Workflow

This document outlines the development workflow for the Mindstack web-based learning application. The workflow is designed to align with the technology stack, which uses Angular for the frontend and Spring Boot (Java) for the backend. It ensures an organized development process from planning to deployment using the selected tools and environments.

Development Phases

Phase 1: Planning and Design
- Define the system's overall architecture and database structure.
- Create mockups and wireframes for the user interface.
- Establish the folder structure and version control setup on GitHub.

Phase 2: Version Control and Collaboration
- Use Git and GitHub for managing source code and team collaboration.
- Create branches for separate features and merge them after code review.
- Use GitHub Issues and pull requests for task tracking and version updates.
- Ensure all commits are documented with descriptive messages.

Phase 3: Frontend Development
- Build the user interface using Angular, HTML, and SCSS.
- Use Bootstrap for responsive and accessible design components.
- Implement interactivity using TypeScript and Angular services.
- Ensure API endpoints are properly integrated with the backend once available.

Phase 4: Backend Development
- Initialize the Spring Boot project using Visual Studio Code.
- Create models for flashcards, quizzes, users, and progress tracking in the MySQL database.
- Develop RESTful APIs using Spring Boot to enable communication with the Angular frontend. Implement user authentication and data validation logic.
- Test backend endpoints using tools like Postman before integrating with the frontend.

Phase 5: Integration and Testing

- Integrate the Angular frontend with REST API endpoints
- Validate API calls and ensure proper data exchange between the client and server.
- Conduct both functional and usability testing.
- Verify that user actions (like creating flashcards, taking quizzes, etc.) correctly update the database.

Phase 6: Deployment

- Prepare the production build for the Angular frontend using the Angular CLI.
- Package the Spring Boot backend into a deployable JAR file and configure it to connect with the MySQL database.
- Deploy both frontend and backend to Hostinger's web server.
- Verify that the deployed application functions correctly and maintains secure communication between components.

Phase 7: Continuous Improvement and Revisions

- Monitor application performance and user feedback.
- Apply regular updates to both Spring Boot and Angular components.
- Use GitHub to manage ongoing development and bug fixes.
- Perform data backups and ensure the system remains secure and stable.

Tools Used in Workflow

VS Code: For writing and debugging Angular and Java Spring Boot code.
GitHub: Version control and team collaboration platform.
Postman: Testing and validating backend APIs.
Browser Developer Tools: Debugging and frontend testing utilities.
MySQL: Database setup and management during development.
Hostinger: Web hosting for live deployment.