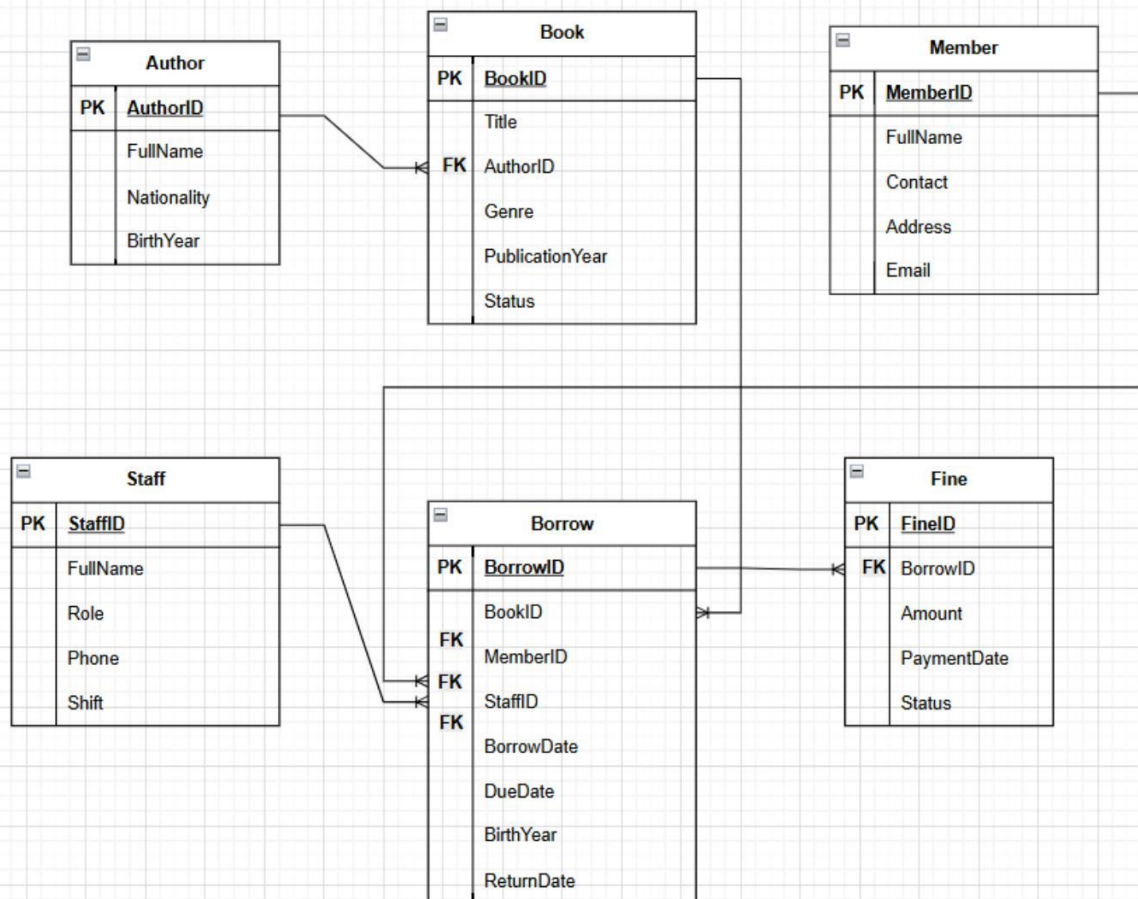**MPUNGA EMMANUEL**
Reg No: 224019555
African Centre of Excellence in Data Science (ACE-DS)
Masters of Data Science in Mining
UR-CBE Gikondo Campus

Library Management and Fine System

CREATING TABLES INTO POSTGRES

```sql
CREATE TABLE author (

    AuthorID SERIAL PRIMARY KEY,

    FullName VARCHAR(100),

    Nationality VARCHAR(50),

    BirthYear INT

);


CREATE TABLE book (

    BookID SERIAL PRIMARY KEY,

    Title VARCHAR(100),

    AuthorID INT,

    Genre VARCHAR(50),

    PublicationYear INT,

    Status VARCHAR(20),

    FOREIGN KEY (AuthorID) REFERENCES Author(AuthorID) ON DELETE CASCADE

);

INSERT INTO Author (FullName, Nationality, BirthYear) VALUES

('Chinua Achebe', 'Nigerian', 1930),

('Wole Soyinka', 'Nigerian', 1934),

('Chimamanda Ngozi Adichie', 'Nigerian', 1977),

('Albert Camus', 'French', 1913),

('George Orwell', 'British', 1903),

('Gabriel García Márquez', 'Colombian', 1927),

('Jane Austen', 'British', 1775),
```

('Mark Twain', 'American', 1835),

('Leo Tolstoy', 'Russian', 1828);

INSERT INTO Book (Title, AuthorID, Genre, PublicationYear, Status) VALUES

('Things Fall Apart', , 'Fiction', 1958, 'Available'),

('Petals of Blood', 8, 'Fiction', 1967, 'Available'),

('Ake: The Years of Childhood', 9, 'Autobiography', 1981, 'Available'),

('Half of a Yellow Sun', 10, 'Historical Fiction', 2006, 'Available'),

('The Stranger', 11, 'Philosophical Fiction', 1942, 'Available'),

('1984', 12, 'Dystopian', 1949, 'Available'),

('One Hundred Years of Solitude', 13, 'Magical Realism', 1967, 'Available'),

('Pride and Prejudice', 14, 'Romance', 1813, 'Available'),

('Adventures of Huckleberry Finn',15, 'Adventure', 1884, 'Available'),

('War and Peace', 16, 'Historical Fiction', 1869, 'Available');

Create table Fine

CREATE TABLE Fine (

    FineID SERIAL PRIMARY KEY,

    BorrowID INT NOT NULL,

    Amount NUMERIC(10,2) NOT NULL CHECK (Amount >= 0),

    PaymentDate DATE,

    Status VARCHAR(20) DEFAULT 'Unpaid',

    -- Foreign key with CASCADE delete

    CONSTRAINT fk_borrow FOREIGN KEY (BorrowID)

        REFERENCES Borrow (BorrowID)

        ON DELETE CASCADE

```
);
```

-- Insert a borrow and fine

```
INSERT INTO Borrow (BookID, MemberID, StaffID, BorrowDate, DueDate)

VALUES (1, 1, 1, CURRENT_DATE, CURRENT_DATE + INTERVAL '14 days');


INSERT INTO Fine (BorrowID, Amount)

VALUES (1, 500);


-- Delete borrow

DELETE FROM Borrow WHERE BorrowID = 1;

DELETE FROM Author WHERE AuthorID = 7;


select * from author

select * from book

select * from member




truncate table  author

truncate table book

-- CREATE SCHEMA sales;


CREATE TABLE sales.customers (

    customer_id SERIAL PRIMARY KEY,

    name TEXT NOT NULL,

    email TEXT UNIQUE,
```

```
    joined_date DATE DEFAULT CURRENT_DATE

);


CREATE TABLE sales.orders (

    order_id SERIAL PRIMARY KEY,

    customer_id INT REFERENCES sales.customers(customer_id),

    order_date DATE DEFAULT CURRENT_DATE,

    amount NUMERIC(10,2)

);

CREATE SCHEMA CUSTOMERS;


CREATE TABLE Customers.clients (

    client_id SERIAL PRIMARY KEY,

    first_name VARCHAR(50) NOT NULL,

    last_name VARCHAR(50),

    email VARCHAR(100) UNIQUE,

    phone VARCHAR(20),

    registered_date DATE DEFAULT CURRENT_DATE

);
```

Insert Sample Records

```
INSERT INTO Staff (StaffID, FullName, Role, Phone, Shift)

VALUES

(1, 'Alice Mukamana', 'Librarian', '+250788111001', 'Morning'),

(2, 'John Ndayisenga', 'Assistant Librarian', '+250788111002', 'Afternoon'),

(3, 'Grace Uwase', 'Library Clerk', '+250788111003', 'Morning'),

(4, 'Eric Habimana', 'Library Technician', '+250788111004', 'Evening'),
```

(5, 'Claudine Ingabire', 'Librarian', '+250788111005', 'Afternoon'),

(6, 'Patrick Mugisha', 'Library Clerk', '+250788111006', 'Morning'),

(7, 'Diane Uwimana', 'Assistant Librarian', '+250788111007', 'Evening'),

(8, 'Samuel Nkurunziza', 'Library Technician', '+250788111008', 'Morning'),

(9, 'Olivia Ishimwe', 'Library Clerk', '+250788111009', 'Afternoon'),

(10, 'Robert Twizeyimana', 'Librarian', '+250788111010', 'Evening');