**Authentication Backend Development Process for EzySign**

**1️. Project Setup**

* Initialize a Node.js project using npm init.
* Install required dependencies: Express, MySQL, JWT, bcrypt, and dotenv.
* Configure environment variables for database credentials and JWT secret.

**2️. Database Setup**

* Create a users table in MySQL with fields: id, name, email, password, role.
* Establish a database connection using mysql2 and use connection pooling.

**3️. Express Server Configuration**

* Initialize an Express server.
* Configure middleware for JSON parsing, CORS, and security (Helmet).

**4️. User Registration**

* Create an API endpoint for user registration.
* Hash passwords using bcrypt before storing them in the database.
* Save user details along with a predefined role (e.g., Admin, Signer, Viewer).

**5️. User Login**

* Create an API endpoint for user login.
* Verify user credentials by comparing the password with the hashed version.
* Generate a JWT token with user ID and role as payload upon successful authentication.

**6️. WT-Based Authentication**

* Implement middleware to verify JWT tokens in protected routes.
* Extract and decode the token from the request headers.
* Validate the token against the secret key.

**7️. Role-Based Access Control (RBAC)**

* Define middleware to restrict access based on user roles.
* Ensure only authorized users can perform certain actions (e.g., Admin-only access).

**8️. Password Reset & Account Recovery *(Optional)***

* Implement functionality for users to reset passwords via email.
* Generate a password reset token with an expiration time.
* Allow users to update passwords after verification.

**9️. Security Enhancements**

* Use HTTPS for secure communication.
* Implement rate limiting to prevent brute-force attacks.
* Store sensitive credentials in .env and use environment variables.

**10. Testing & Deployment**

* Test authentication endpoints using Postman or Swagger.
* Deploy the authentication backend on a cloud server (AWS, DigitalOcean).
* Set up CI/CD pipelines for continuous deployment.