity records details of customer transactions, including purchased items and transaction information. It includes attributes such as order date, quantity, and total price.
- Sample Data:
  - OrderID: 401
  - CustomerID: 101
  - ProductID: 201
  - CourseID: 301
  - Order Date: 2024-02-28
  - Quantity: 1
  - Total Price: $149.98
- Relationships:
  - One-to-Many with Customer: Each order is associated with one customer.
  - Many-to-Many with Product: An order can contain multiple products, and a product can be part of multiple orders.
  - Many-to-Many with Course: An order can contain multiple courses, and a course can be part of multiple orders.
  - One-to-One with Payment: Each order has one payment transaction.

5. Review:

- Description: The Review entity allows customers to leave reviews and ratings for products or courses. It contains attributes such as rating and comment.
- Sample Data:
    - ReviewID: 501
    - ProductID: 201
    - CourseID: 301
    - CustomerID: 101
    - Rating: 5 (out of 5)
    - Comment: "Great quality dumbbells! Highly recommend."
- Relationships:
    - One-to-Many with Product: Each review is associated with one product.
    - One-to-Many with Course: Each review is associated with one course.
    - One-to-Many with Customer: Each review is associated with one customer.

6. ProductCategory:

- Description: The ProductCategory entity represents categories to which products belong, such as workout equipment, apparel, and supplements.
- Sample Data:
    - CategoryID: 1
    - Name: Workout Equipment
    - Description: Equipment used for fitness and strength training.
- Relationships:
    - One-to-Many with Product: Each category can have multiple products.

7. Instructor:

- Description: The Instructor entity represents individuals who teach fitness courses offered by Fitness Fusion. It includes attributes such as instructor name, contact information, and qualifications.
- Sample Data:
    - InstructorID: 1
    - Name: Jane Smith
    - Email: jane@example.com
    - Phone Number: 987-654-3210
    - Qualifications: Certified Yoga Instructor
- Relationships:
    - One-to-Many with Course: Each instructor can teach multiple courses.

8. Payment:

- Description: The Payment entity records payment details for each order transaction, including payment method, transaction amount, and transaction date.

- Sample Data:
    - PaymentID: 701
    - OrderID: 401
    - Payment Method: Credit Card
    - Transaction Amount: $149.98
    - Transaction Date: 2024-02-28
- Relationships:
    - One-to-One with Order: Each order has one payment transaction.

9. Address:

- Description: The Address entity stores customer address information, including shipping or billing addresses.
- Sample Data:
    - AddressID: 801
    - CustomerID: 101
    - Street Address: 123 Main Street
    - City: Anytown
    - State: CA
    - ZIP Code: 12345
    - Country: USA
- Relationships:
    - One-to-Many with Customer: Each customer can have multiple addresses.

10. CustomerCourseEnrollment (Bridge Table):

- Description: This bridge table manages the many-to-many relationship between customers and courses, representing the enrollment of customers in various fitness courses.
- Attributes:
    - CustomerID (Foreign Key)
    - CourseID (Foreign Key)
    - EnrollmentDate
    - Status (e.g., Active, Inactive)
    -

11. ProductCategory:

- Description: This entity represents the relationship between products and their corresponding categories, such as workout equipment, apparel, or supplements.
- Attributes:
    - CategoryID (Primary Key)
    - Name
    - Description

12. Instructor:

- Description: This entity establishes the relationship between courses and their respective instructors who teach the courses.
- Attributes:
    - InstructorID (Primary Key)
    - Name
    - Email
    - Phone Number
    - Qualifications

13. Payment:

- Description: This entity represents the relationship between orders and their associated payment transactions.
- Attributes:
    - PaymentID (Primary Key)
    - OrderID (Foreign Key)
    - Payment Method
    - Transaction Amount
    - Transaction Date

14. Address:

- Description: This entity represents the relationship between customers and their shipping or billing addresses.
- Attributes:
    - AddressID (Primary Key)
    - CustomerID (Foreign Key)
    - Street Address
    - City
    - State
    - ZIP Code
    - Country

Relationships:

Customer-Order Relationship:

- One-to-Many relationship: Each customer can place multiple orders.

Product-Order Relationship:

- Many-to-Many relationship: An order can contain multiple products, and a product can be part of multiple orders.

- Bridge Table: OrderProduct.

Course-Order Relationship:

- Many-to-Many relationship: An order can contain multiple courses, and a course can be part of multiple orders.
- Bridge Table: OrderCourse.

Product-Review Relationship:

- One-to-Many relationship: A product can have multiple reviews, but each review is associated with only one product.

Course-Review Relationship:

- One-to-Many relationship: A course can have multiple reviews, but each review is associated with only one course.

Customer-Review Relationship:

- One-to-Many relationship: A customer can leave multiple reviews, but each review is associated with only one customer.

Customer-Course Enrollment Relationship:

- Many-to-Many relationship: Represents the enrollment of customers in fitness courses.
- Bridge Table: CustomerCourseEnrollment.

Product-Category Relationship:

- One-to-Many relationship: A product belongs to a specific category.

Course-Instructor Relationship:

- Many-to-Many relationship: A course is taught by many instructors and vice versa..

Order-Payment Relationship:

- One-to-One relationship: Each order has one associated payment transaction.

Customer-Address Relationship:

- One-to-Many relationship: Each customer can have multiple addresses.

These relationships and tables form the complete structure of the Fitness Fusion database, enabling efficient management of customer interactions, product offerings, course enrollments, and order transactions.