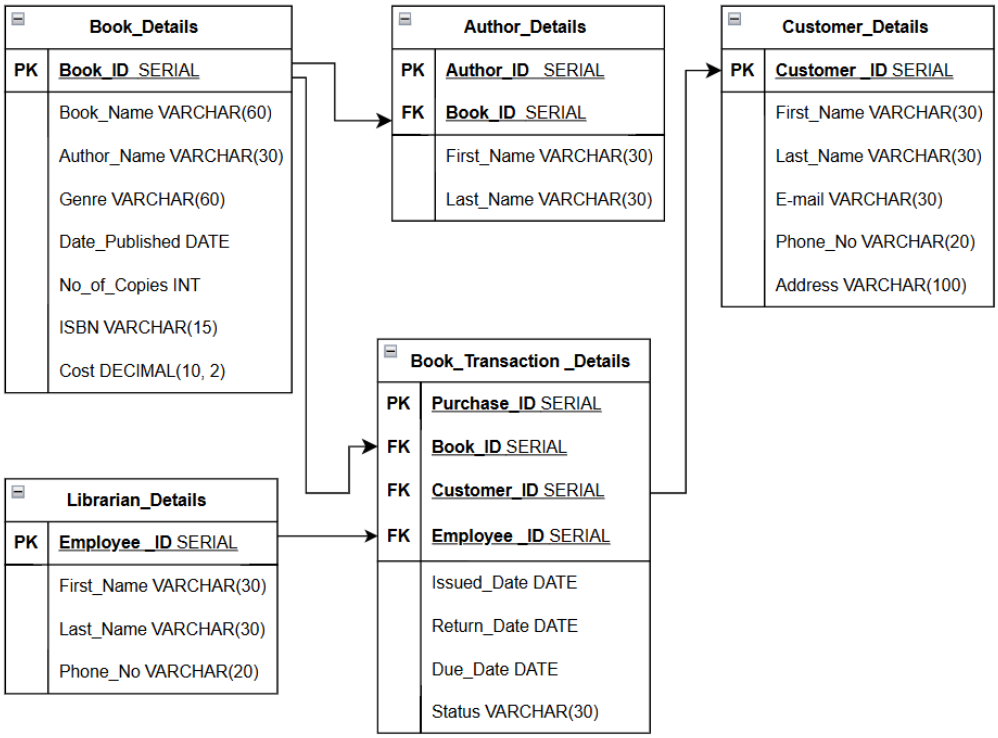
# Schema Design and Explanation




## 1. Book_Details

```
CREATE TABLE Book_Details(
Book_ID SERIAL PRIMARY KEY,
Book_Name VARCHAR(60) NOT NULL,
Author_Name VARCHAR(30) NOT NULL,
Genre VARCHAR(60) NOT NULL,
Date_Published DATE,
No_of_Copies INT,
ISBN VARCHAR(15) UNIQUE NOT NULL,
Cost DECIMAL(10, 2)
);
```

# Explanation

- Book_ID: Primary key for the table; auto-incremented value.
- Book_Name: Title of the book.
- Author_Name: Author who wrote of the book.
- Genre: Type or category of the book.
- Date_Published: When the book was published.
- No_of_Copies: Represents the total number of copies of the book in the library.
- ISBN: Unique identifier for the book in International standards.
- Cost: Price of the book.

## 2. Author_Details

```
CREATE TABLE Author_Details(
Author_ID SERIAL PRIMARY KEY,
Book_ID SERIAL NOT NULL,
First_Name VARCHAR(30) NOT NULL,
Last_Name VARCHAR(30) NOT NULL,
FOREIGN KEY (Book_ID) REFERENCES Book_Details(Book_ID) ON DELETE CASCADE   );
```

# Explanation

- Author_ID: Primary key for the author.
- Book_ID: Foreign key from the Book_Details table, linking an author to a specific book.
- First_Name and Last_Name: Author's first and last names.
- Foreign Key: Ensures that the relationship between authors and books is maintained. If a book is deleted, associated author records will also be deleted due to ON DELETE CASCADE.

## 3. Customer_Details

```
CREATE TABLE Customer_Details(
Customer_ID SERIAL PRIMARY KEY,
First_Name VARCHAR(30) NOT NULL,
Last_Name VARCHAR(30) NOT NULL,
Email VARCHAR(30) UNIQUE NOT NULL,
Phone_No VARCHAR(20) UNIQUE NOT NULL,
Address VARCHAR(100)
);
```

## Explanation

- Customer_ID: Primary key for the customer.
- First_Name and Last_Name: Customer's first and last names.
- Email: Unique email address of the customer, ensuring no duplicates.
- Phone_No: Customer's phone number, ensuring uniqueness.
- Address: Optional address field for the customer.

## 4. Librarian_Details

```
CREATE TABLE Librarian_Details(
Employee_ID SERIAL PRIMARY KEY,
First_Name VARCHAR(30) NOT NULL,
Last_Name VARCHAR(30) NOT NULL,
Phone_No VARCHAR(20) UNIQUE NOT NULL
);
```

## Explanation

- Employee_ID: Primary key for the librarian.
- First_Name and Last_Name: Librarian's first and last names.
- Phone_No: Librarian's phone number, ensuring uniqueness.

## 5. Book_Transaction_Details

```
CREATE TABLE Book_Transaction_Details(
Purchase_ID SERIAL PRIMARY KEY,
Book_ID SERIAL NOT NULL,
Customer_ID SERIAL NOT NULL,
Employee_ID SERIAL NOT NULL,
Issued_Date DATE,
Return_Date DATE,
Due_Date DATE,
Status VARCHAR(30),
FOREIGN KEY (Book_ID) REFERENCES Book_Details(Book_ID) ON DELETE CASCADE,
FOREIGN KEY (Customer_ID) REFERENCES Customer_Details(Customer_ID) ON DELETE
CASCADE,
FOREIGN KEY (Employee_ID) REFERENCES Librarian_Details(Employee_ID) ON DELETE
CASCADE
);
```

## Explanation

- Purchase_ID: Primary key for each transaction record.
- Book_ID: Foreign key linking to the Book_Details table, identifying which book was borrowed.
- Customer_ID: Foreign key linking to the Customer_Details table, identifying which customer borrowed the book.
- Employee_ID: Foreign key linking to the Librarian_Details table, identifying which librarian managed the transaction.
- Issued_Date: Date the book was issued to the customer.

- Return_Date: Date the book was returned (nullable, as it may not be returned yet).
- Due_Date: Date by which the book should be returned.
- Status: Current status of the transaction (e.g., 'Issued', 'Returned', 'Overdue').