**User Guide For PUZZLINK**

Backend – Node.js + Express

Directory: backend/

The following libraries must be installed using npm install:

* express – Web server framework
* mongoose – MongoDB object-document mapper
* socket.io – Real-time communication
* dotenv – Manages environment variables
* cors – Handles cross-origin requests
* bcryptjs – Password hashing
* jsonwebtoken – Token-based authentication
* express-session – Session handling
* connect-mongo – Stores sessions in MongoDB
* passport – User authentication framework
* passport-jwt – JWT strategy for Passport
* passport-google-oauth20 – Google login via OAuth
* express-validator – Validates input and forms
* multer – File upload middleware
* morgan – HTTP request logger
* nodemon – Automatically restarts the server on file changes (development use)
* config – Manages environment-specific configurations
* express-async-handler – Simplifies error handling in async routes

Required Setup:

You must create a .env file inside the backend/ directory. This file should include sensitive or environment-specific configuration, such as:

MONGO\_URI=your\_mongodb\_connection\_string  
JWT\_SECRET=your\_jwt\_secret\_key  
SESSION\_SECRET=your\_session\_secret  
GOOGLE\_CLIENT\_ID=your\_google\_client\_id  
GOOGLE\_CLIENT\_SECRET=your\_google\_client\_secret

If nodemon is not installed globally on your system, install it using the following command: npm install -g nodemon

## Frontend – React + Tailwind

Directory: frontend/

The following libraries must be installed using npm install:

* Core libraries:
* react
* react-dom
* react-router-dom
* react-scripts
* State management and storage:
* @reduxjs/toolkit
* react-redux
* redux-persist
* Server communication:
* axios
* socket.io-client
* openai
* openai-edge
* UI and user experience:
* tailwindcss (via shadcn/ui)
* @shadcn/ui
* lucide-react – Icon library
* react-icons
* react-hot-toast – Notification toasts
* gsap – Animation library
* Drag & Drop support:
* @dnd-kit/core
* @dnd-kit/sortable
* @dnd-kit/utilities
* Data fetching and caching:
* @tanstack/react-query
* @tanstack/react-query-devtools
* Date handling:
* date-fns
* 3D rendering:
* three
* Performance monitoring:
* web-vitals
* Testing and development tools:
* @testing-library/react
* @testing-library/jest-dom
* @testing-library/user-event
* jest-environment-jsdom
* Development and build tools:
* concurrently – To run frontend and backend simultaneously
* @babel/plugin-proposal-private-property-in-object

Required Setup:

If the frontend requires any environment-specific configuration (such as backend URL), create a .env file inside the frontend/ directory. For example:

REACT\_APP\_API\_URL=http://localhost:5000  
REACT\_APP\_FEATURE\_FLAG=true

Important: All variables in the frontend .env file must start with REACT\_APP\_ to be accessible within the React application.