**📘 Product Requirements Document: Junior School App**

**🧭 1. Purpose**

Build a secure, intuitive web application for junior schools to manage users (students, teachers, admins) and conduct exams digitally. Designed with role-based access and powered by the MERN stack.

**👥 2. User Roles**

| **Role** | **Capabilities** |
| --- | --- |
| Admin | - Add/edit/delete users - Create/manage exams - View all results - Control user access |
| Teacher | - Manage student lists - Create/view exams - Grade submissions - View student results |
| Student | - Take exams - View personal results - Update own profile |

**🔐 3. Authentication & Authorization**

* **Technology:** JWT (JSON Web Tokens) for session control
* **Login Page:** Separate login interfaces for each role
* **Validation:** Role-based redirection post-login
* **Security:** Passwords hashed using bcrypt; sessions timed out after inactivity

**📚 4. Key Features**

**User Management**

* Admin can create/delete/update users
* Student self-registration (with approval workflow)

**Exam Module**

* Exam creation interface (questions, durations, deadlines)
* Online exam submission (MCQs, short answer formats)
* Timer and autosave features for exams
* Result calculation & analytics dashboard

**Notifications**

* In-app alerts for upcoming exams, grades published, user changes

**Dashboard**

* Role-specific dashboards showing relevant metrics and actions
  + Admin: System-wide stats
  + Teacher: Class and exam overview
  + Student: Upcoming exams and grades

**🧪 5. Technical Stack**

| **Component** | **Technology** |
| --- | --- |
| Frontend | React.js |
| Backend | Node.js + Express.js |
| Database | MongoDB |
| Auth | JWT + bcrypt |
| Styling | TailwindCSS or Material UI |

**📅 6. Timeline & Milestones**

| **Week** | **Milestone** |
| --- | --- |
| 1–2 | Project setup, user auth framework |
| 3–4 | User management module |
| 5–6 | Exam creation and submission |
| 7 | Dashboard integration |
| 8 | Final testing and deployment |

**✅ 7. Success Criteria**

* Secure login for each user role
* Exams can be created and taken with proper grading
* Real-time performance and access control
* Minimal downtime, optimal UI/UX for junior school users