**Design 2 – ERD**

A diagram of a data flow

AI-generated content may be incorrect.

**Overview:**

The database architecture is designed to support all use cases of the Sports Invoice System project, including user authentication, role-based access, invoice creation, itemization, and tracking of payment status. The schema ensures data integrity and scalability, while aligning directly with the system's business logic.

**Entities:**

**1. User**

The User table stores information for all system users including admins, members, coaches, and accountants.

Fields:

- id: Primary key, unique identifier for each user.

- username: Used for system login and display.

- email: Email address used for contact and reset.

- password: Securely stored password hash.

- role: Enum representing the user type: ADMIN, COACH, MEMBER, ACCOUNTANT.

Each user may be linked to multiple invoices. The role determines permissions throughout the system.

**2. Invoice**

The Invoice table contains details about each invoice issued to a member.

Fields:

- id: Primary key.

- user\_id: Foreign key to the User table, indicating the member receiving the invoice.

- issued\_date: Date the invoice was created.

- due\_date: Date payment is due.

- paid: Boolean indicating whether the invoice has been marked as paid.

Each invoice belongs to one user (a member) and may contain many line items.

**3. InvoiceItem**

The InvoiceItem table stores each chargeable line item added to an invoice.

Fields:

- id: Primary key.

- invoice\_id: Foreign key to the Invoice table.

- description: Text description of the service or item.

- quantity: Number of units for the item.

- unit\_price: Price per unit of the item.

An invoice must contain one or more-line items, which are used to calculate totals.

**Relationships:**

1. User to Invoice (1 to many)

- One user (a member) may have multiple invoices.

- Enforces user ownership of invoice data.

2. Invoice to InvoiceItem (1 to many)

- Each invoice contains multiple items.

- Enables granular cost breakdowns.

**Support for Use Cases:**

- Login/Logout: Managed through User credentials and roles.

- Create Invoice: Admins insert new rows into the Invoice table.

- Add Invoice Items: Admins append related items to the InvoiceItem table.

- Assign Invoice: Admin links the invoice to a member using user\_id.

- View All Invoices: Admins, Coaches, and Accountants query all invoices.

- View My Invoices: Members query invoices where user\_id matches their ID.

- Download PDF: Invoice and its items can be rendered into a PDF format.

- Mark as Paid: Accountants update the 'paid' field of the Invoice record.