PAYMENT GATEWAY

Documentation Report

Team Members

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1. Objective

The objective is to integrate a cashier system with an online payment system, allowing businesses to process both cash and digital payments seamlessly. This integration aims to:

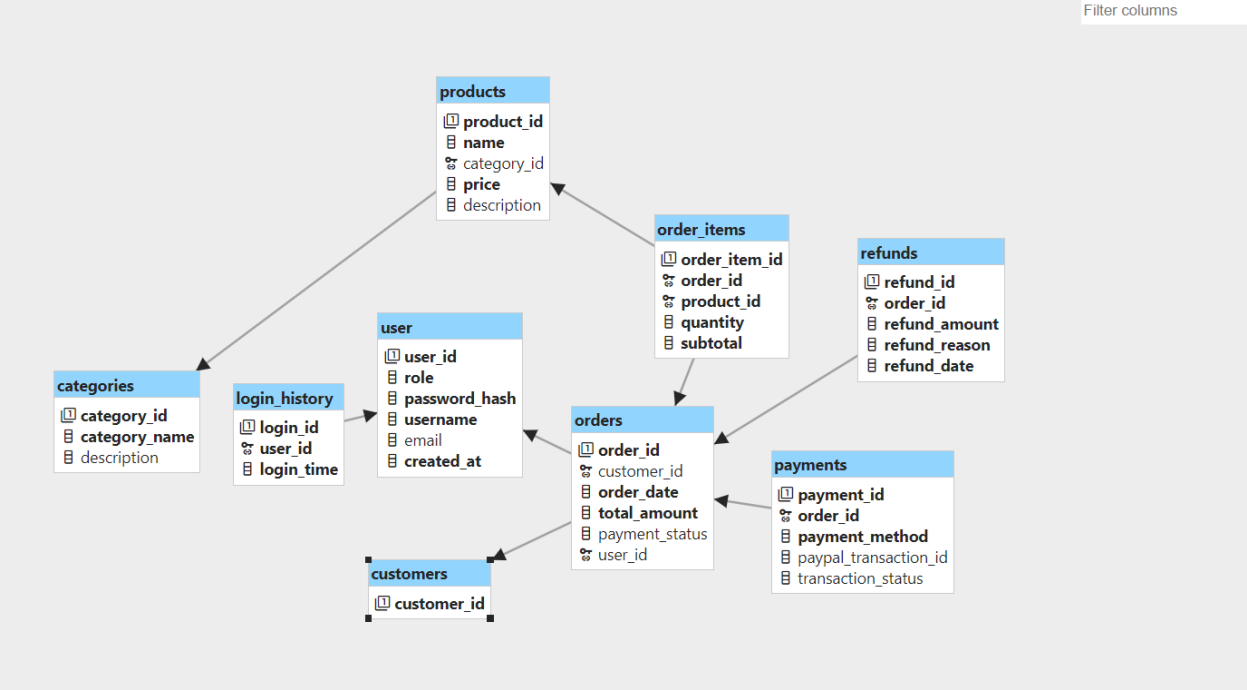
- Enhance transaction efficiency
- Minimize cash dependency
- Improve financial security
- Ensure ease of use for cashiers and customers

2. System Overview

Features Implemented

1. **User Authentication**
    - Secure login system with password hashing
    - Role-based access control (Admin, Cashier, Manager)
2. **Cashier Dashboard**
    - Process payments (cash & digital)
    - View transaction history
    - Logout functionality
3. **Payment Processing**
    - Integration with **PayPal** for digital transactions
    - Cash payment processing with receipt generation
4. **Session Management**
    - Tracks active user sessions
    - Prevents unauthorized access after logout

3. Database Schema Diagram



4. Code Snippets

Authentication System

```
public static String authenticateUser(String username, String password) {
    String role = null;

    try (Connection conn = DriverManager.getConnection(DB_URL, DB_USER, DB_PASS);
         PreparedStatement pstmt = conn.prepareStatement("SELECT password_hash, role FROM user WHERE username = ?")) {

        pstmt.setString(1, username);
        ResultSet rs = pstmt.executeQuery();

        if (rs.next()) {
            String storedHash = rs.getString("password_hash");
            String hashedInput = hashPassword(password);

            if (storedHash.equals(hashedInput)) {
                role = rs.getString("role");
            }
        }

    } catch (SQLException e) {
        e.printStackTrace();
    }

    return role;
}
```

Session Management

```
public class UserSession {

    private static String loggedInUser;
    private static String userRole;

    public static void startSession(String username, String role) {
        loggedInUser = username;
        userRole = role;
    }

    public static void endSession() {
        loggedInUser = null;
        userRole = null;
    }

    public static boolean isUserLoggedIn() {
        return loggedInUser != null;
    }

    public static String getUserRole() {
        return userRole;
    }
}
```

5. Challenges Encountered & Solutions Applied

Challenge 1: Foreign Key Constraint Issues in Database

- **Issue:** When renaming `staff_id` to `user_id`, a foreign key constraint error occurred.
- **Solution:** Dropped the foreign key properly before renaming, then re-added it after the change.

Challenge 2: Incorrect Credentials Handling

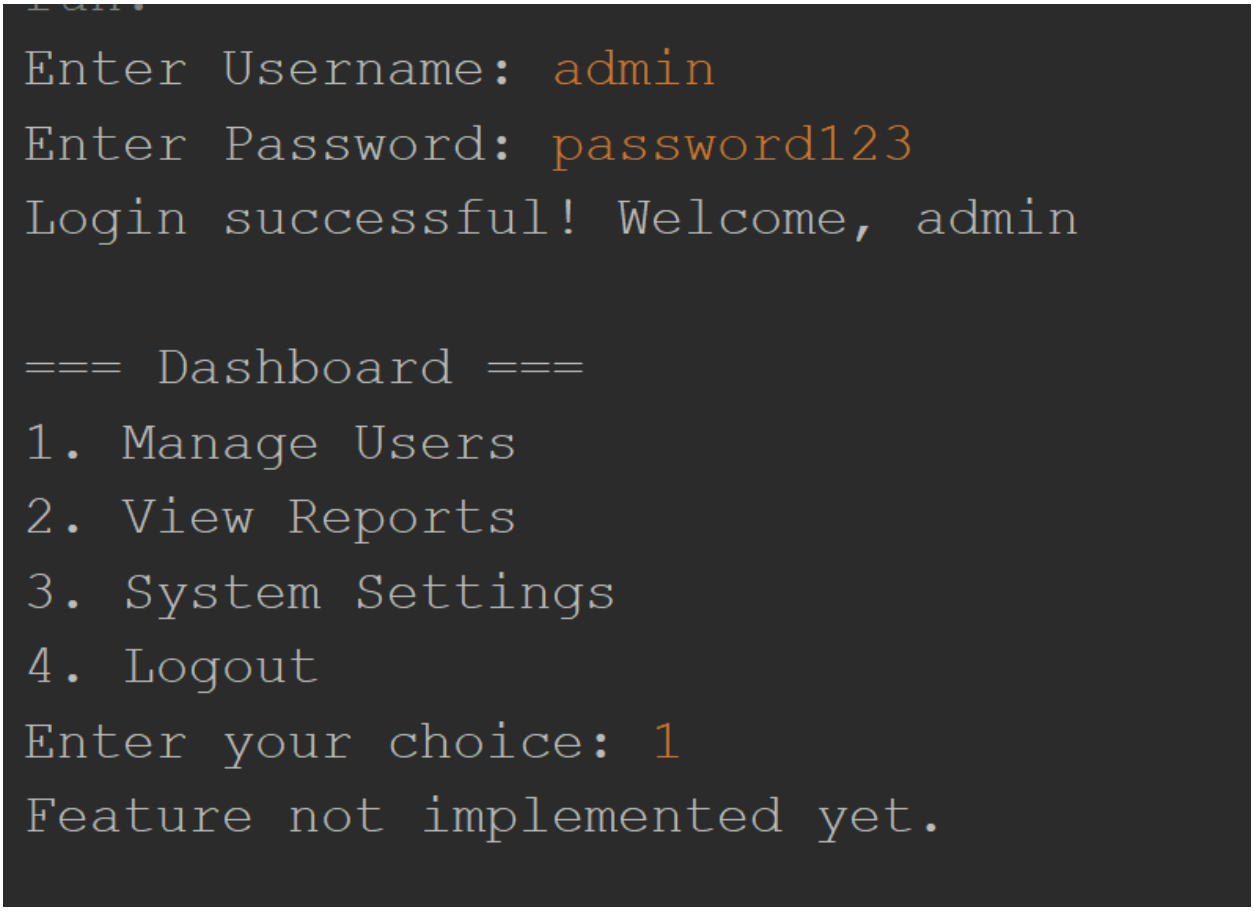
- **Issue:** The login system would exit after incorrect credentials.

- **Solution:** Implemented a loop to allow users to retry login until they enter valid credentials.

Challenge 3: Dashboard Redirection

- **Issue:** Users were not redirected to the appropriate dashboard based on their role.
- **Solution:** Implemented role-based dashboard selection using a switch-case structure.

6. Screenshots



```
Enter Username: user1
Enter Password: userpass
Login successful! Welcome, user1

=== Dashboard ===
1. Process Payments
2. View Transactions
3. Logout
Enter your choice:
```