
BENGALURU 560085, KARNATAKA, INDIA.

**Department of Computer Science and Engineering**

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**B. TECH. (CSE) - 6th Semester**

**UE20CS352 – OOADJ**

**PROJECT REPORT ON**

# E-LEARNING PLATFORM


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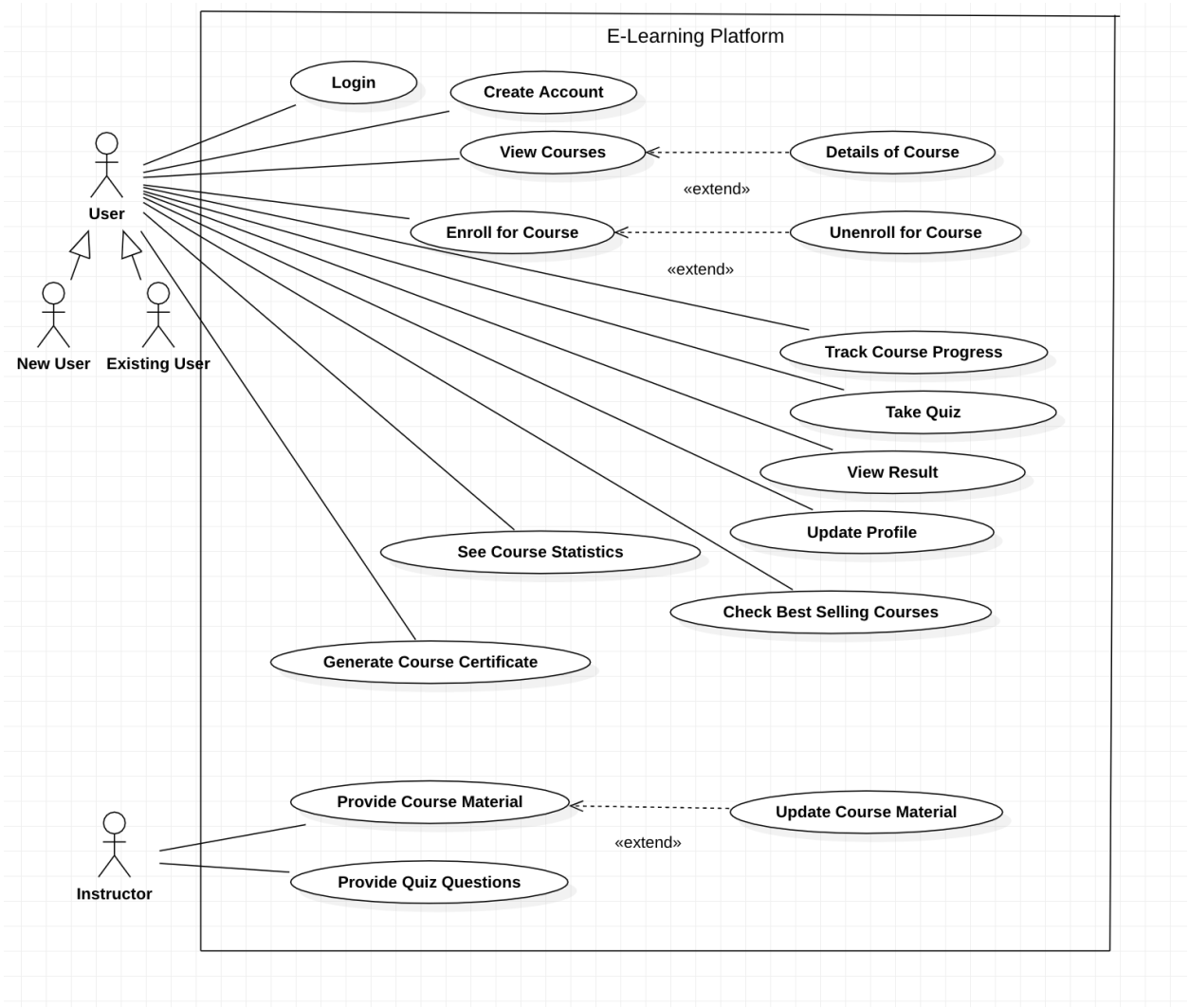
# SYNOPSIS

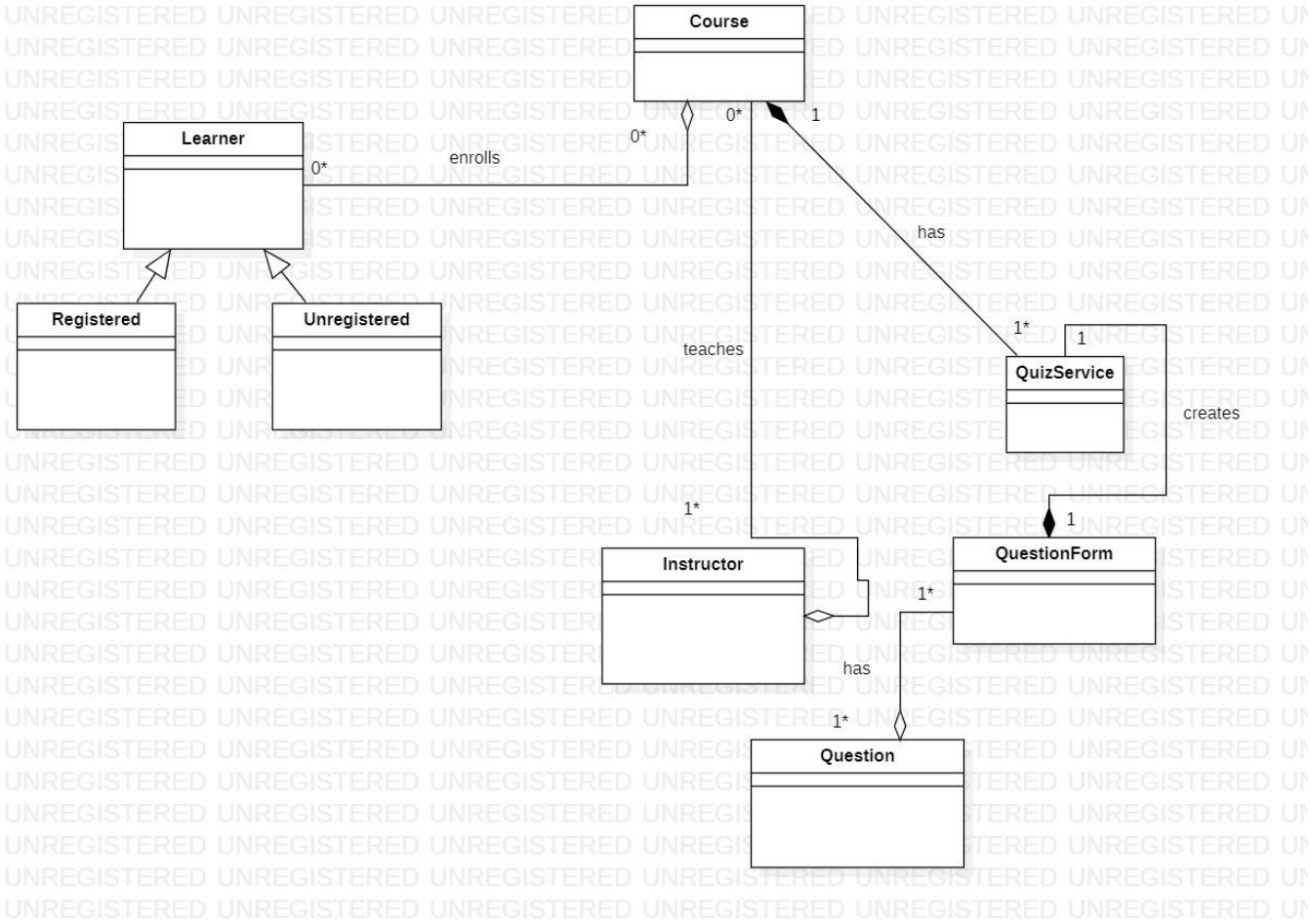
This is a web based learning system that helps the students to take the learning in incremental steps by providing the latest available content on the subjects. At its most basic level, it is an online course with a series of online resources to help students understand and prepare for their interested subjects. Essentially, e-Learning is the realization of the concept of flexible learning, by giving the student time, resources and scope to learn at his own interest and potential.

First students register by creating a new account or by login using an existing account by entering their username and password along with the necessary details. After providing the correct username and password, the student logs in to the e-Learning system's homepage . Then each student profile will be maintained which can be edited by the student whenever desired.There the student can select the available subjects to further learn about them.
Different courses will have a variable range of duration so that students can choose according to their comfort.Also students will have a choice to choose among various courses available on the platform.These courses will be paid/unpaid.The student can enroll in these courses and after this, he/she can get access to the course resources and also track progress in the course.Different courses will have different instructors.
To pass the quiz a minimum of 80% score will be required.The solution to the quiz is not displayed but only the questions marked correct and incorrect are displayed and in case he/she doesn't get the required min 80% score,they can retake the quiz again.This time new questions will be asked in the quiz related to the same topic.This increases challenge and tests the real level of understanding of the student more efficiently.
After successful completion of the course and all the quizzes in the respective course, the learner will be provided with a verified auto generated e-certificate.

# USE CASE DIAGRAM



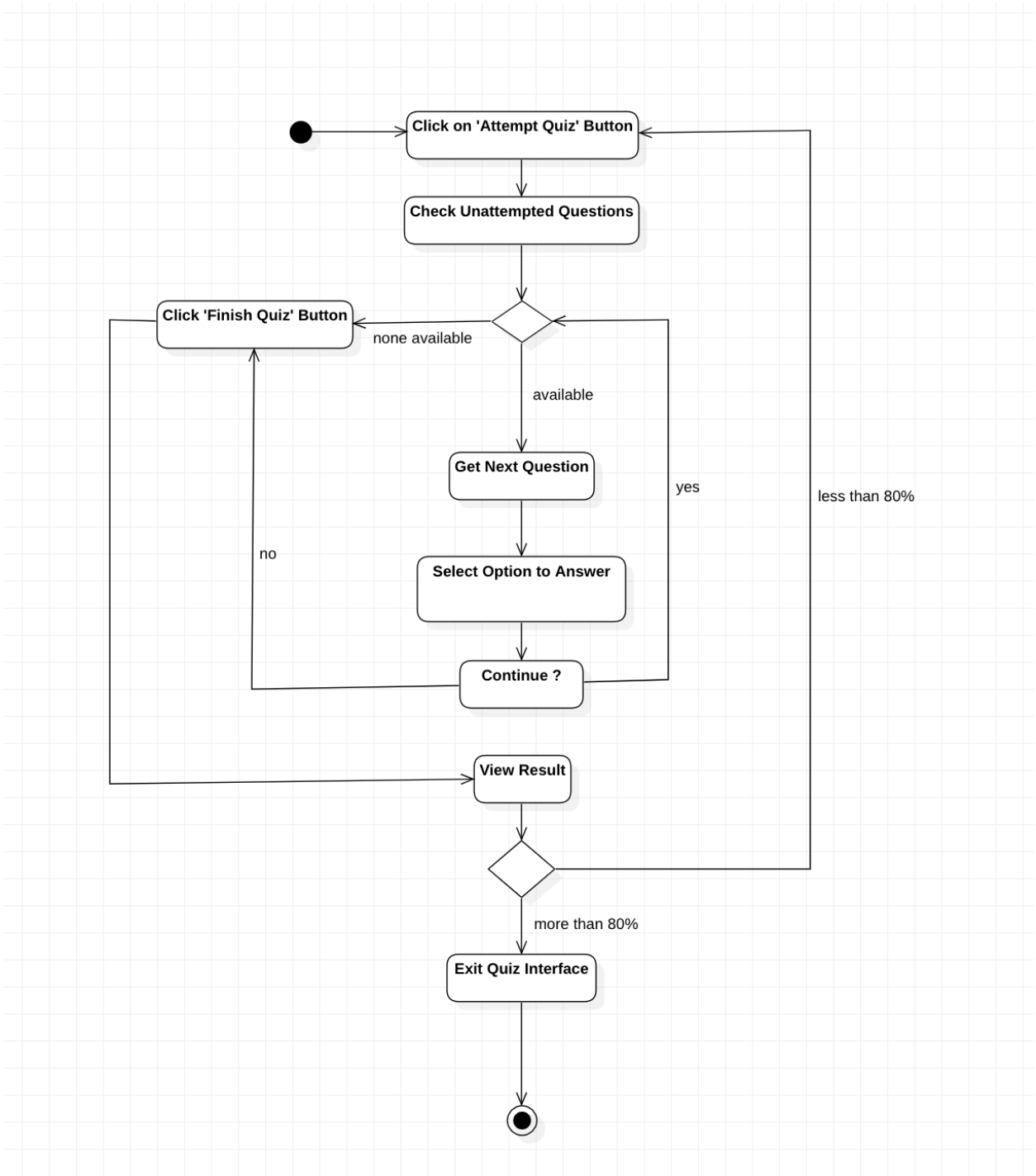
# CLASS DIAGRAM



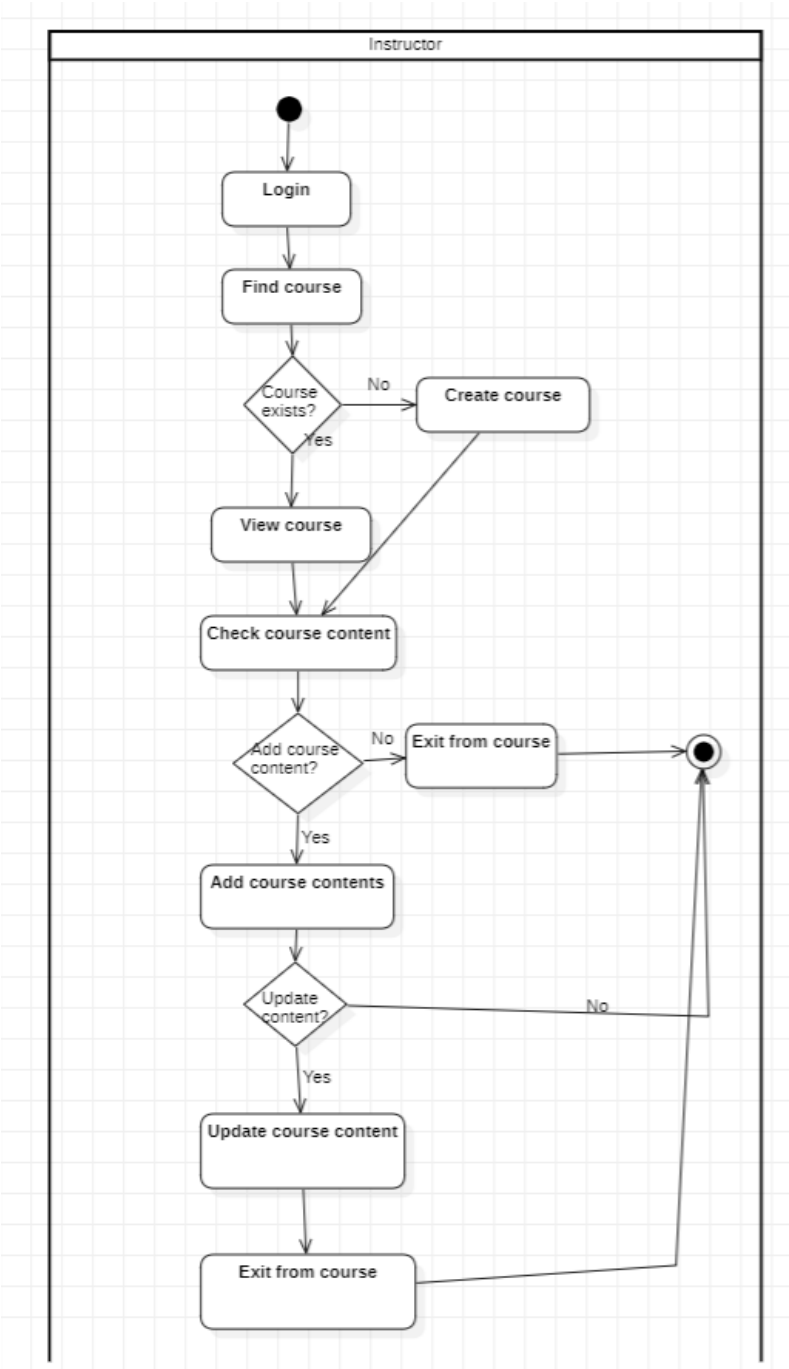

Factory Method: The getQuestions() method in the QuizService class can be considered an implementation of the Factory Method pattern. It creates a new QuestionForm object and sets its questions property to a list of Question objects obtained from the QuestionRepo. The QuestionForm object is then returned to the caller. This pattern allows the QuizService class to encapsulate the creation of QuestionForm objects, making it easier to change the implementation details in the future

# ACTIVITY AND STATE DIAGRAM

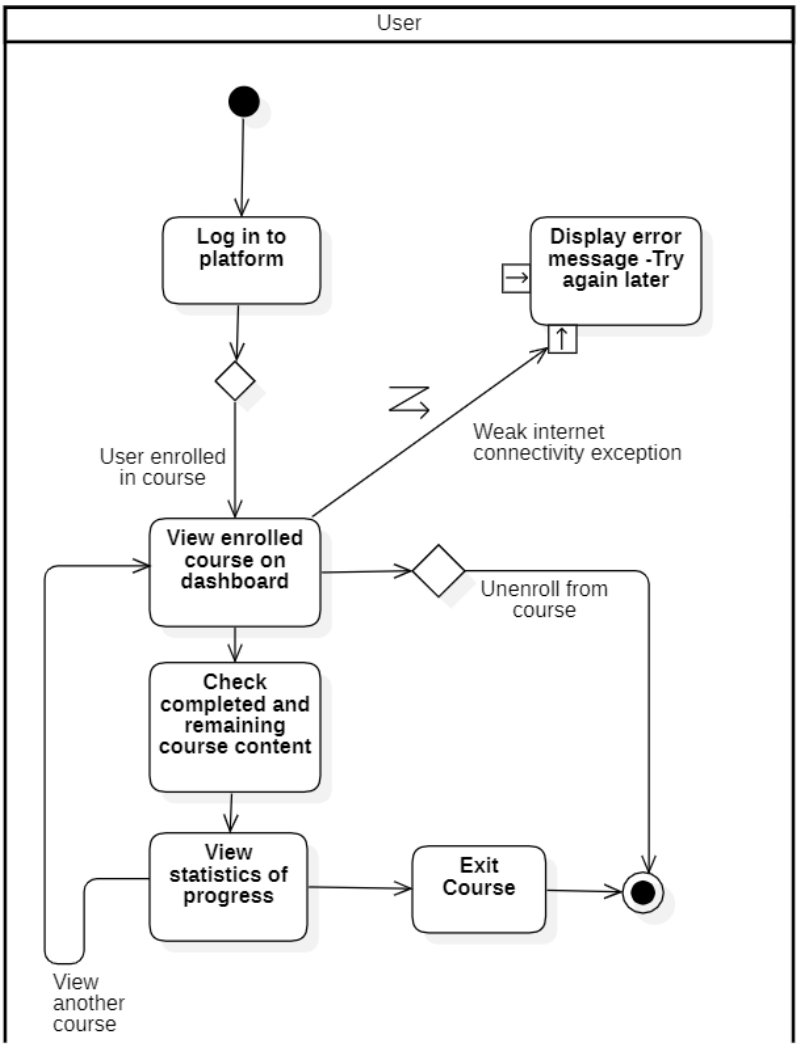
Activity diagram for Quiz



Activity diagram for Uploading Course content



Activity diagram for Track progress



**DESIGN PRINCIPLES**

- **Open Close Principle**
  - New functions can be added to the application without having to make any changes to the existing code.It is open for adding new functions and features but closed for modification.
  - For example, new questions can be added by inserting them into the database, and the QuizService class can be extended to support new types of quizzes

- **Creator :**
  - The QuizService class follows the Creator principle, as it is responsible for creating and providing Question objects to the MainController.
  - The QuizService class creates a new instance of the QuestionForm class and populates it with questions from the database.
  - It follows the Creator pattern from GRASP, where a class is responsible for creating new instances of other classes

- **Information Expert:**
  - The Question class holds the data for a single question in the quiz.
  - It follows the Information Expert pattern from GRASP, where the object with the most information about a particular concept is responsible for that concept

- **Controller:**
    - The MainController class follows the Controller pattern by acting as a central point for handling incoming requests and delegating the necessary tasks to other classes.

- **Low Coupling:**
    - The MainController class communicates with the QuizService class through method calls and does not depend on the specific implementation of the service.
    - It follows the Low Coupling pattern from GRASP, where objects should minimize their dependencies on other objects

- **High Cohesion:**
    - The QuizService class has methods that are related to the same responsibility (manipulating questions and results).
    - It follows the High Cohesion pattern from GRASP, where objects should have a single, well-defined responsibility.

- **Indirection:**
    - The QuizService class interacts with the QuestionRepo and ResultRepo classes through their respective interfaces rather than directly.
    - It follows the Indirection pattern from GRASP, where objects should interact with other objects through abstract interfaces rather than concrete implementations.

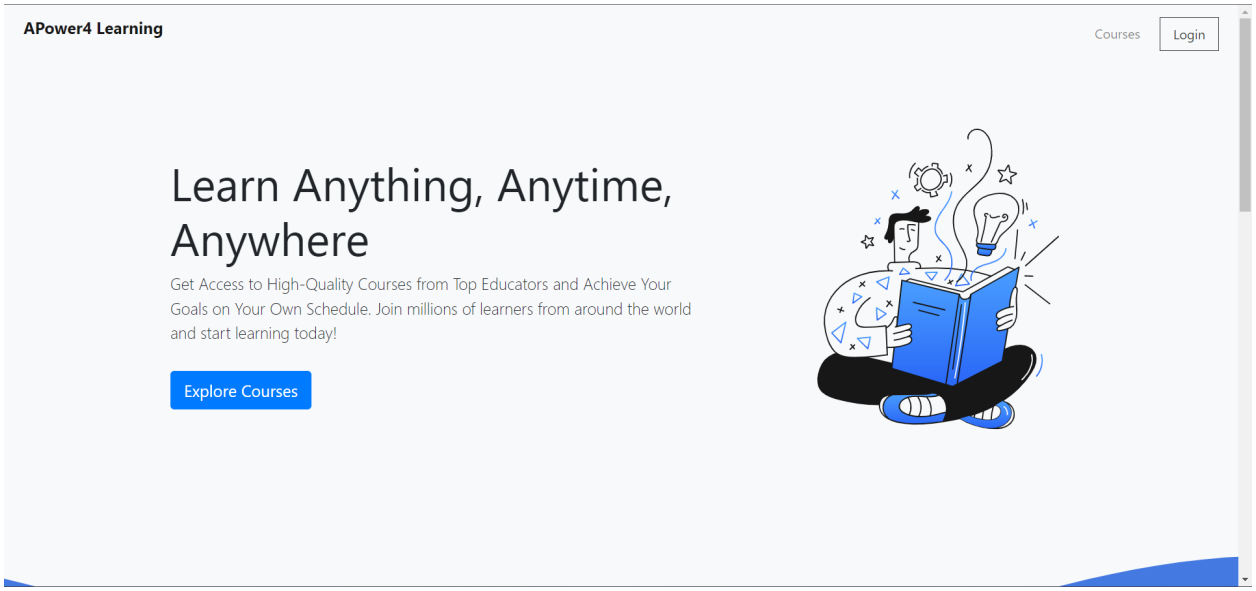
- **Single Responsibility Principle (SRP):**
    - Each class has a single responsibility or task to perform.
    - For example, the MainController class is responsible for handling HTTP requests and managing the quiz flow, the QuizService class manages the quiz logic, and the Question class represents the question entity.

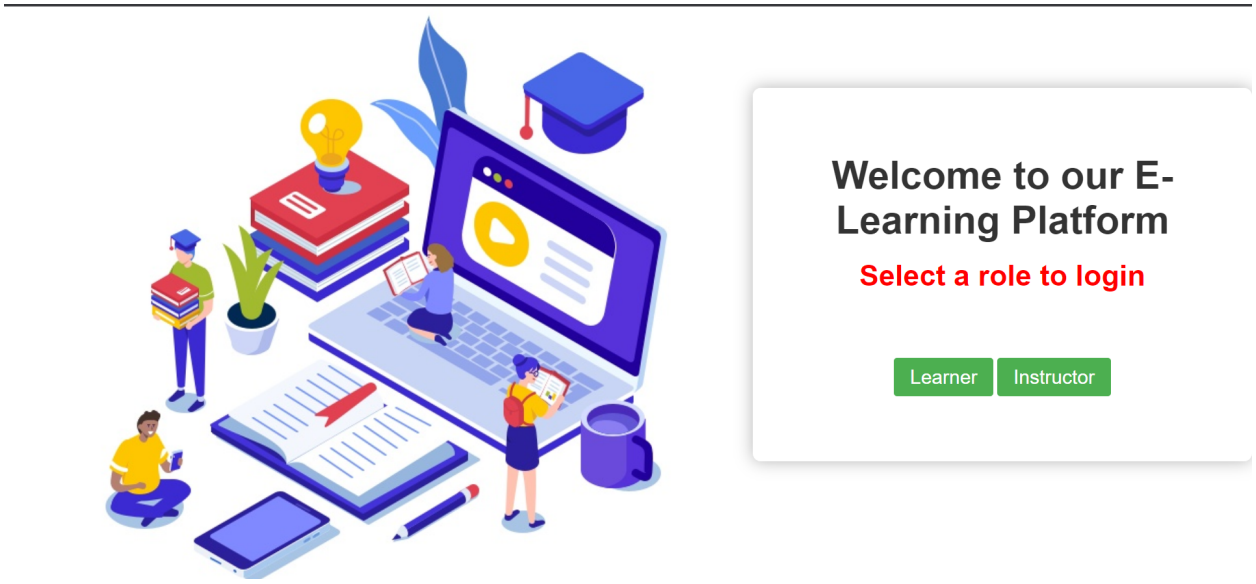
**DESIGN PATTERNS**

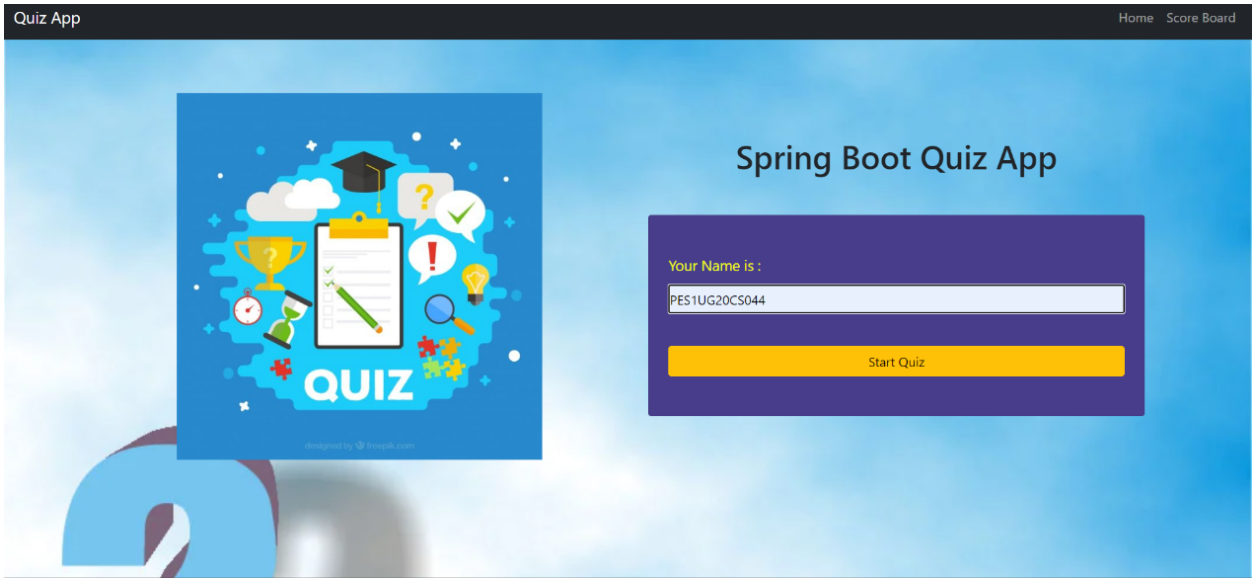
- **Model-View-Controller (MVC) Pattern:**
    - This pattern separates the application into three components: model (data), view (student interface),and controller (handles student input and updates the model and view).
    - In a quiz application, the model would contain the quiz questions and answers, the view would display the questions and receive student input, and the controller would handle student input and update the model and view accordingly.

- **Factory Pattern:**
    - The Quiz class creates an object and gives the object to the Question Service class which then decides what questions to be selected which will be displayed to the student.

## Application Screenshots:




Quiz App
Home
Score Board
QUIZ
Spring Boot Quiz App
Your Name is :
PES1UG20CS044
Start Quiz