**Database Schema Report for MyPass Project**

**1. Overview**

Our report represents the database schema design for our MyPass project, a secure password management application. Our schema is designed to ensure data organization, encryption, and user-centric features as specified in the project requirements by Dr. Xu. It includes tables to manage user accounts, vault items, and specific categories of sensitive data such as logins, credit cards, identities, and secure notes.

Below is our database schema design for each section (User tables, Login Table, SecureNote table, CreditCard Table, Identity Table and SecureNote table.

**2. Database Schema Design**

**2.1 Users Table**

CREATE TABLE Users (

user\_id INT AUTO\_INCREMENT PRIMARY KEY,

email VARCHAR(255) NOT NULL UNIQUE,

password\_hash VARCHAR(255) NOT NULL,

security\_question1 VARCHAR(255) NOT NULL,

security\_answer1\_hash VARCHAR(255) NOT NULL,

security\_question2 VARCHAR(255) NOT NULL,

security\_answer2\_hash VARCHAR(255) NOT NULL,

security\_question3 VARCHAR(255) NOT NULL,

security\_answer3\_hash VARCHAR(255) NOT NULL

);

**2.2 Login Table**

CREATE TABLE Login (

id INT AUTO\_INCREMENT PRIMARY KEY,

user\_id INT NOT NULL,

name VARCHAR(255) NOT NULL,

username VARCHAR(255) NOT NULL,

password VARCHAR(255) NOT NULL,

url VARCHAR(255),

created\_at DATETIME DEFAULT CURRENT\_TIMESTAMP,

updated\_at DATETIME DEFAULT CURRENT\_TIMESTAMP ON UPDATE CURRENT\_TIMESTAMP,

FOREIGN KEY (user\_id) REFERENCES Users(user\_id) ON DELETE CASCADE

);

**2.3 CreditCard Table**

The CreditCard table holds sensitive credit card data.

CREATE TABLE CreditCard (

id INT AUTO\_INCREMENT PRIMARY KEY,

user\_id INT NOT NULL,

name VARCHAR(255) NOT NULL,

card\_number VARCHAR(255) NOT NULL,

expiration\_month INT NOT NULL,

expiration\_year INT NOT NULL,

cvv VARCHAR(255) NOT NULL,

created\_at DATETIME DEFAULT CURRENT\_TIMESTAMP,

updated\_at DATETIME DEFAULT CURRENT\_TIMESTAMP ON UPDATE CURRENT\_TIMESTAMP,

FOREIGN KEY (user\_id) REFERENCES Users(user\_id) ON DELETE CASCADE

);

**2.4 Identity Table**

The Identity table stores information about personal identities such as passports or licenses.

CREATE TABLE Identity (

id INT AUTO\_INCREMENT PRIMARY KEY,

user\_id INT NOT NULL,

name VARCHAR(255) NOT NULL,

identity\_type VARCHAR(50) NOT NULL,

identity\_number VARCHAR(255) NOT NULL,

expiration\_date DATE,

created\_at DATETIME DEFAULT CURRENT\_TIMESTAMP,

updated\_at DATETIME DEFAULT CURRENT\_TIMESTAMP ON UPDATE CURRENT\_TIMESTAMP,

FOREIGN KEY (user\_id) REFERENCES Users(user\_id) ON DELETE CASCADE

);

**2.5 SecureNote Table**

CREATE TABLE SecureNote (

id INT AUTO\_INCREMENT PRIMARY KEY,

user\_id INT NOT NULL,

name VARCHAR(255) NOT NULL,

content TEXT NOT NULL,

created\_at DATETIME DEFAULT CURRENT\_TIMESTAMP,

updated\_at DATETIME DEFAULT CURRENT\_TIMESTAMP ON UPDATE CURRENT\_TIMESTAMP,

FOREIGN KEY (user\_id) REFERENCES Users(user\_id) ON DELETE CASCADE

);

**3. Entity Relationships**

* **Users Table**: Serves as the primary table connecting with the Login, CreditCard, Identity, and SecureNote tables.
* **One-to-Many Relationships**: Each user can have multiple entries in the Login, CreditCard, Identity, and SecureNote tables.

**4. Key Features**

* **Security**: All sensitive data is stored in encrypted fields (e.g., hashed passwords, masked credit card numbers).
* **Extensibility**: The schema is modular, allowing additional data types to be added in the future.
* **Data Integrity**: Foreign key constraints ensure consistency between the Users table and related tables.
* **Audit Trail**: created\_at and updated\_at fields track changes for compliance and debugging.

**5. Conclusion**

Our schema is designed to meet the security, usability, and scalability requirements of our MyPass project. It ensures efficient organization and secure management of user data, adhering to best practices for password management applications.