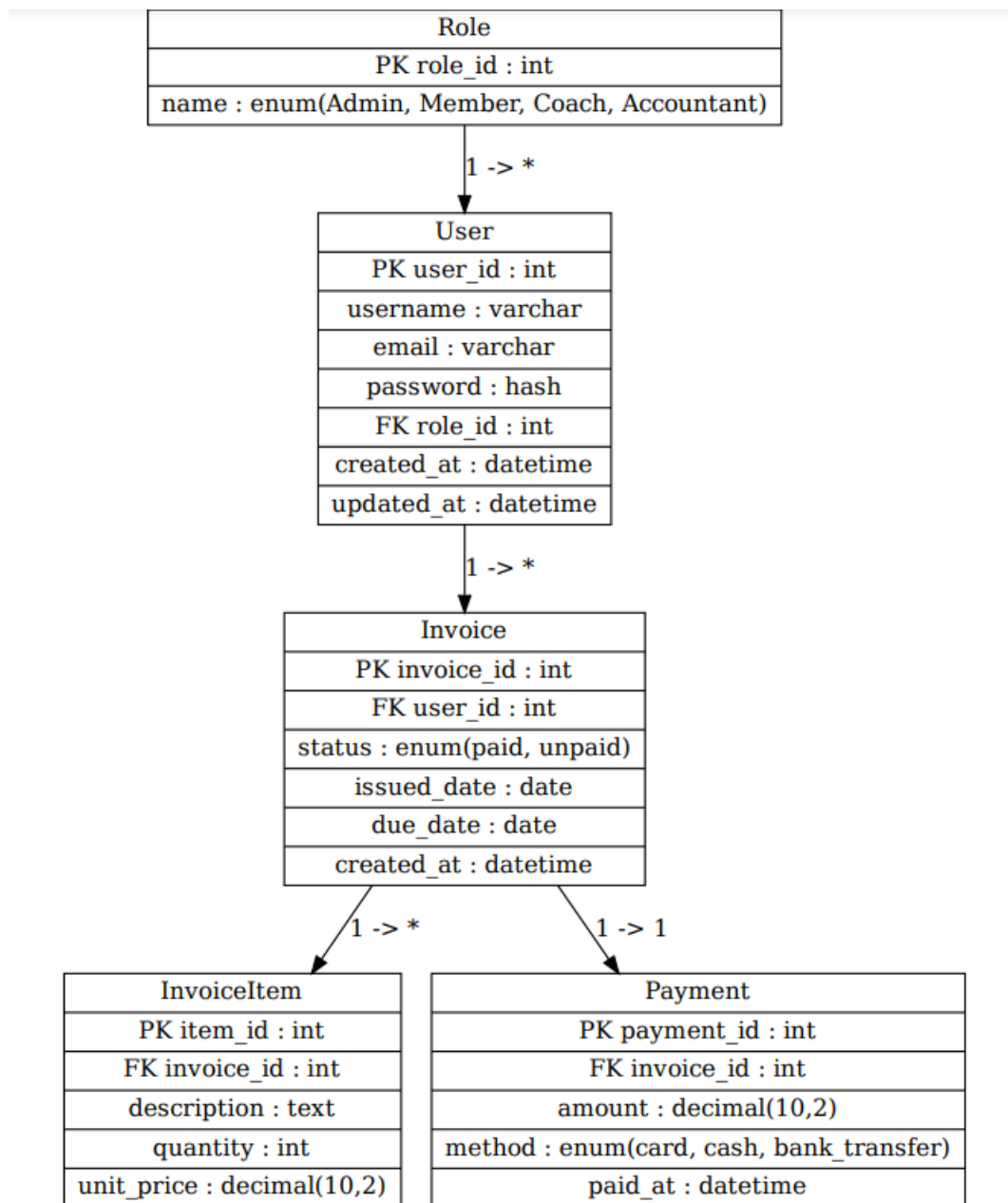


Design 2 – ERD



Overview:

This enhanced ERD models the full database architecture for the Sports Invoice System project. It includes normalized structures, role-based relationships, and support for payment records.

Entities and Descriptions:

1. Role

- role_id (PK): Unique identifier for each role.
- name: Enum string. Values include 'Admin', 'Member', 'Coach', 'Accountant'.

This table provides normalized role definitions. Each user in the system is linked to a single role through role_id. This allows better scalability and avoids hard-coded enum values in the user model.

2. User

- user_id (PK): Unique user identifier.
- username: Used for login and display.
- email: Contact and notification address.
- password: Secure hashed value.
- role_id (FK): Links to the Role table.
- created_at, updated_at: Timestamps for auditing and change tracking.

Users can be Admins, Coaches, Members, or Accountants. Each user may have multiple invoices associated with them if they are members.

3. Invoice

- invoice_id (PK): Unique invoice ID.
- user_id (FK): References the User (typically with role = Member).
- status: Enum value showing if the invoice is 'paid' or 'unpaid'.
- issued_date: Date invoice is created.
- due_date: Date payment is due.
- created_at: Timestamp of invoice creation.

Each invoice belongs to one user and is linked to invoice items and an optional payment. This structure supports use cases like invoice creation, tracking, filtering, and reporting.

4. InvoiceItem

- item_id (PK): Unique line item identifier.
- invoice_id (FK): Refers to the parent invoice.
- description: Describes the service or product.
- quantity: Number of units charged.
- unit_price: Price per unit.

Invoices may contain multiple items. This table allows for dynamic total calculation and itemized displays.

5. Payment

- payment_id (PK): Unique ID for the payment.
- invoice_id (FK): One-to-one link with an invoice.
- amount: Amount paid.
- method: Enum of available payment methods ('card', 'cash', 'bank_transfer').
- paid_at: Timestamp when payment was made.

This table supports payment tracking and report generation. Only invoices marked as 'paid' should be linked to this table.

Relationships Summary:

- One Role -> Many Users
- One User -> Many Invoices
- One Invoice -> Many InvoiceItems
- One Invoice -> One Payment

How the Schema Supports Use Cases:

- Login: Based on User credentials and Role
- Create Invoice: Admin inserts into Invoice table
- Add Invoice Items: Admin appends to InvoiceItem for each invoice
- Assign Invoice: Admin selects user_id (Member)
- View Invoices: Based on role, query on Invoice table
- Mark as Paid: Accountant updates Invoice and inserts into Payment
- Download PDF: Pull from Invoice and InvoiceItem with invoice_id
- Role Permissions: Handled through Role table joins