Assignment 1: Analyze a given business scenario and create an ER diagram that includes entities, relationships, attributes, and cardinality. Ensure that the diagram reflects proper normalization up to the third normal form.

Business Scenario: A Library System

In this scenario, we'll design a database for a library system. The library system contains information about books, authors, borrowers, and transactions (borrowing and returning books).

Entities:

- Book
  - Attributes: ISBN (Primary Key), Title, Genre, Publication Year, Publisher
- Author
  - Attributes: Author ID (Primary Key), Name, Nationality, Birthdate
- Borrower
  - Attributes: Borrower ID (Primary Key), Name, Address, Email, Phone Number
- Transaction
  - Attributes: Transaction ID (Primary Key), Book ISBN (Foreign Key), Borrower ID (Foreign Key), Date Borrowed, Due Date, Date Returned

Relationships:

- **Book - Author (Many-to-Many):**
  - An author can write multiple books.
  - A book can have multiple authors.
  - This relationship is resolved by an intermediate table.
- **Book - Transaction (One-to-Many):**
  - A book can be involved in multiple transactions (borrowing/returning).
  - A transaction involves only one book.
- **Borrower - Transaction (One-to-Many):**
  - A borrower can have multiple transactions (borrowing/returning).
  - Each transaction is associated with only one borrower.

Cardinality:

- **Book - Author:** Many-to-Many
- **Book - Transaction:** One-to-Many (Each book can have multiple transactions)
- **Borrower - Transaction**: One-to-Many (Each borrower can have multiple transactions)