



Lab 8

Skill Forge

Objective

The goal of this phase is to extend the Skill Forge system by introducing advanced platform features, including role-based administrative control, course approval workflows, student assessment through quizzes, certification generation, and performance insights for instructors.

1. Admin Role & Course Approval Workflow

Backend (Java)

- Introduce a dedicated Admin user role with elevated permissions.
- Implement functionality for Admins to review newly submitted instructor courses.
- Add fields to courses for approval status: PENDING, APPROVED, REJECTED.
- Ensure only approved courses are visible to students and eligible for enrollment.
- Persist approval actions in courses.json and maintain audit consistency.

Frontend (Swing)

- Add a new Admin Dashboard.
- Display list of pending courses with full details for review.
- Provide Approve/Decline buttons and update the course status instantly.

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2. Instructor Insights & Student Performance Analytics

Backend

- Record quiz results, lesson completion, and progression data for every student.
- Aggregate performance statistics per course and per lesson.
- Ensure data is synchronized in users.json and courses.json.

Frontend

- In the Instructor Dashboard, add an Insights Section that shows:
 - Student performance charts (bar/line charts).
 - Quiz averages per lesson.
 - Completion percentages.
- Add a standalone ChartFrame for rendering analytics visually.

3. Student Quiz System & Assessment Management

Backend

- Extend lesson logic to include a structured Quiz object with questions, options, and correct answers.
- Store student quiz attempts, scores, and retry policies.
- Determine lesson completion based on quiz success.
- Prevent access to next lessons unless the current quiz is passed (optional enhancement).

Frontend

- For each lesson, show a Quiz Page after content.
- Support multiple-choice questions, and score calculation.
- Display immediate results and correct answers.
- Save quiz results automatically to the database.

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4. Course Completion Tracking & Certificate Generation

Backend

- Track global course completion by verifying that all lesson quizzes are passed.
- Generate a digital certificate (JSON-based or PDF-based depending on requirements).
- Add certificate metadata: issue date, student ID, course ID, certificate ID.
- Store certificate references in users.json and optionally in courses.json.

Frontend

- Add “Certificate Earned” section in the Student Dashboard.
- Allow students to view or download their course certificate.

Required:

1. You are required to obey the OOP concepts (inheritance, polymorphism, abstraction, ...).
2. A discussion will be made with you at your lab next week on what you delivered.
3. The deadline for the delivery on the form is Monday 24/11/2025.

What to be delivered

1. On the form, you should deliver a zipped file that contains the .java files of your classes.
2. Your zip file should be named as id1_id2_id3_id4_groupNumber. For example, 4678_4557_4558_4559_G2.

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Policies:

1. You should work in groups of four (Same Groups unless you get permission to change).
2. Cheating will be severely penalized, so delivering nothing is so much better than cheating.
3. No late submission is allowed.
4. Each group must use GitHub throughout their lab work.

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