CODE MENTOR

INTERACTIVE PROGRAMMING LANGUAGE LEARNER

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Introduction

IN TODAY'S DIGITAL AGE, CODING HAS BECOME AN INDISPENSABLE SKILL, YET TRADITIONAL LEARNING METHODS OFTEN MAKE THE JOURNEY, CHALLENGING ESPECIALLY FOR BEGINNERS. THE COMPLEXITIES OF SYNTAX, THE DRYNESS OF THEORETICAL LESSONS, AND THE LACK OF IMMEDIATE FEEDBACK CAN BE DISCOURAGING. RECOGNIZING THESE CHALLENGES, WE INTRODUCE THE INTERACTIVE PROGRAMMING LANGUAGE LEARNER (IPLL)
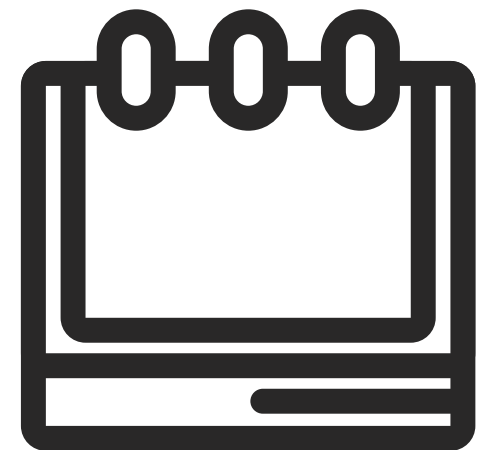
Problem Statement

1. In the rapidly evolving tech landscape ,learning programming languages effectively and engagingly remains a significant challenge.
2. Traditional education methods often fall short in providing interactive and practical learning experiences.
3. The "Interactive Programming Language Learner" project aims to bridge the gap by creating a dynamic platform that revolutionizes how individuals learn programming languages.

Solution for Problem Statement

The IPLL platform aims to track and manage various types of user data, such as progress on learning modules, quiz results, badges earned, and daily question engagement. The platform also needs to store a diverse set of programming challenges and associated metadata, including difficulty level, language type, and user interaction records (e.g., attempts, feedback). Traditional SQL-based databases, while effective, may face challenges in scalability and flexibility as the amount and variety of data increase.

Requirements
Functional Requirements
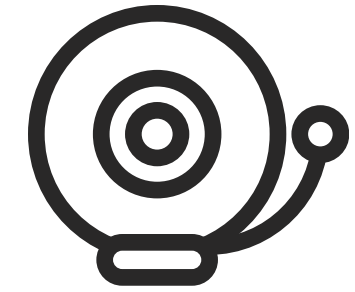
- Providing Choosing the programming language.

- Physical learning materials and equipment like paper, pens and chalkboard

- Provide a interactive session.

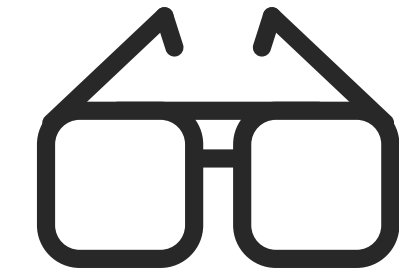- Teach user from basic to advance concept.

- To conduct small quiz

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- Provide daily question

- To check overall progress

- To provide Badges

Requirements
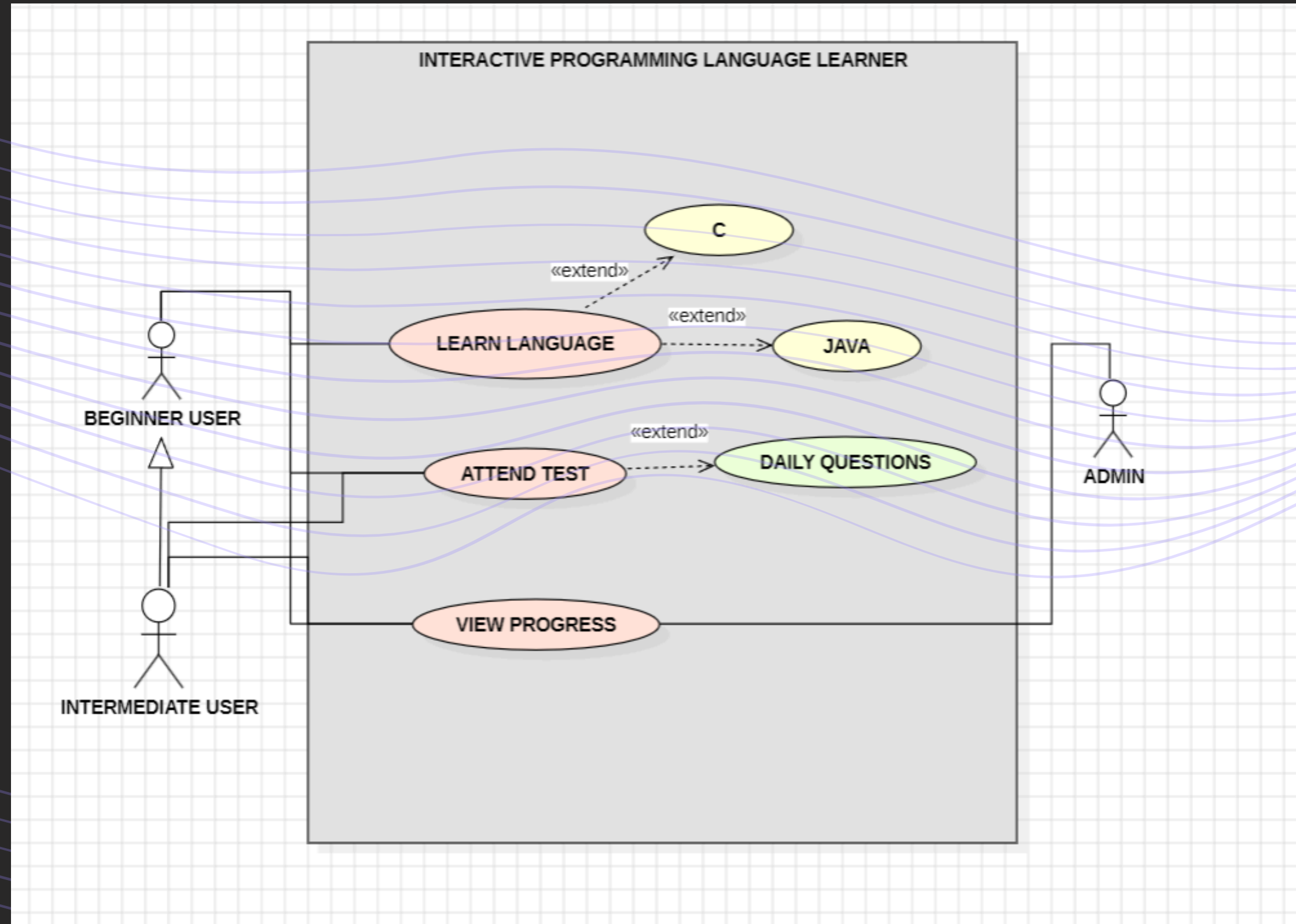## Non Functional Requirements

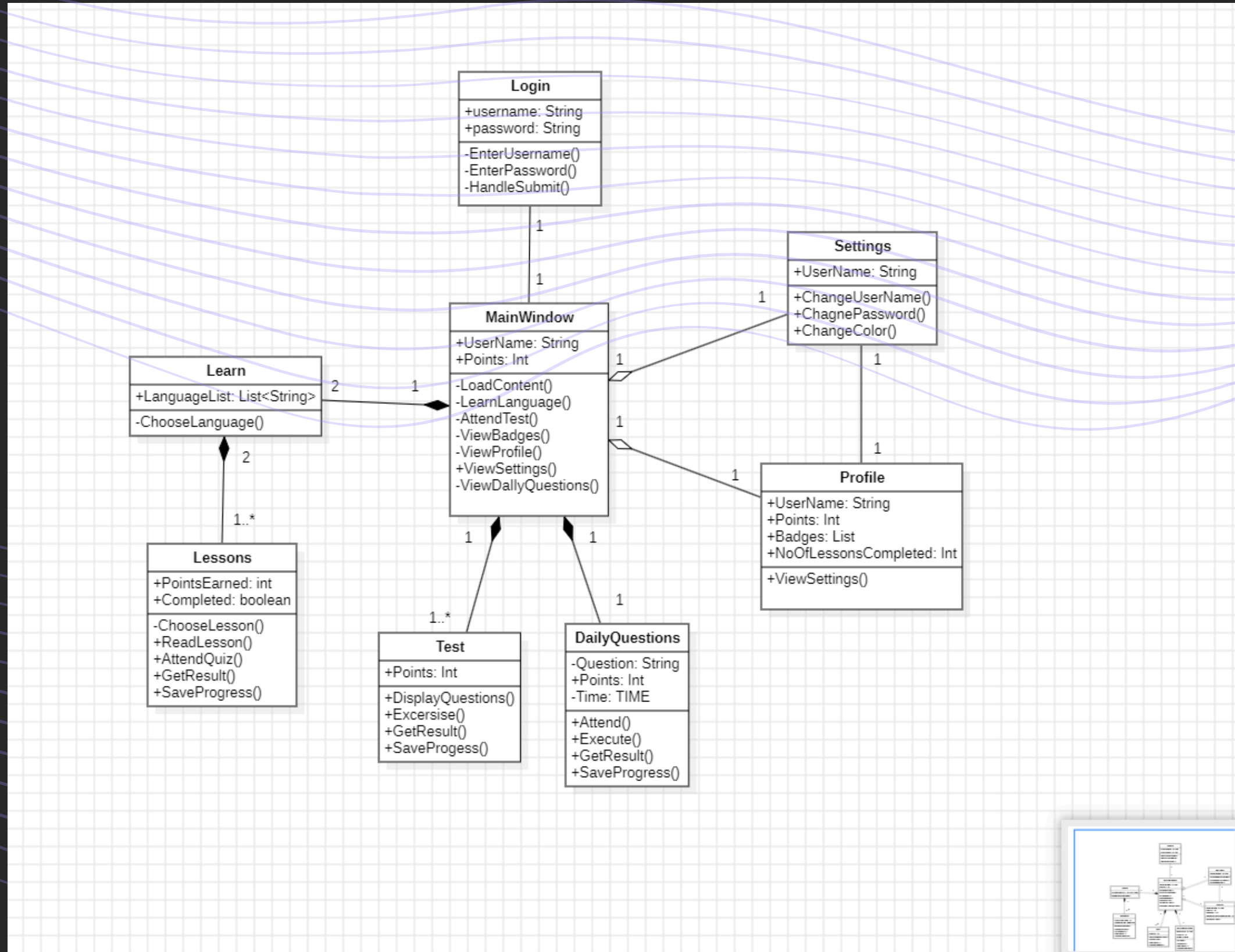- Usability (user friendly interface)

- Performance (Fast loading times)

- Reliability

- Portability.

Use Case Diagram

Class Diagram

Module Diagram
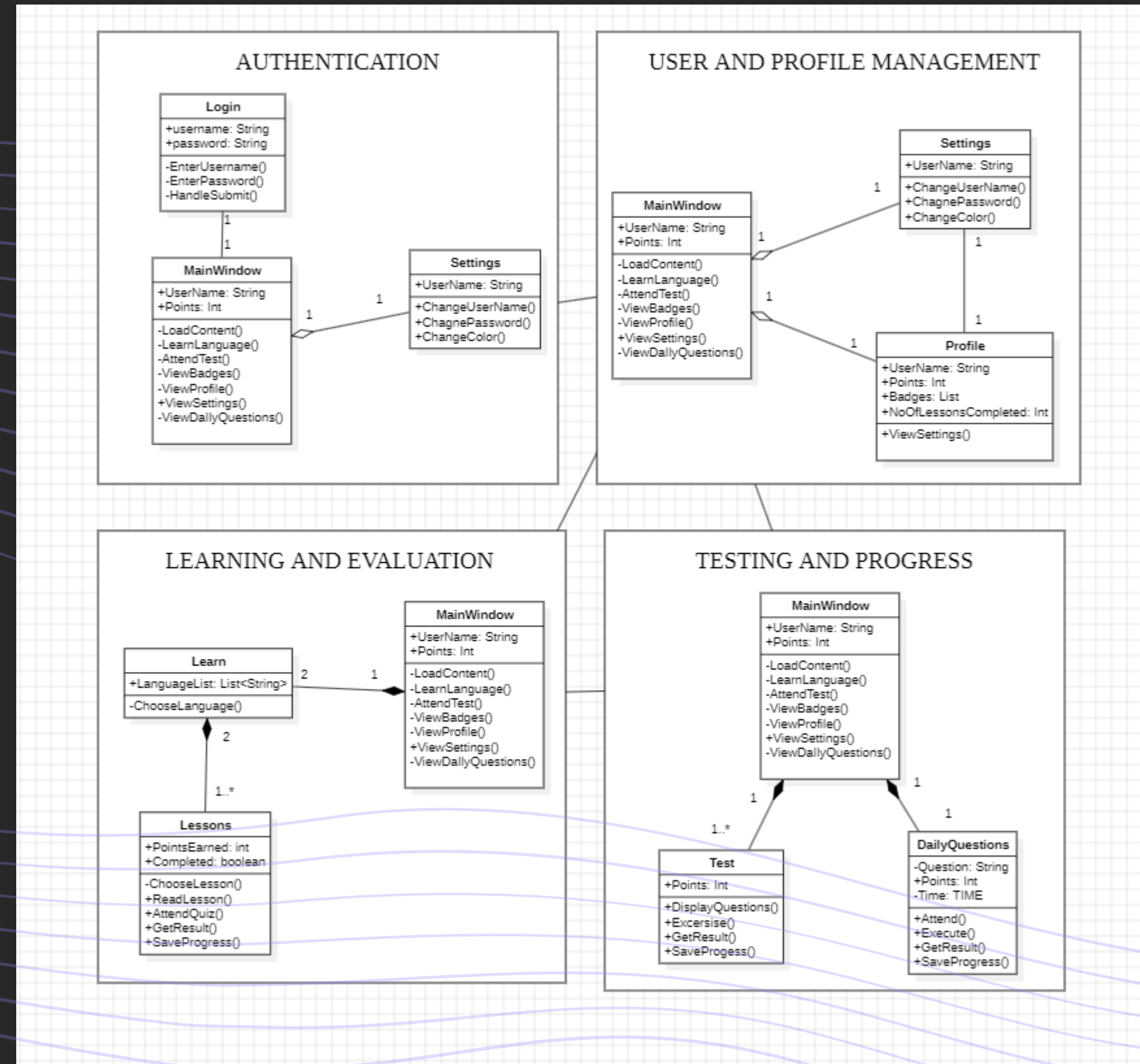
Class Responsibility Collaboration Cards

LOGIN	
- Get username and password from user - Validate the credentials - Redirect to the main window after getting the valid credentials	- MainWindow

MainWindow	
- Load the content on valid credential login - Provide buttons to learn, test their knowledge, and provide daily questions - DIsplay points of the user. - Allow user to navigate to Settings - Allow user to see his profile - Display the badges	- Login - Settings - Profile - Learn

Settings	
- Allow user to change username and password - Allow user to change the color of the highlighter	- MainWindow - Profile

| Lessons	
- Throw user lessons to learn - Allow user to attend quiz at the end of each lesson - Unlock next lesson only when you complete current lesson - At the end of quiz add the points and give result to the user - Save the progress automatically and update the points	- Learn

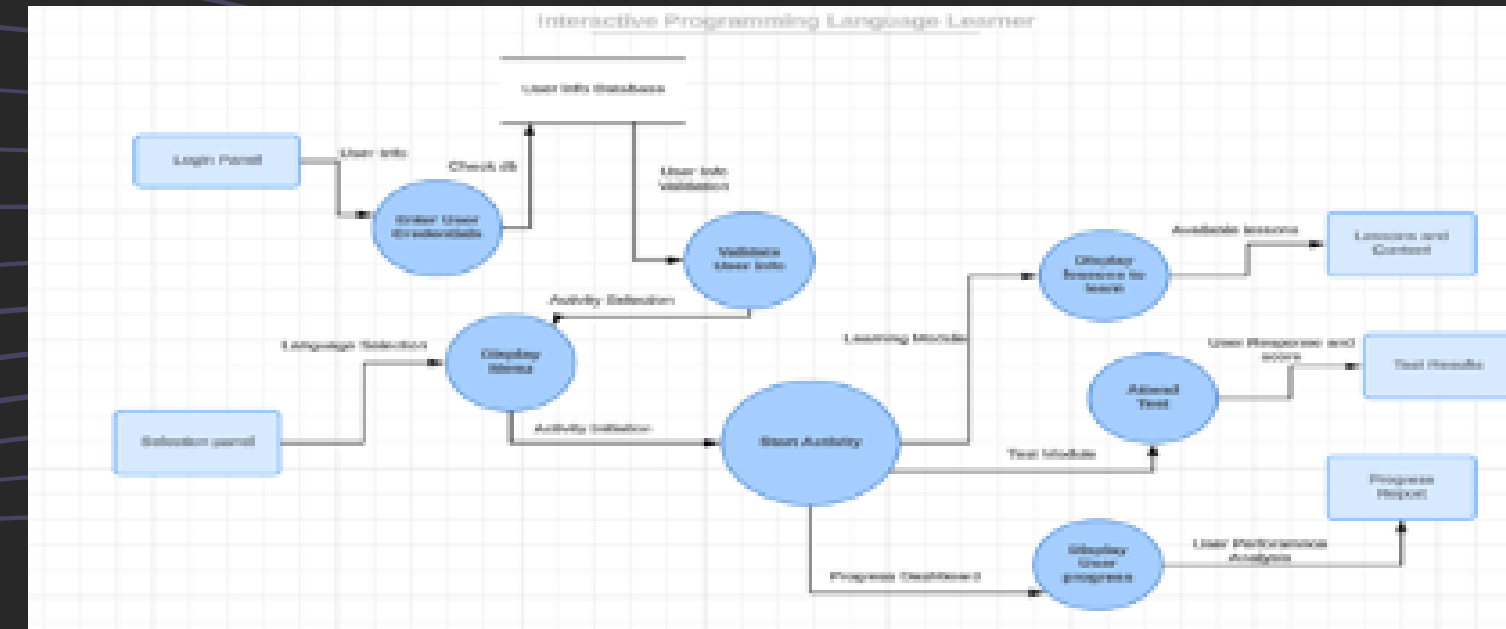| Test	
- Allow user to attend the test. - Display questions based on progress level - Save progress on every test completion and update the points - Get result and display to the user	- MainWindow

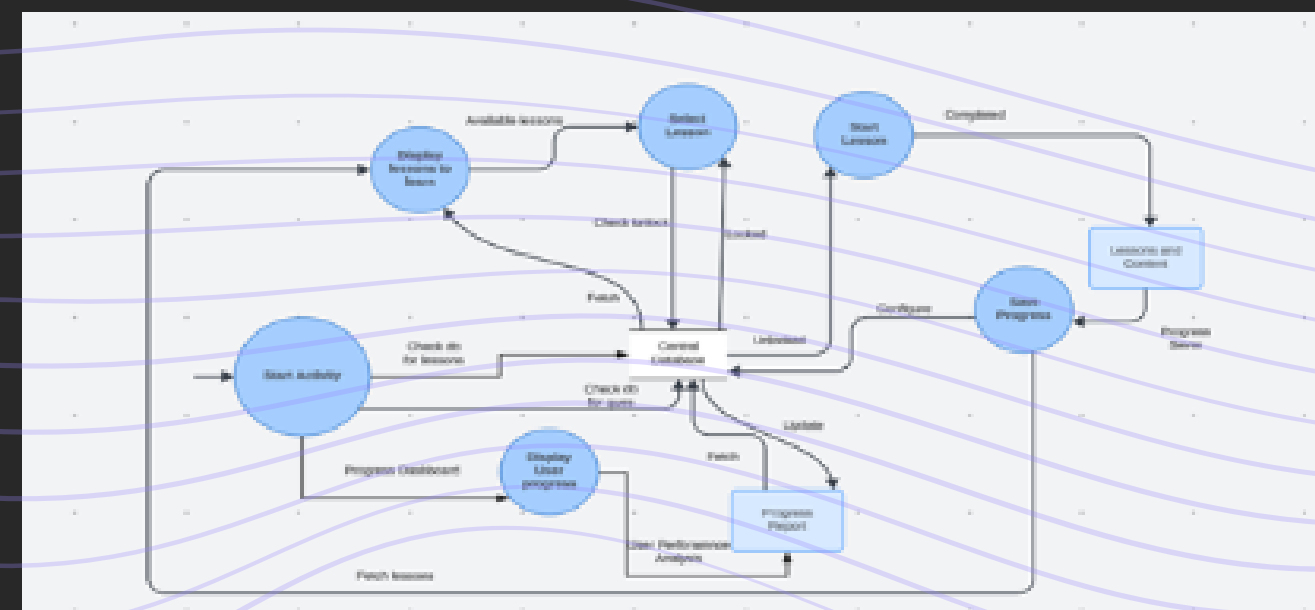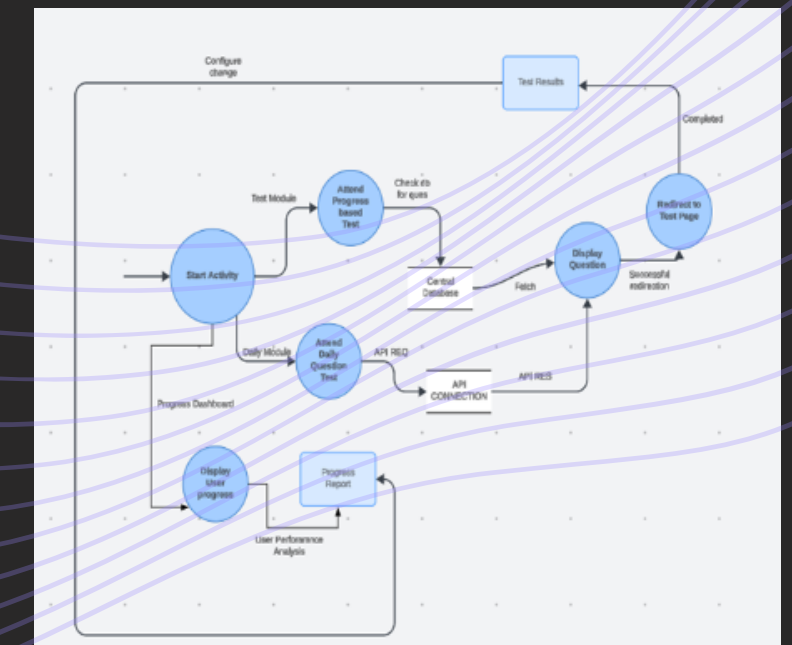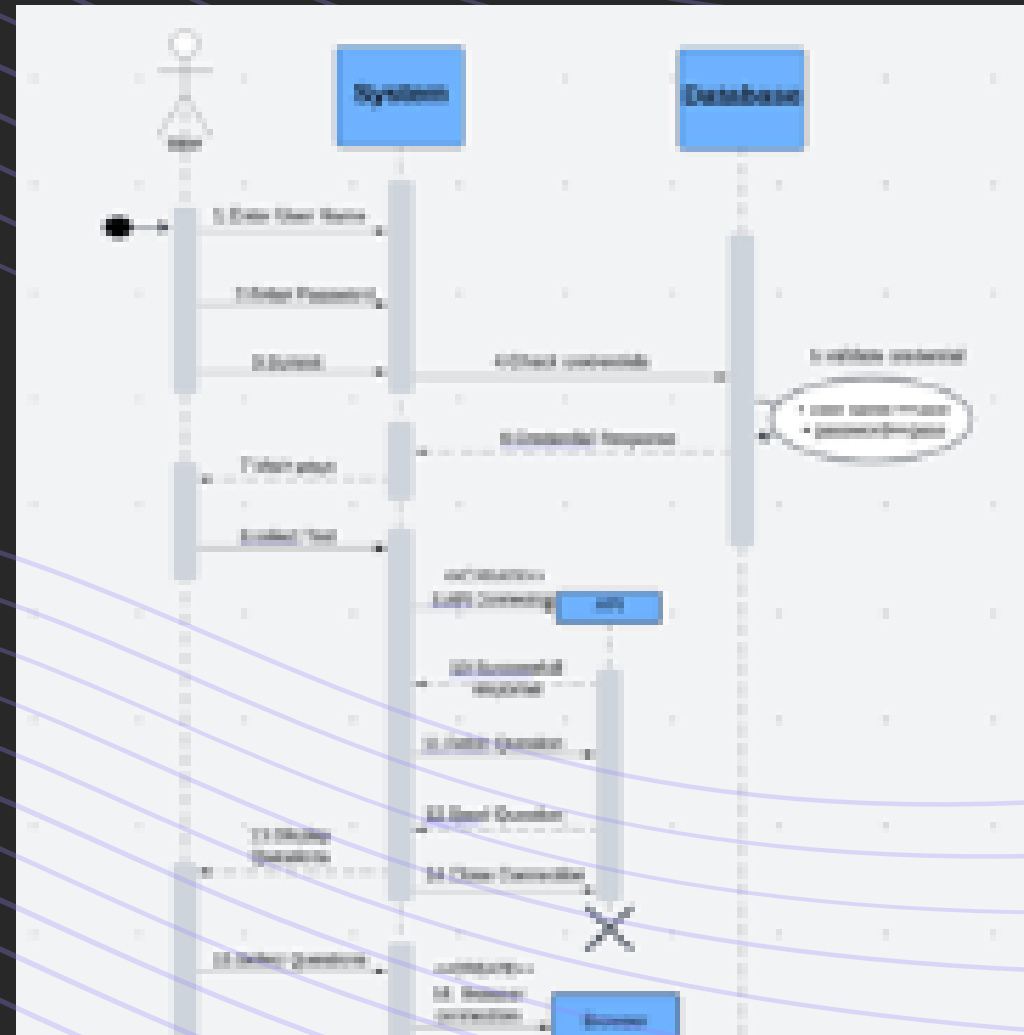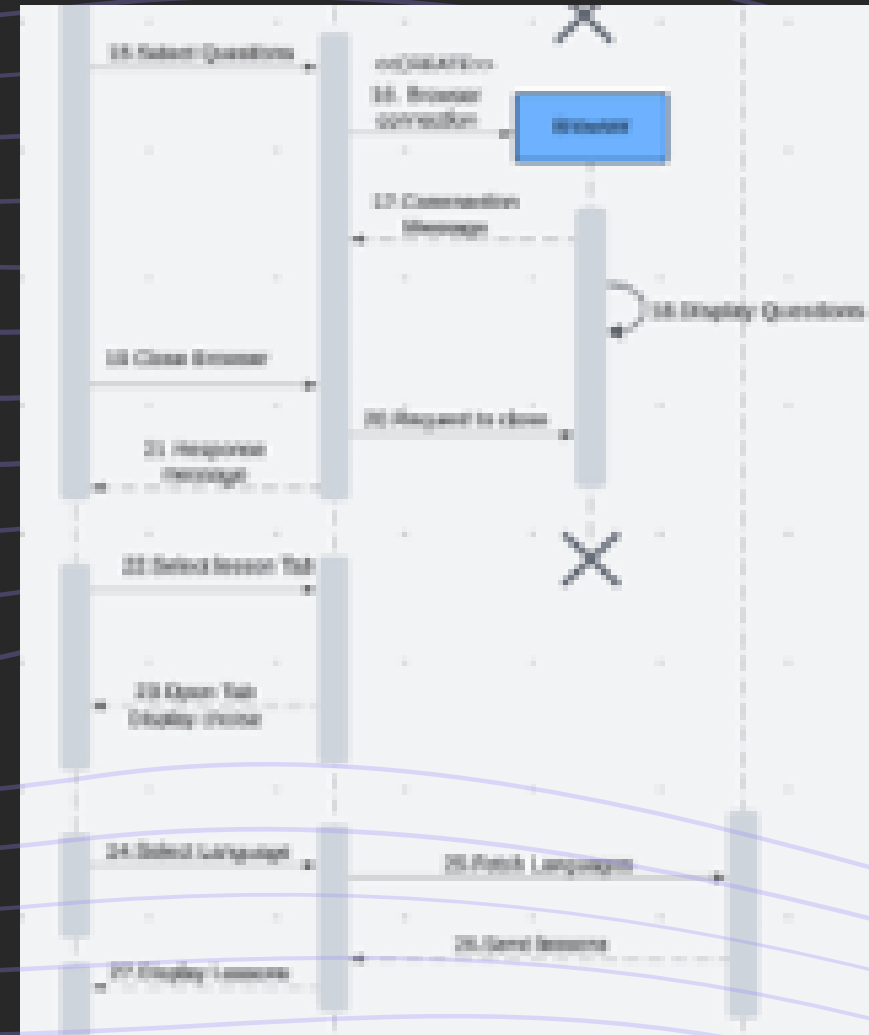| DailyQuestions	
- Provide questions that resets for every 24 hrs - Allow user to attend the test. - Save progress and update the points. - Get result and display to the user	- MainWindow

Data Flow Diagram
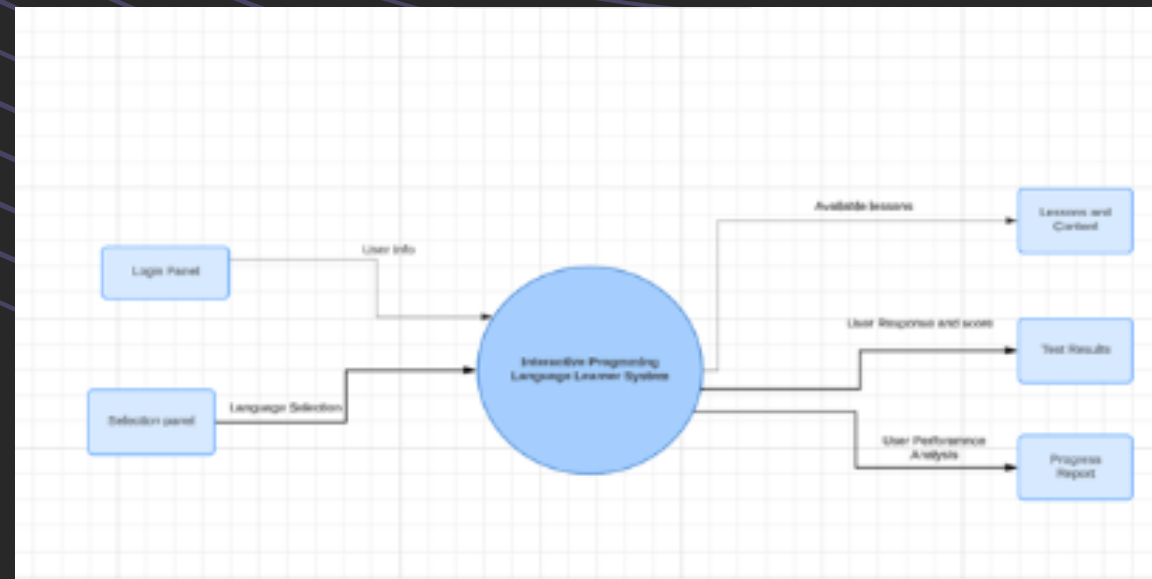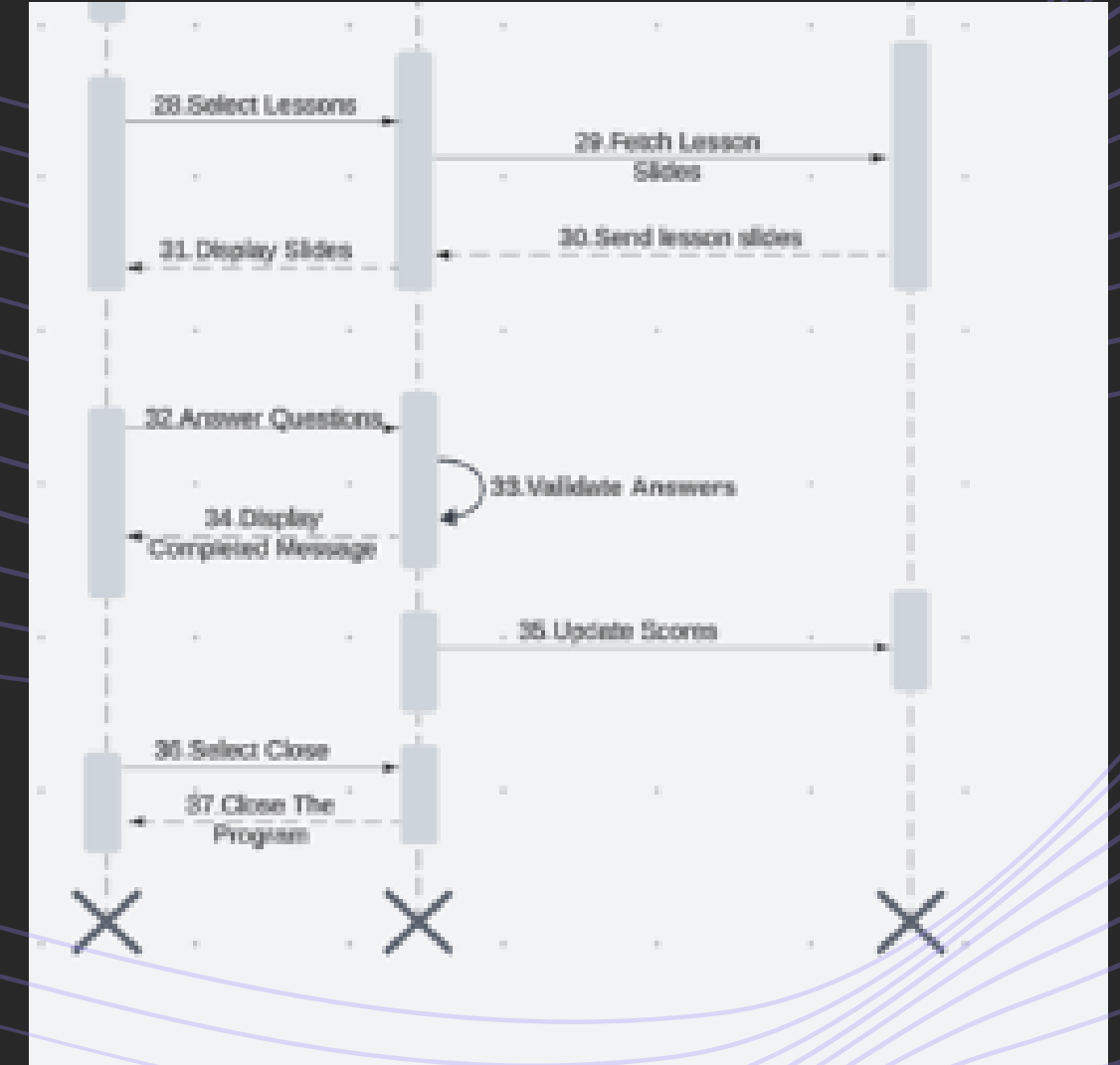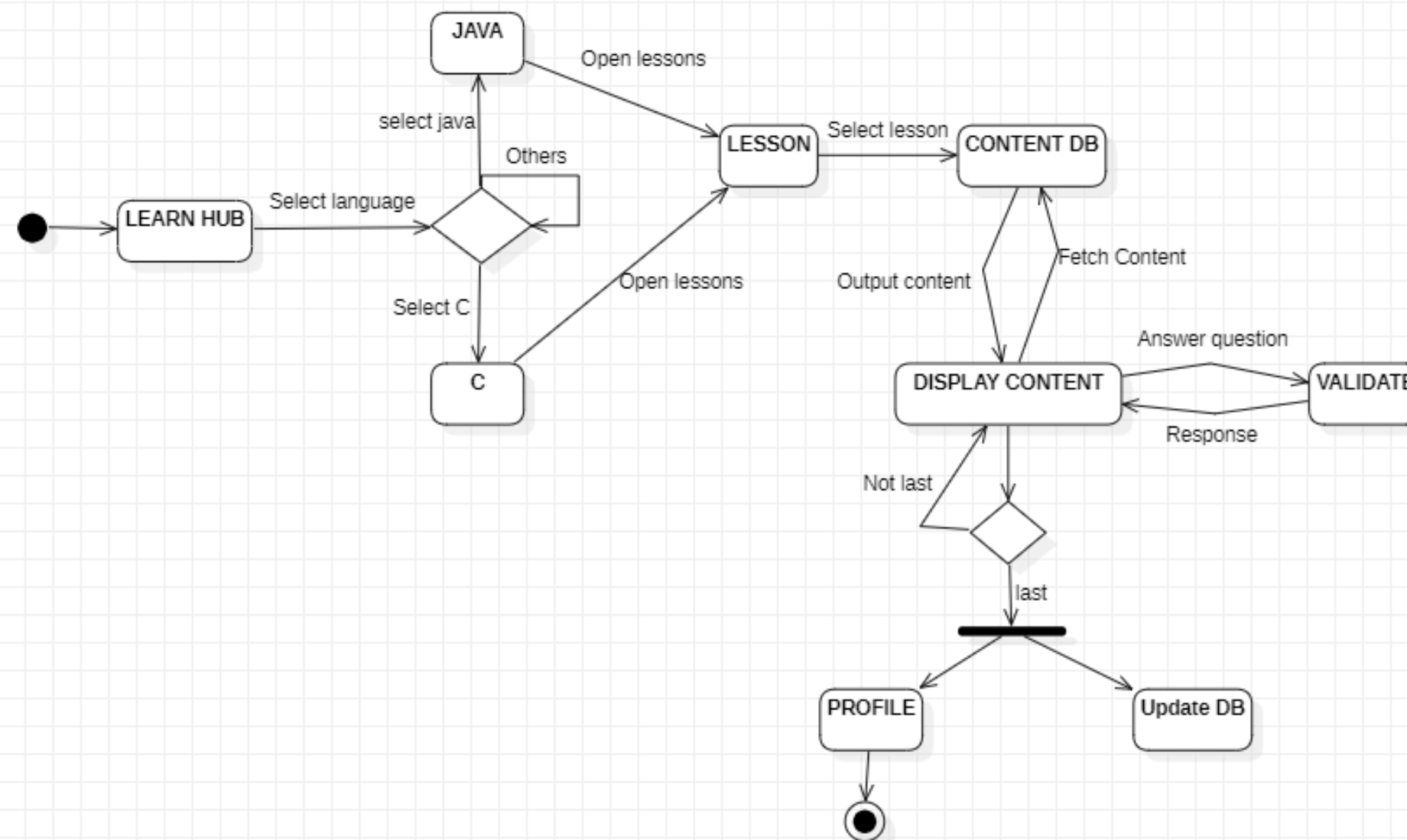

Level 0

Level 1

Level 2

Level 3

Level 4

Sequence Diagarm

A

B

C

State Machine Diagram
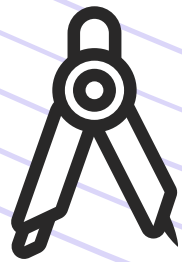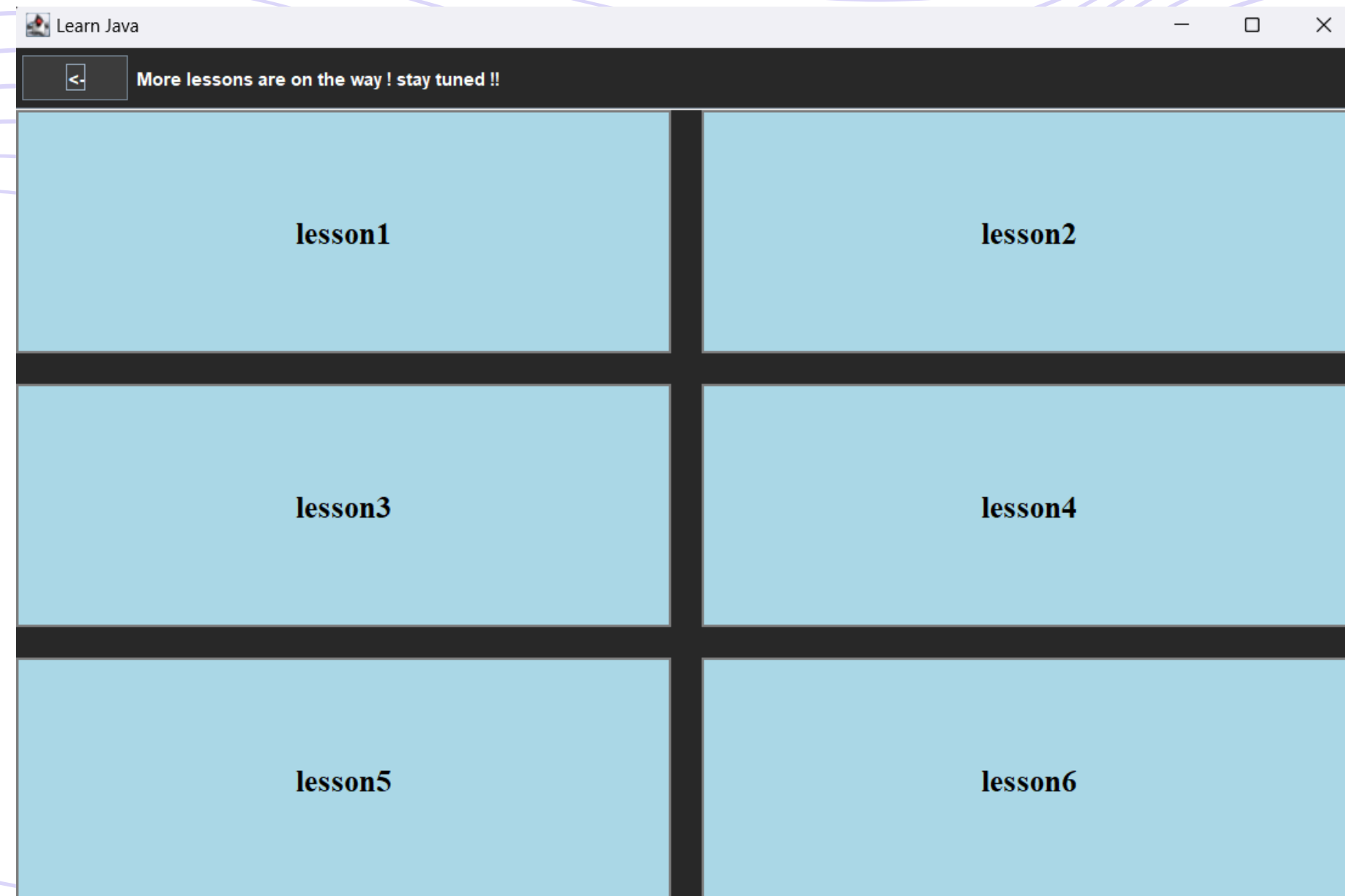
Demonstration
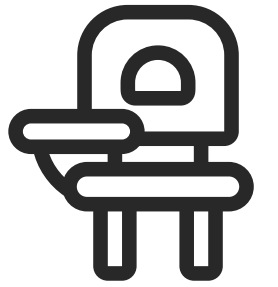
LOGIN PAGE

HOME PAGE
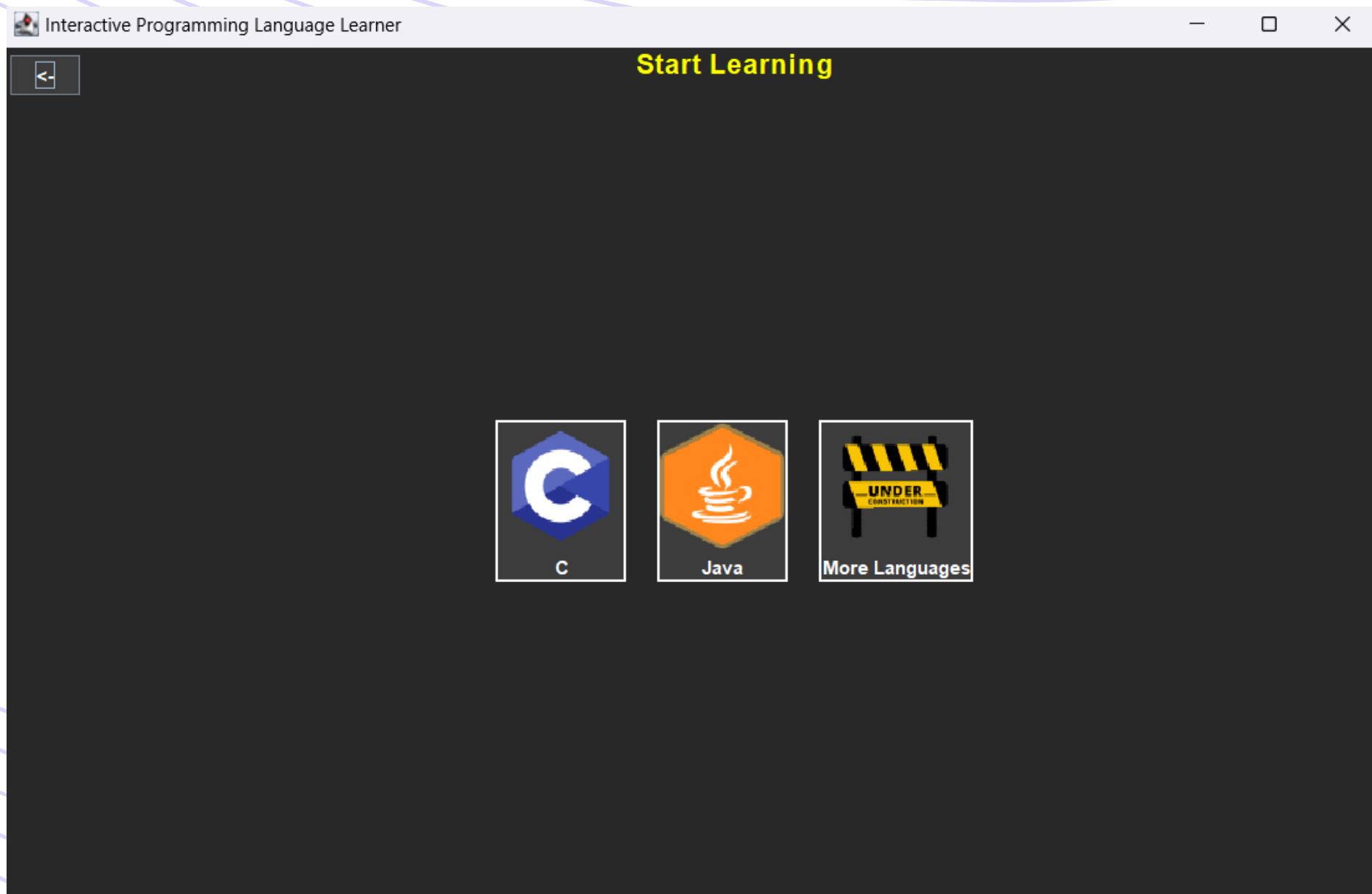
Demonstration

LEARN HUB

LESSONS PAGE

Demonstration
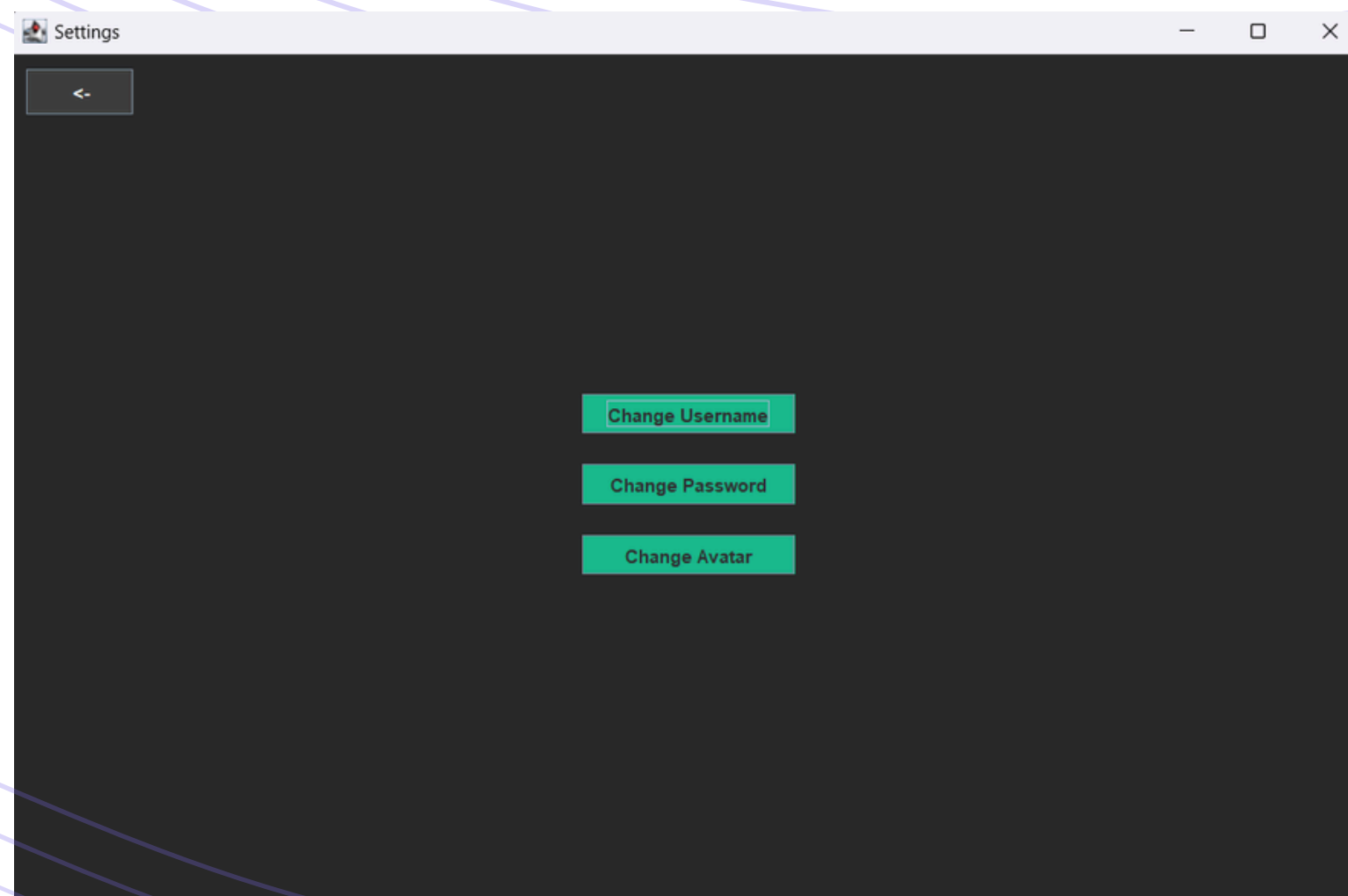
SETTINGS
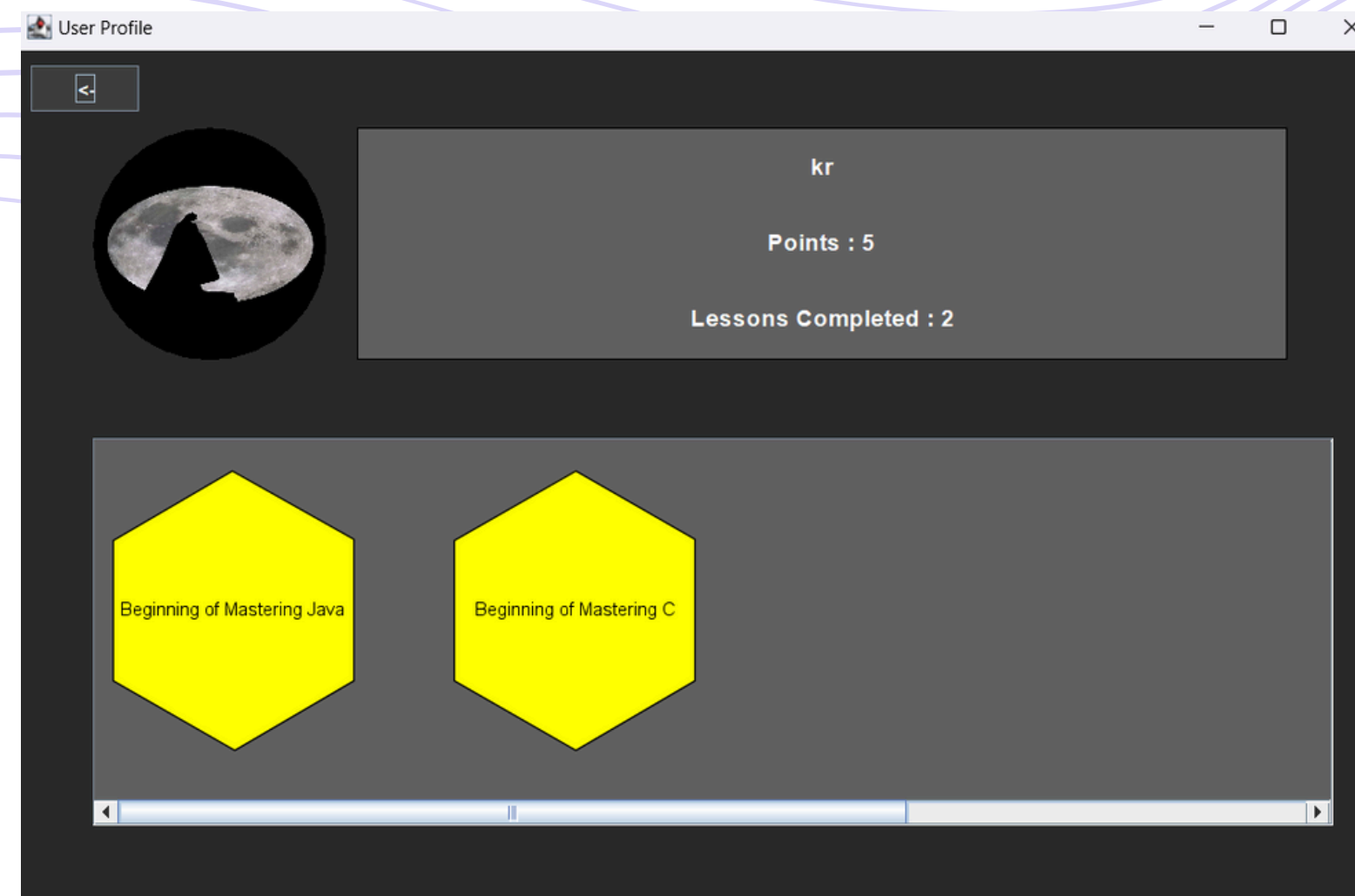
PROFILE
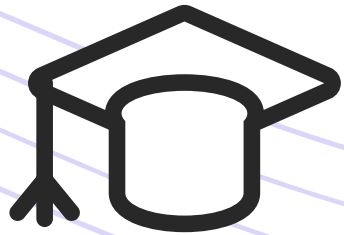
Demonstration

No.	Content ID	Index	Problem	Action
1	2036	G	Library of Magic	View Problem
2	2036	F	XORificator 3000	View Problem
3	2036	E	Reverse the Rivers	View Problem
4	2036	D	I Love 1543	View Problem
5	2036	C	Anya and 1100	View Problem
6	2036	B	Startup	View Problem
7	2036	A	Quintomania	View Problem
8	2035	H	Peak Productivity Forces	View Problem
9	2035	G2	Go Learn! (Hard Version)	View Problem
10	2035	G1	Go Learn! (Easy Version)	View Problem
11	2035	F	Tree Operations	View Problem

Daily Questions - by CodeForces -- Happy Coding

Daily Questions - Sponsored by CodeForces

Library of Magic

Go To CodeForces

Time until next question: 03 : 57 : 13

Go to Hub

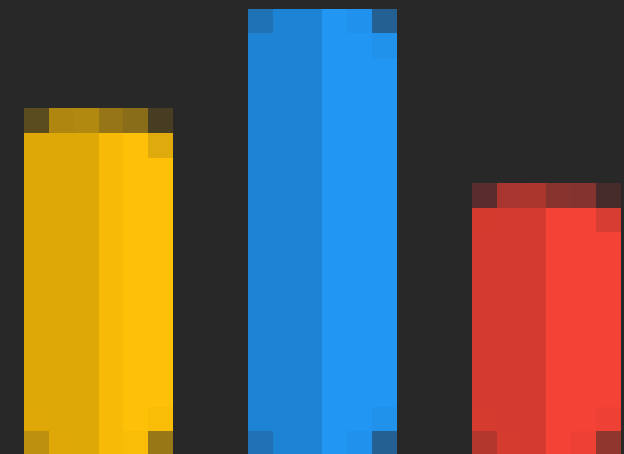**TEST PAGE**

DAILY PAGE

Technology Stack Used

JAVA

MONGO

CODE FORCE

Testing with JUnit

Conclusion

The Interactive Programming Language Learner (IPLL) platform addresses the limitations of traditional programming education by creating an immersive, engaging learning environment.

IPLL transforms coding into an enjoyable and productive experience.

IPLL not only supports beginners in grasping foundational concepts but also provides continuous challenges to maintain their learning trajectory.