

LEARNER MANAGEMENT AND 3D SIMULATION SYSTEM FOR CRANE TRAINING CENTER

GROUP: GFA25SE59

TOPIC: FA25SE097

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Context & problem

1.Context:

This system is designed for a driving training center to organize crane operation training courses using simulation exercises for trainees before they practice on real equipment. It helps track trainee progress and simulate real practice to prepare trainees and improve safety.

2.Problem:

- Crane simulation in Vietnam is not available
- Safety risks for beginners using real equipment.
- Manual, inefficient management of programs, classes, and trainee progress.
- Existing LMS and simulators are not integrated.

Solution

LSSCTC provides an all-in-one training ecosystem combining:

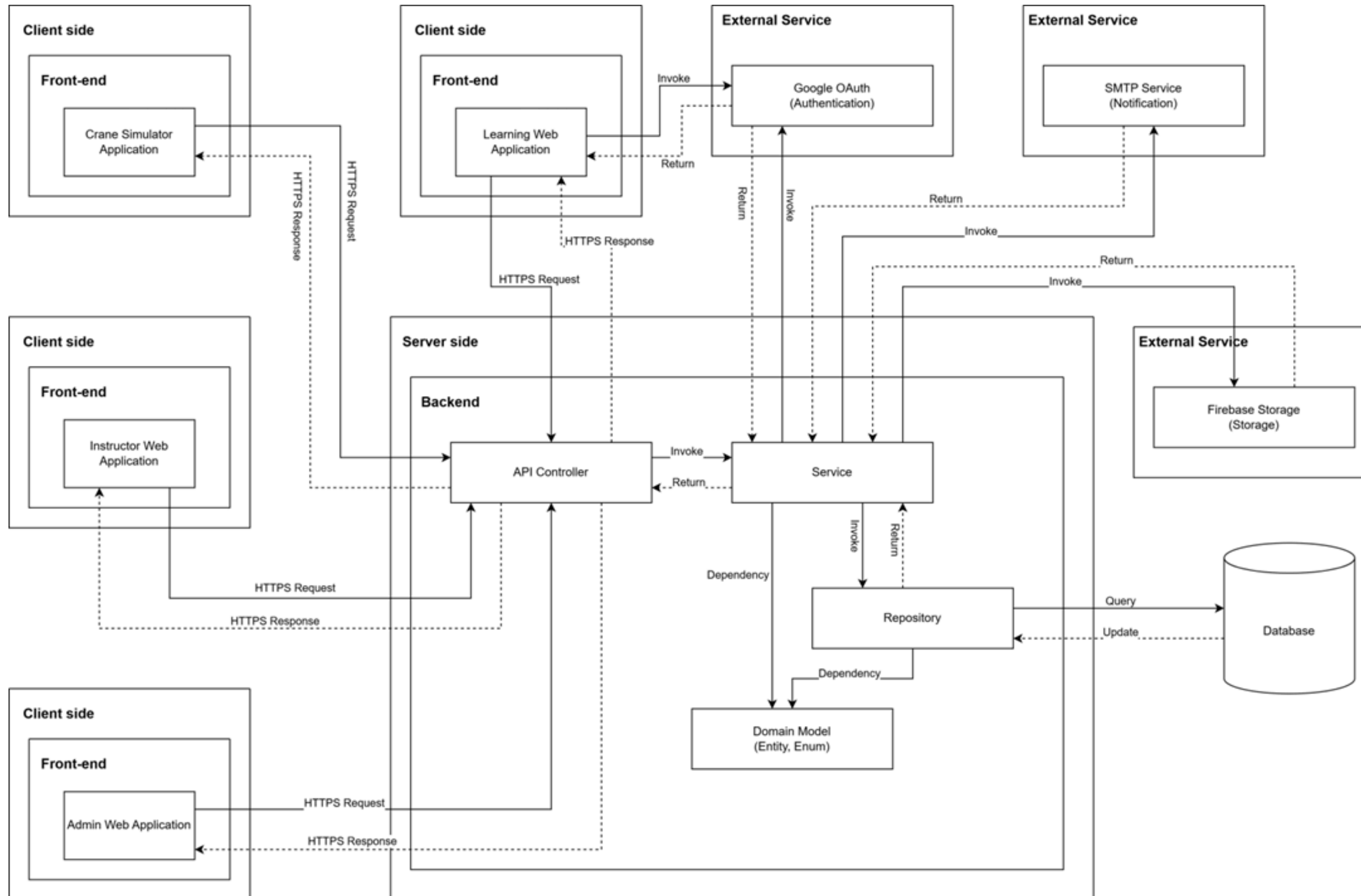
- A web-based LMS for managing users, courses, classes, materials, quizzes, and performance.
- A desktop 3D simulation app for safe, low-cost, repeatable crane practice.
- Unified tracking of theoretical and practical results.

This reduces cost, increases safety, improves training quality, and centralizes training center operations.

Technology

Category	Tool / Infrastructure
Technology	ReactJs (Front-End), .Net (Back-End), Unity (Simulation)
Database	SQL Server
IDEs/Editors	Visual Studio Code, Visual Studio
Diagramming	Draw.io
Documentation	Google Docs/Sheets
Version Control	GitHub (Source Codes), Google Drive (Documents)
Deployment Server	Azure Web Service, Azure VM
Project Management	Google Sheet

System Architecture Diagram



Actors



Trainee

- View and enroll in available programs, courses, classes
- View class syllabus and sections
- Access and download assigned learning materials
- Access and attempt quizzes, view recorded results
- View and attempt assigned practices, view recorded results
- In 3D simulation: view assigned practices, select practice attempts, view guides/settings, interact with simulation tasks/components, receive tasks results.



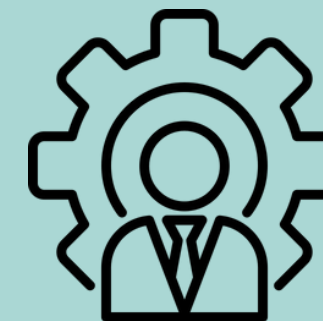
Instructor

- Manage class members (view, add)
- Manage class sections (view, add, update)
- Manage learning materials (view, add, update, assign to sections)
- Manage quizzes (view, add, update, assign to sections)
- View and assign practices to class sections
- View trainee quiz and practice results, provide direct feedback
- View overall trainee performance and confirm pass/fail status



Admin

- Manage user accounts (view, add, deactivate)
- Manage programs (view, add, update, assign courses)
- Manage courses (view, add, update)
- Manage classes (view, add for courses, update, assign instructors)



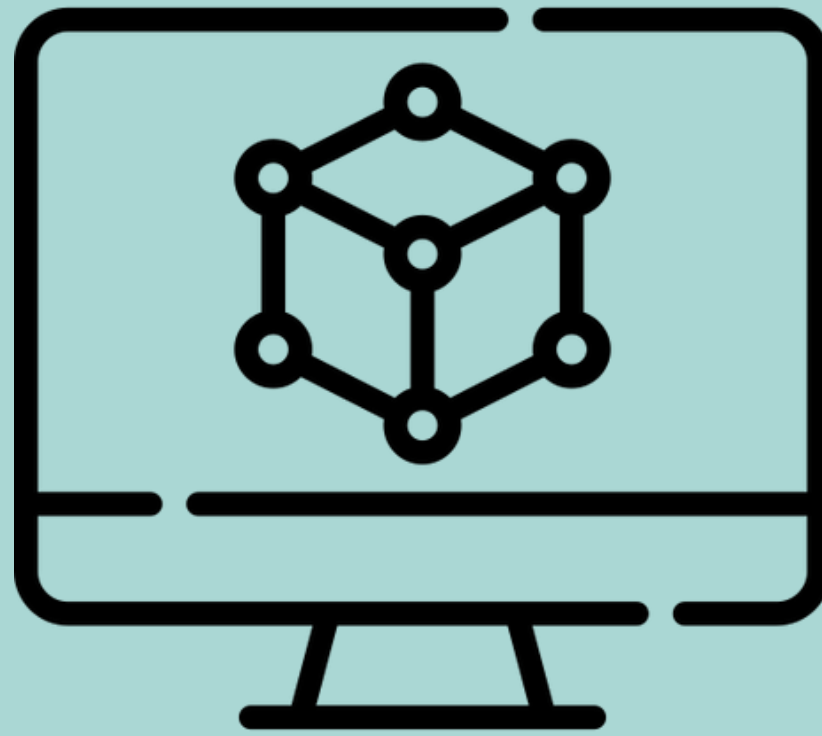
Simulation Manager

- Manage simulation components (view, add, update)
- Manage simulation practices (view, add, update)
- Manage practice tasks (view, add, update)

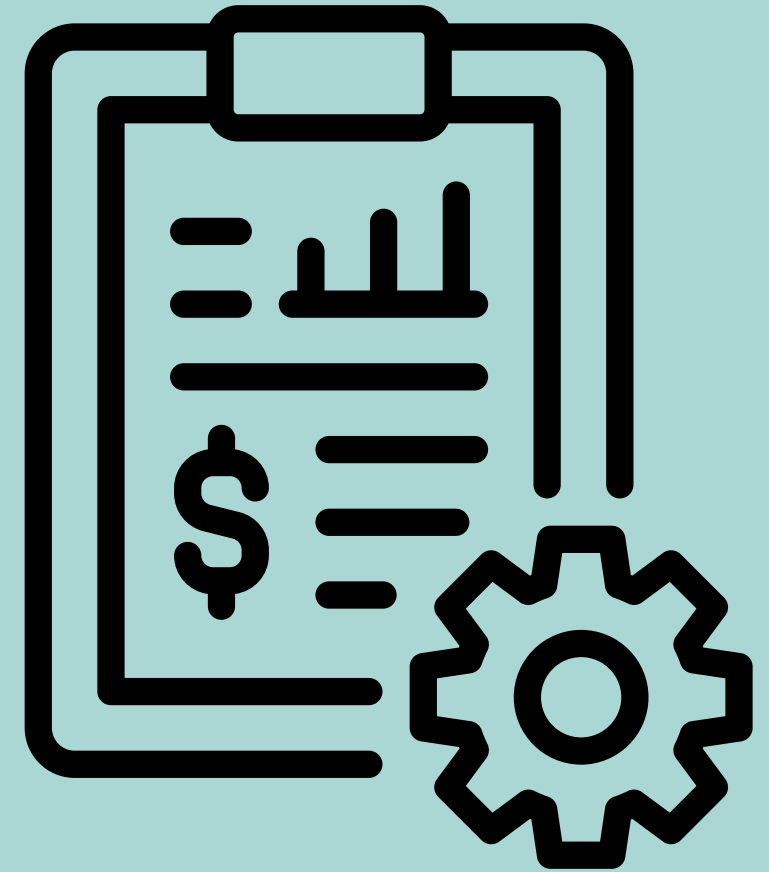
Main Features



Learning Management
System (LMS)



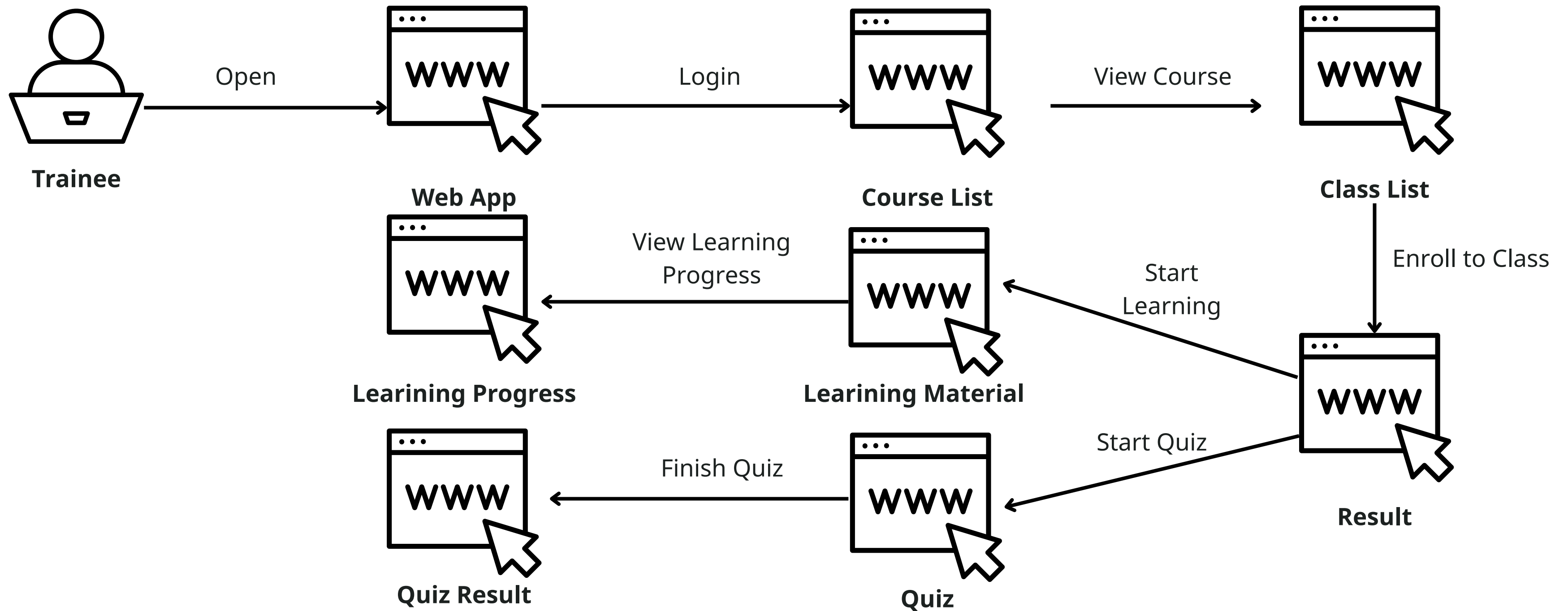
Simulation Training
System



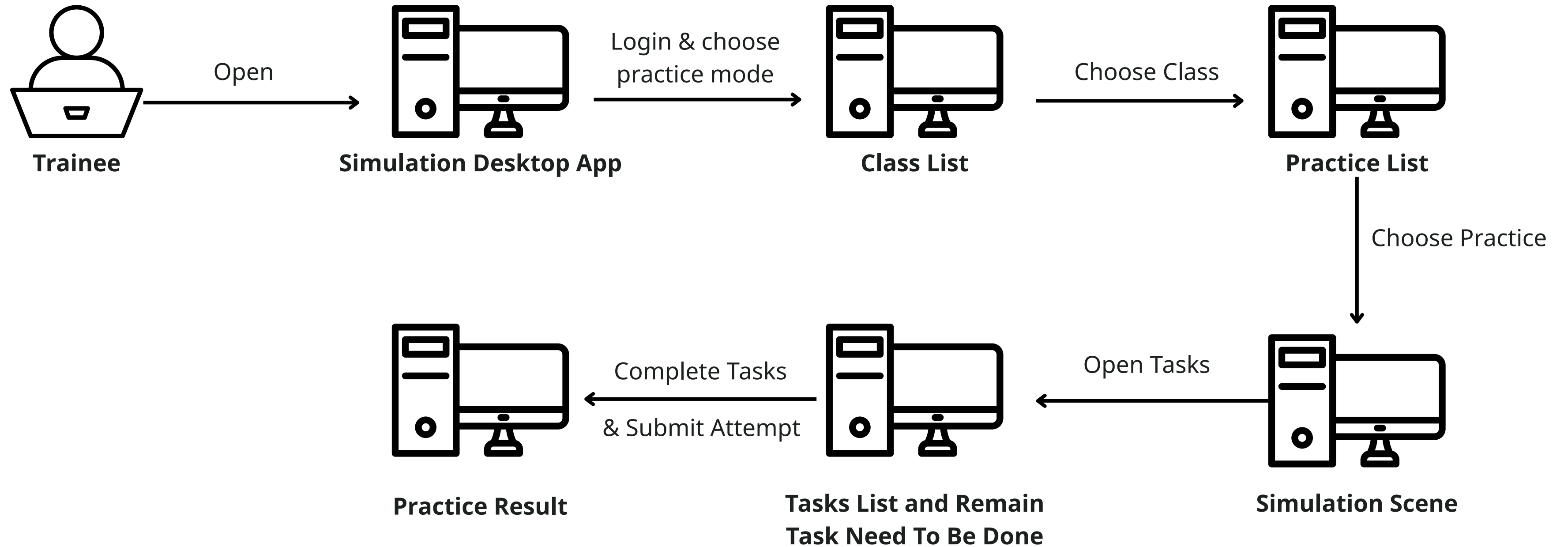
Management

Demo

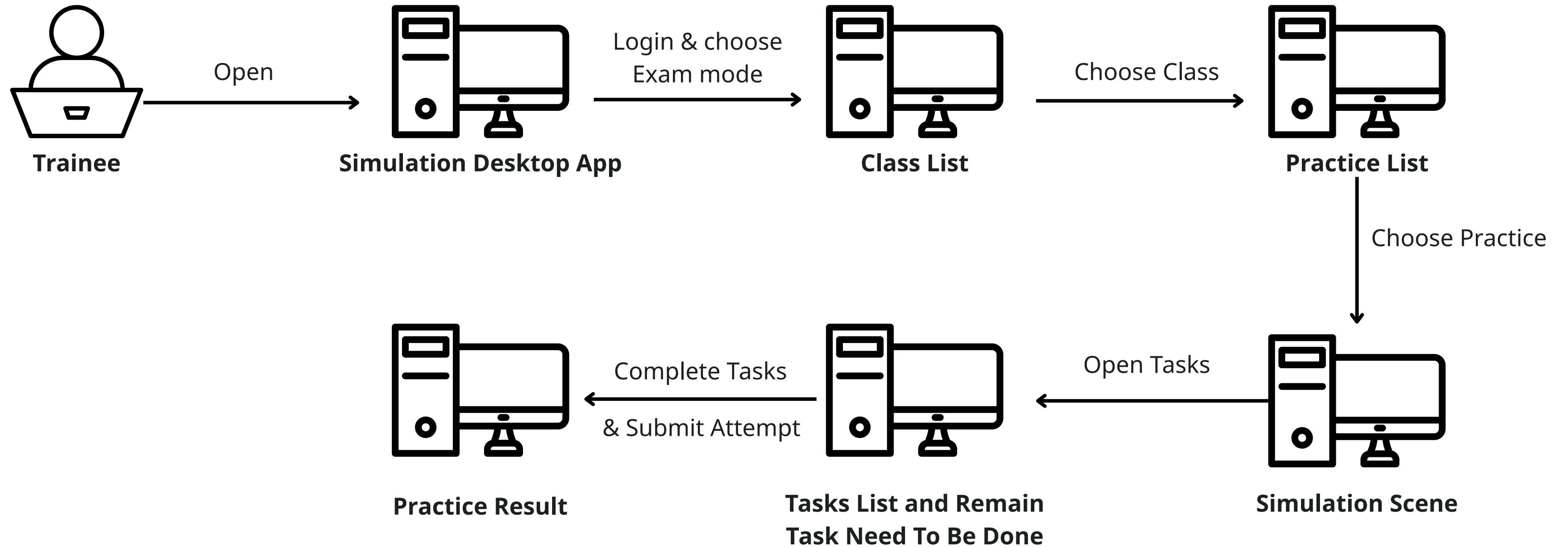
Workflow : Enroll to class & learning



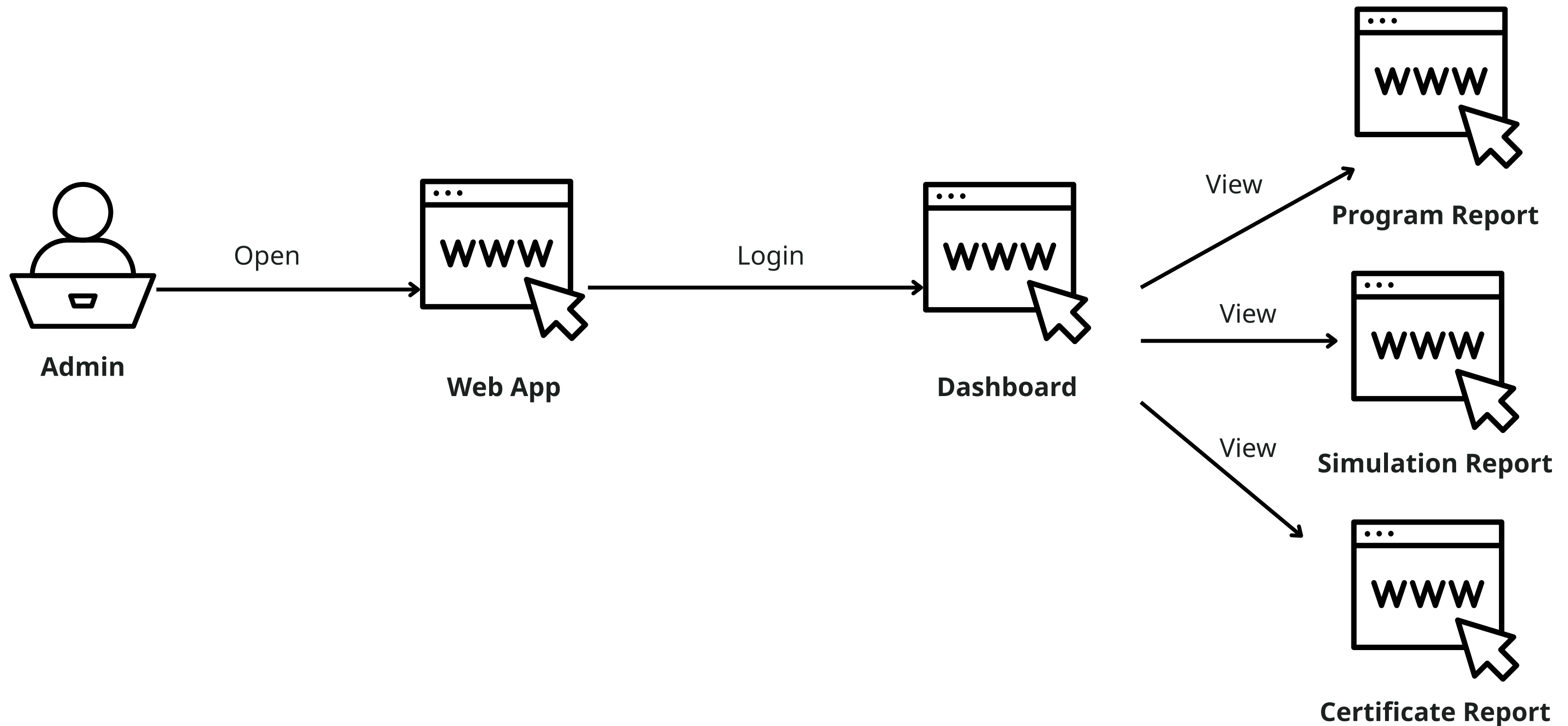
Workflow : Simulation practice



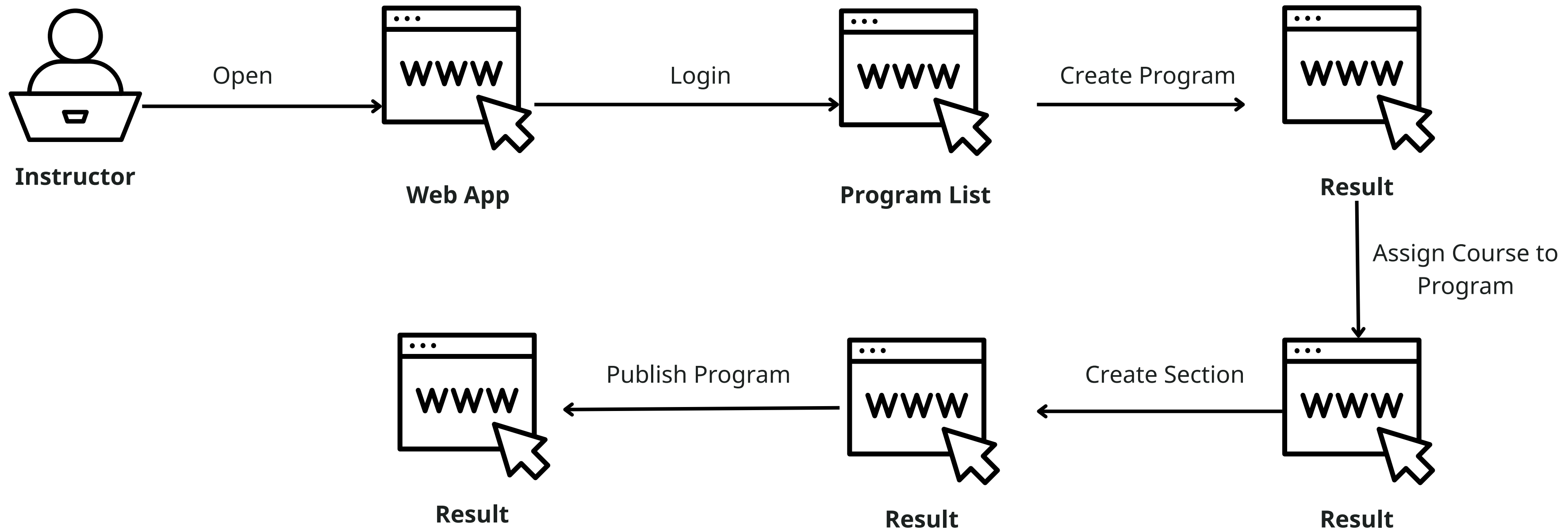
Workflow : Final Exam



Workflow : Final Reporting and Summary Evaluation



Workflow : Create And Manage Learning Programs, Courses



Thank you

BY LSSCTC

Q&A