**PuzzLink - Detailed Requirements**  
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**Functional Requirements:**

1. **User Authentication:**
   * Users can register an account using their email, username, and password.
   * Users can log in to their account using their credentials.
   * Users will be tokenized and remembered with cookies.
2. **Private Rooms:**
   * Users can create and join rooms.
   * Users can progress to a shared web page within the room.
   * **Note:** The key requirement here is that multiple users can simultaneously write on the shared board in real time, which is central to the purpose of the platform. *This functionality should be emphasized as the core feature.*
3. **Room Type:**
   * Users can choose between an image-based or plain whiteboard room.
4. **Image Uploading:**
   * Users can upload an image.
   * After uploading, users can begin drawing activities on the board.
5. **Room Options:**
   * Users can draw or erase on the board.
   * Users can change the pencil width and color.
6. **Private Room Chat:**
   * Users can enter the chat corresponding to their room.
   * Users can send and receive text messages in the chat room.
   * Real-time updates for new messages will be provided.
7. **Profile Tab:**
   * Users can view and edit their profile information, including name, contact details, and recent drawings.
   * Users can upload a profile picture.
   * Users can view their activity history within the app (e.g., past rooms, partners).
8. **Notifications:**
   * Users will receive notifications for new chat messages.

**Non-Functional Requirements:**

**Performance:**

1. **Real-Time Communication:**
   * Chat messages and whiteboard updates should be delivered with minimal latency (< 1 second).
   * The system should handle concurrent private room sessions efficiently, allowing real-time updates and collaboration.
2. **Response Time:**
   * The application should respond to user interactions within 2 seconds on average.
   * The maximum acceptable response time for any action is 5 seconds (excluding image uploading/download).

**Security:**

1. **Authentication and Authorization:**
   * User authentication should be secure, employing industry-standard encryption techniques.
   * Access to certain features (e.g., creating or
   * joining rooms, dashboard) should require user authorization.
2. **Data Protection:**
   * User data should be stored securely, adhering to best practices for data protection.
   * Sensitive data transmission should be encrypted using HTTPS.

**Reliability:**

1. **Availability:**
   * The system should aim for at least 99% availability, allowing for scheduled maintenance downtime.
2. **Backup and Recovery:**
   * Regular backups of the database should be performed to prevent data loss.
   * Procedures for data recovery in case of system failures should be in place.

**Usability:**

1. **User Interface:**
   * The user interface should be intuitive and user-friendly, facilitating easy navigation.
   * Adequate feedback should be provided to users for their actions (e.g., successful session, error messages).
2. **Compatibility:**
   * Responsive design principles should be followed to ensure usability across different screen sizes.