Marriage Matchmaking System Report

# 1. Introduction:

This project aims to develop a Marriage Matchmaking Web Application that allows users to find potential matches based on various personal criteria, such as shared interests, location, and preferences. The application will provide features like user registration, profile updates, match searching, and account deletion. It will be built using FastAPI, SQLAlchemy, and JWT (JSON Web Tokens) for authentication. This system will enable users to register, authenticate, and connect with others based on common interests and location.

# 2. Technology Stack:

• FastAPI: A high-performance web framework for building APIs with Python 3.7+. FastAPI is known for its ease of use, speed, and ability to handle asynchronous operations.  
• SQLAlchemy: An Object Relational Mapper (ORM) and database toolkit for Python. It will be used to interact with the application's database, providing an easy interface for handling data operations.  
• JWT (JSON Web Tokens): A secure method for transmitting information between clients and servers as a JSON object. JWT is commonly used for user authentication and authorization.  
• Pydantic: A data validation library used to define the structure of incoming and outgoing data in the application.  
• CORS (Cross-Origin Resource Sharing): CORS middleware will allow the frontend and backend to communicate, even if they are hosted on different domains.

# 3. Application Structure and Components:

## 3.1. User Registration and Authentication

The application will provide an easy-to-use registration system where users can sign up by providing basic personal information such as name, age, gender, email, city, and interests. During registration, the password provided by the user will be hashed for security. Once registered, users can log in to the system using their credentials. After successful authentication, a JWT token is generated to ensure secure access to other features.

## 3.2. User Profiles

Each user will have a profile that contains their personal information such as:  
• Name  
• Age  
• Gender  
• Email  
• City  
• Interests  
Users will have the ability to update their profiles, including changing their personal information and password. The profile update functionality is protected, meaning only the logged-in user can update their own profile.

## 3.3. Matchmaking Algorithm

The core feature of the application is its matchmaking functionality, which helps users find potential matches based on shared interests and location. The system will:  
• Compare the user's city with other users.  
• Look for common interests between the user and others in the same geographical location.  
This will allow users to find matches who share similar values and preferences, making the matching process more relevant and effective.

## 3.4. Deleting a User Account

In case a user wishes to delete their profile, the system will allow them to remove their account completely from the database. This feature ensures that users have full control over their data.

# 4. Application Flow:

1. User Registration:   
Users will sign up by providing basic details such as name, age, gender, city, and interests, along with a password. The password is hashed before storage for security reasons.  
  
2. Login and Authentication:  
Users can log in using their credentials. Upon successful login, they will receive a JWT token that must be included in subsequent requests for authentication.  
  
3. Profile Management:  
After logging in, users can update their profiles with new information, including changing their password if needed.  
  
4. Matchmaking:  
Users can find potential matches by searching for others who share similar interests and are located in the same city.  
  
5. Account Deletion:  
If desired, users can delete their account and all associated data from the system.

# 5. Security Considerations:

• Password Hashing: All passwords are stored in a hashed format using a secure hashing algorithm, ensuring that plain-text passwords are never exposed in the database.  
  
• JWT Authentication: JWT tokens are used for secure, stateless authentication. The token is issued upon successful login and is included in subsequent requests to verify the user's identity.  
  
• CORS: The application uses CORS middleware to allow secure cross-origin requests between the frontend and backend, particularly useful in multi-domain setups.

# 6. Potential Enhancements:

• Additional Match Criteria: Expand the matchmaking logic to include other criteria such as education level, occupation, and hobbies.  
  
• Profile Picture Upload: Allow users to upload profile pictures to make their profiles more personalized.  
  
• Messaging System: Implement a messaging feature to allow users to communicate with each other once they match.  
  
• Rate Limiting: Prevent abuse of the API by adding rate limiting to ensure that users do not make too many requests in a short period.  
  
• Two-Factor Authentication (2FA): Implement an additional layer of security for user logins, ensuring that users can securely access their accounts.

# 7. Conclusion:

The Marriage Matchmaking Web Application offers a secure, easy-to-use platform for users to find potential matches based on shared interests and location. Built with modern tools like FastAPI and SQLAlchemy, the application is designed to be fast, secure, and scalable. With features like profile management, matchmaking, and account deletion, the system is simple yet functional. Future enhancements, such as adding more matching criteria, profile pictures, and messaging, will make the platform even more robust and user-friendly.

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