**Calculator Full-Stack Application — Documentation**

A complete reference for a full-stack Calculator app (Angular front end, Spring Boot back end, MySQL database), email notifications, and hosting/deployment guidance.

**1. Project Overview**

**Purpose:** Build a secure, tested, deployable full‑stack web application that exposes a calculator UI (basic + scientific operations), stores user history in MySQL, sends email receipts/notifications, and is ready for hosting.

**Primary goals:**

* Clear folder structure and coding conventions for Angular + Spring Boot
* Persistent user calculation history in MySQL
* Email integration (e.g., calculation receipt or password reset)
* Dockerized builds and deployment recipes (local and cloud)
* CI/CD guidance and security recommendations

**2. Technology Stack**

* **Frontend:** Angular (recommended: Angular 20+)
* **Backend:** Spring Boot (recommended: Spring Boot 3.x)
* **Language:** TypeScript (frontend), Java 17/21 (backend)
* **Database:** MySQL 8.x
* **Hosting options:** Netlify / Vercel / GitHub Pages (static front end), AWS/GCP/DigitalOcean for backend or container hosts (ECS, App Engine, App Platform) or platform services (Elastic Beanstalk), managed MySQL (RDS/Cloud SQL/Managed DB)

**4. Features**

* Basic arithmetic: add, subtract, multiply, divide
* Scientific functions: power, sqrt, trigonometry, logarithms (optional)
* Expression parser to accept multi-operator expressions
* User accounts (optional): signup/login
* Calculation history stored in MySQL per user (or per session)
* Send email receipt after a calculation or on demand
* REST API with secure endpoints
* Admin page to view DB metrics (optional)