Technology Stack Selection Document

# Testify Project – Tech Stack Justification

## 1. Frontend

- \*\*Framework:\*\* React.js or Next.js

- \*\*Reason:\*\* Component-based architecture, strong community, excellent SPA/SSR support (with Next.js), fast development, ecosystem of tools.

- \*\*UI Library:\*\* Tailwind CSS or Material UI

- \*\*Other Tools:\*\* Axios for HTTP requests, React Router for navigation

## 2. Backend

- \*\*Framework:\*\* Spring Boot (Java)

- \*\*Reason:\*\* Scalable, mature, well-suited for building RESTful APIs, integrates well with security modules and database tools.

- \*\*Security:\*\* Spring Security + JWT for authentication & authorization

- \*\*Data Access:\*\* Spring Data JPA with Hibernate

## 3. Database

- \*\*DBMS:\*\* PostgreSQL

- \*\*Reason:\*\* Open source, supports complex relationships, reliable performance, strong support for data integrity and indexing.

## 4. File Storage

- \*\*Service:\*\* Amazon S3

- \*\*Reason:\*\* Highly scalable, reliable, secure object storage for storing question and answer images.

## 5. CI/CD & Deployment

- \*\*CI/CD Tools:\*\* GitHub Actions

- \*\*Deployment Platform:\*\* Railway (Dev) / AWS EC2 (Prod)

- \*\*Containerization:\*\* Docker

- \*\*Reason:\*\* Automates builds, tests, and deployments. Docker ensures consistent environment setup.

## 6. Monitoring & Logging

- \*\*Monitoring:\*\* Prometheus + Grafana (optional)

- \*\*Logging:\*\* Spring Boot + Logback / ELK Stack (for production)

## 7. Version Control

- \*\*System:\*\* Git + GitHub

- \*\*Reason:\*\* Standard distributed version control, with team collaboration, issue tracking, and CI/CD integration.