Skill Magnet

An Online Learning Platform

SDMAY24-46:
Backend Developers: Sam DeFrancisco, Nick Erickson, Brayton Rude,
Frontend Developers: Jennifer Robles, Deepika Vempati, Nikhil Kuricheti
Client & Advisor: Judith Islam

Introduction/Context

SKILLMAGNET AIMS TO CREATE A **CENTRALIZED ONLINE PLATFORM FOR STUDENTS**, FOCUSING ON ENHANCING THE LEARNING EXPERIENCE BY PROVIDING **QUALITY EDUCA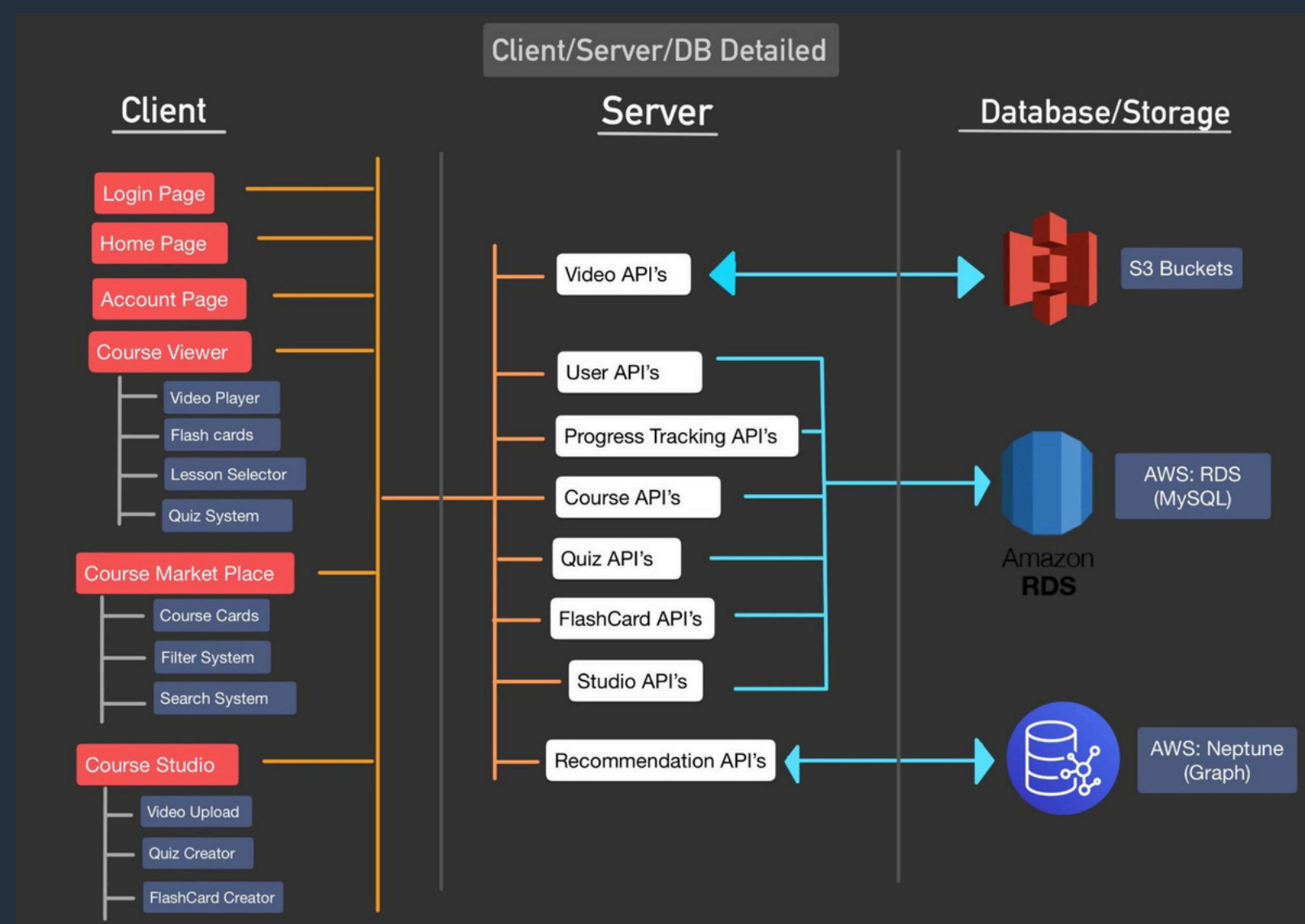TIONAL RESOURCES AND USER-DRIVEN STUDY TOOLS**. THE PLATFORM'S KEY FEATURES INCLUDE ORGANIZING CONTENT INTO LESSONS, TRACKING USER PROGRESS, AND OFFERING STUDY TOOLS SUCH AS **FLASHCARDS AND QUIZZES**
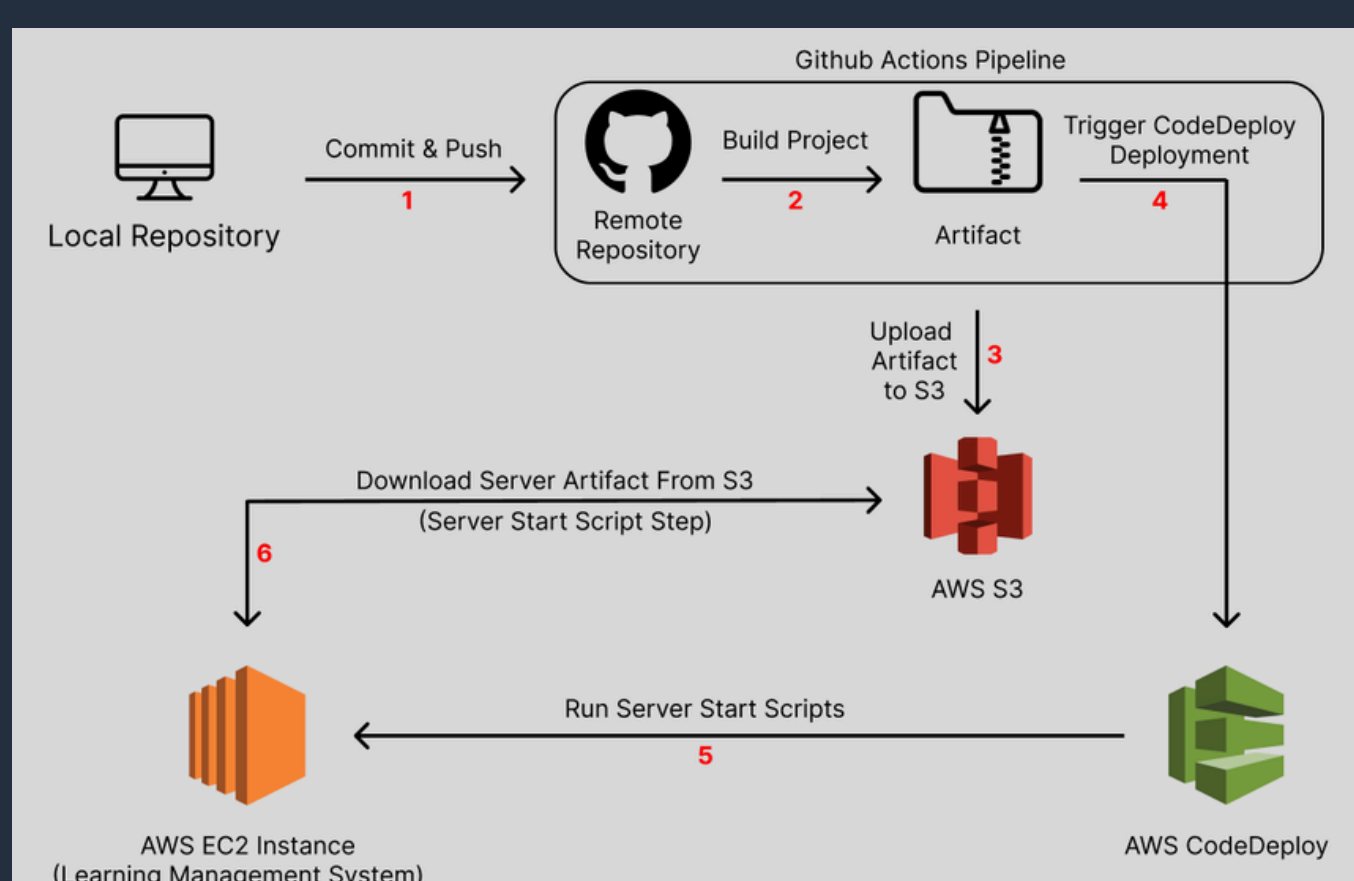
Design Requirements

- Build learning platform that allows users to search and enroll in courses
- Courses should have various video lessons and track a users progress into a course
- Courses can have quizzes and will save a users score on a quiz
- Videos may be linked to YouTube or directly uploaded as a mp4
- Course marketplace allows users to search courses
- Course marketplace gives course recommendation based on previous taken courses
- Course creator studio where users can create their own courses

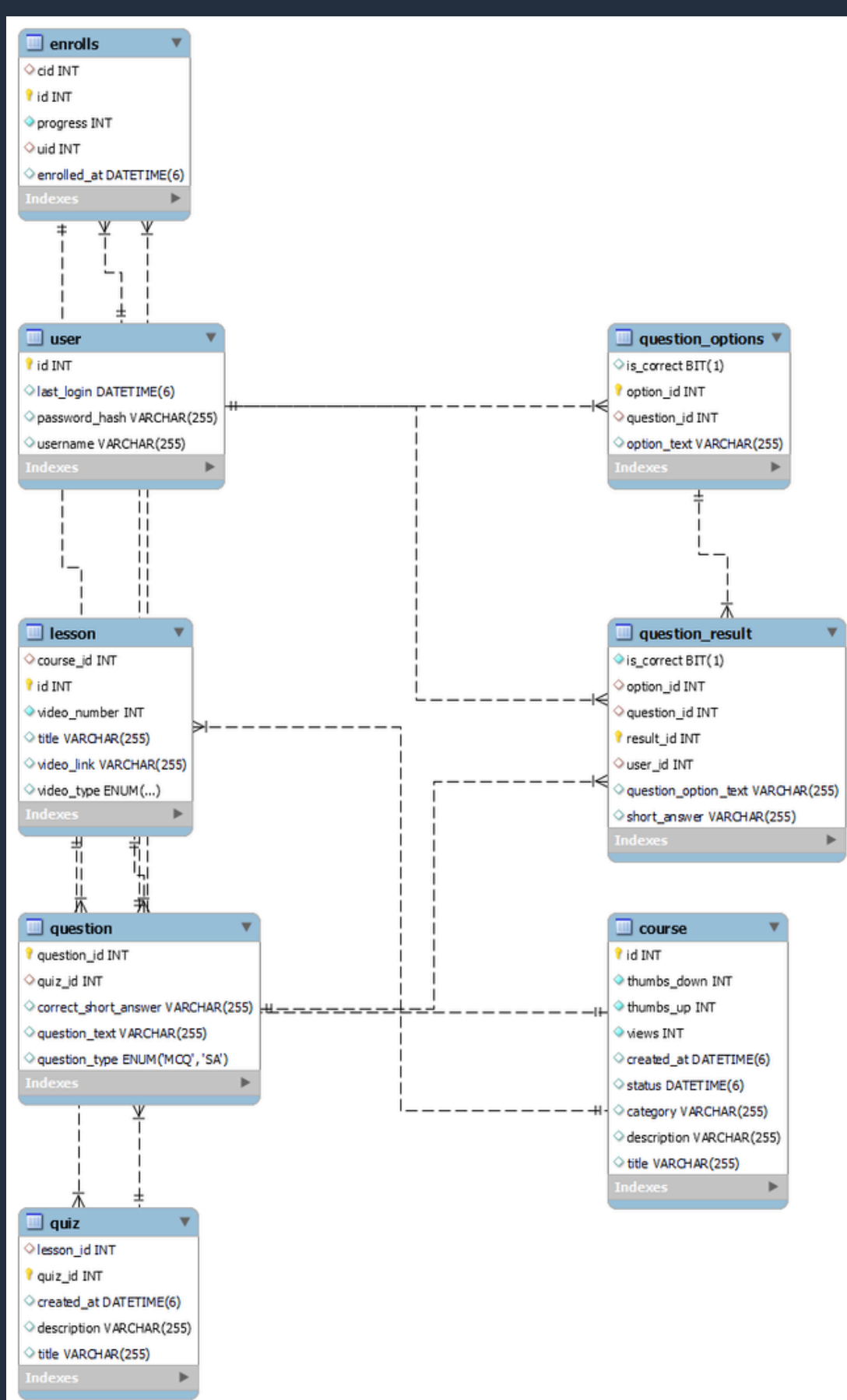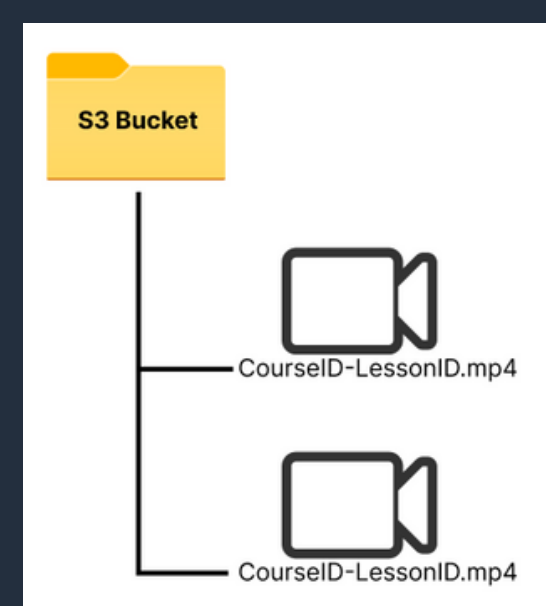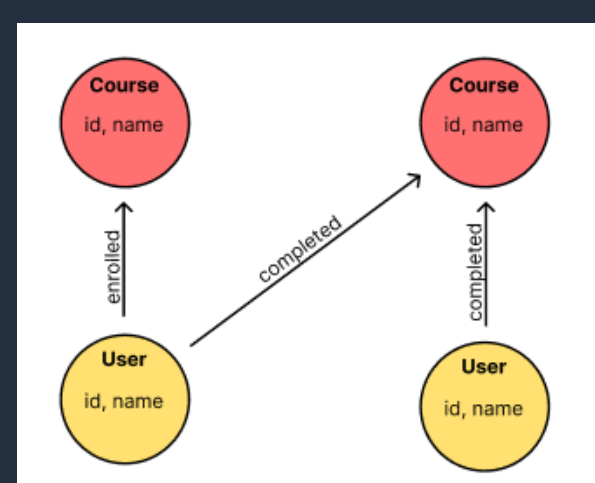## Design Approach

System Diagram

Deployment Pipeline

MySQL Schema

S3 Bucket for Video Storage

Recommendation Schema

Technical Details

ReactJs Component Based Client Side
Login, Home, Market Place, Course Viewer, Quiz
- Utilizes Vite, npm, React router, aws-sdk, mui
- Wired to server APIs with JS services

Java SpringBoot Server Side
User, Course, Lesson, Question, Quiz, Enrollment,
- Layered Architecture
- RestAPI Conventions
- Automated Database population for the dev environment
- Global Exception Handling
- SwaggerUI Documentation
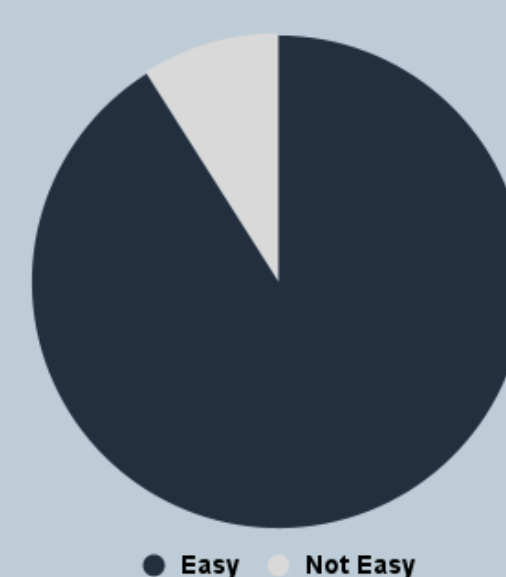- Maven

Database
- MySql: AWS RDS (Relational Database Service)
  - Manages and stores all core application data
  - The schema is shown on the left
- Graph: Neo4j: Handles course recommendation system
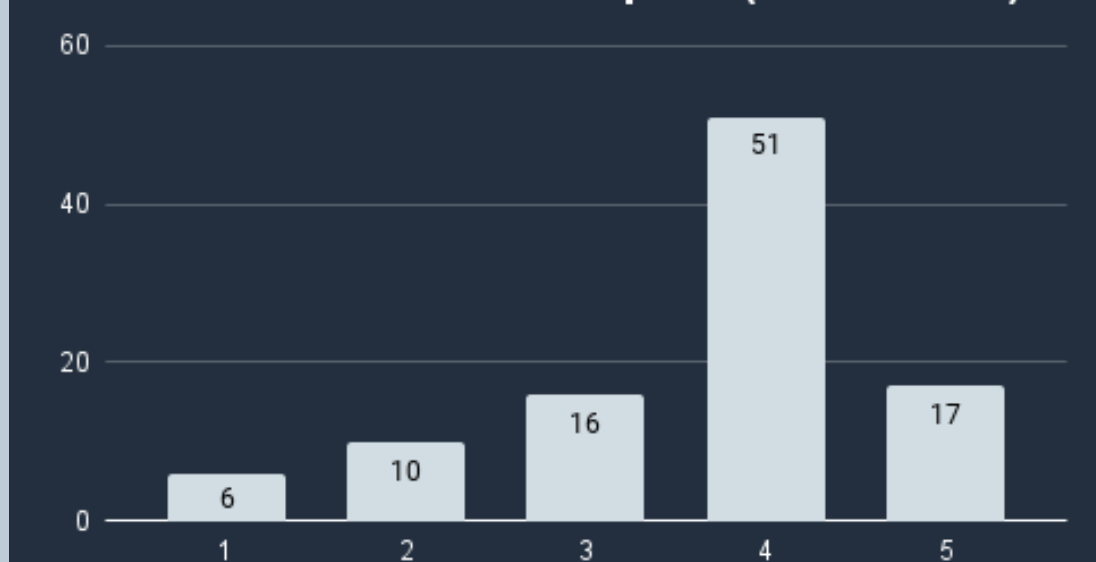
Other Technologies
- Github
  - Version Control
  - Github Actions
  - Code Review
- Postman: Testing APIs
- Discord: Communicating as a team

User Survey

Course Viewer Ease of Use

Clearness of Website's Purpose (Scale 1 to 5)

Participants/Results

- User testing conducted through a demo walk-through survey
- Participants: 90 (Professor Islam's SE students)
- Overall Positive Results
  - 90% of users found the site easy to use
  - 92% of users felt engaged by our course viewer
  - 94% were able to find their enrolled courses, view lessons of a course, and take a quiz
  - 89% said the website's responsiveness and loading speed were fast