Become a Back-End Expert

Learner’s Academy Admin Portal Project

Report content:

- Basic Info
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- Project objective
- Sprite planning
- Java concepts in use
- App workflow chart
- App sample snips
- Algorithms with comments
- Unique selling points
- Conclusion

Basic Info

App name: Learner’s Academy Admin Portal

Developer: Drazen Drinic

GitHub: https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Specification document - Product’s capabilities, appearance, and user interactions

This is a web application that gives many options to the user. Since it is a web app all interaction is done through the browser. User can register an Admin and then Login into the portal. Admins can be listed, edited and deleted.

Lerner’s Academy Admin Portal admin can manager students, teachers, subjects and classes. All of those can be created, edited and deleted by the Admin.

The look of the app is very simple and designed with only few lines of CSS since the goal here was the backend not the frontend.

Interactions is very simple and straight forward, each section of the page has a title that explains what is it about and the interaction is done by mouse and keyboard with minimal user imputs.

Project Objectives:

Project objective:

As a Full Stack Developer, design and develop a backend administrative portal for the Learner's Academy. Use the GitHub repository to manage the project artifacts.

Background of the problem statement:

Learner's Academy is a school that has an online management system. The system keeps track of its classes, subjects, students, and teachers. It has a back-office application with a single administrator login.

The administrator can:

- Set up a master list of all the subjects for all the classes
- Set up a master list of all the teachers
- Set up a master list of all the classes
- Assign classes for subjects from the master list
- Assign teachers to a class for a subject (A teacher can be assigned to different classes for different subjects)
- Get a master list of students (Each student must be assigned to a single class)

There will be an option to view a Class Report which will show all the information about the class, such as the list of students, subjects, and teachers.

The goal of the company is to deliver a high-end quality product as early as possible.

The flow and features of the application:

- Plan more than two sprints to complete the application
- Document the flow of the application and prepare a flow chart
- List the core concepts and algorithms being used to complete this application
- Implement the appropriate concepts, such as exceptions, collections, and sorting techniques for source code optimization and increased performance

You must use the following:

- Eclipse/IntelliJ: An IDE to code for the application
- Java: A programming language to develop the web pages, databases, and others
- SQL: To create tables for admin, classes, students, and other specifics
- Git: To connect and push files from the local system to GitHub
- GitHub: To store the application code and track its versions
- Scrum: An efficient agile framework to deliver the product incrementally
- Search and Sort techniques: Data structures used for the project
- Specification document: Any open-source document or Google Docs

The following requirements should be met:

- The source code should be pushed to your GitHub repository. You need to document the steps and write the algorithms in it.
- The submission of your GitHub repository link is mandatory. In order to track your task, you need to share the link of the repository. You can add a section in your document.
- Document the process step-by-step starting from sprint planning to the product release.
- The application should not close, exit, or throw an exception if the user specifies an invalid input.
- You need to submit the final specification document which will include:
- Project and developer details
- Sprints planned and the tasks achieved in them
- Algorithms and flowcharts of the application
- Core concepts used in the project
- Links to the GitHub repository to verify the project completion

Sprint Planning

There are eight sprites each taking 3-7 days. The goal here is to have a working web application which will communicate with the database and enable Admin options to an admin of a Learners Academy including adding, editing, listing and deleting students, teachers, subjects and classes. Admin can also manage admins inside the portal.

Sprint 1:

Step Zero
Refresh MySQL and Eclipse.

For the purpose of this project I am going to reinstall the MySQL and Eclipse so I can have a fresh start.

1. Fresh MySQL & Eclipse
2. Download MySQL Installer and use it to uninstall everything
3. In File Explorer use View and mark Hidden items and delete all MySQL related folders
    a. C:\Program Files\MySQL
    b. C:\Program Files (x86)\MySQL
    c. C:\ProgramData\MySQL
    d. C:\Users\<your-username>\AppData\Roaming\MySQL
4. Install fresh MySQL, https://downloads.mysql.com/archives/installer/
    a. I chose 8.0.13
5. My user and password for MySQL
    a. user: root
       password: password
6. Install fresh Eclipse
    a. First uninstall
        i. Delete eclipse folder C:\Users\YourUserName\eclipse
        ii. Delete eclipse cache C:\Users\YourUserName\.p2
        iii. Delete shortcuts
        iv. Delete eclipse workspace (if you want to delete all of your projects)
7. Than Install
    a. Download https://www.eclipse.org/downloads/
    b. Install now and chose Eclipse IDE for Enterprise Java and Web Developers

Step one

Create Dynamic Web Project inside eclipse-workspace,

- create git repo for this project (RC on the project > Team > Share Project... >
- check Use or create repository in parent folder of the project >
- click on the project/select project >
- Create Repository >
- Finish),
- refresh project,
- delete .gitignore,
- do initial commit

- or
- Creating project GitHub repo,
- clone GitHub repo into eclipse-workspace,
- create Dynamic Web Project inside cloned GitHub repo folder inside eclipse-workspace,
- add files into staging area and do an initial commit.
- or simply just create your eclipse project and use GitHub Desktop to take care of your VCS

Step two

Add essential documents into the project, add dependencies and build path for necessary JARs:

1. antlr-2.7.7
2. byte-buddy-1.8.17
3. classmate-1.3.4
4. dom4j-2.1.1
5. hibernate-commons-annotations-5.0.4.Fina
6. hibernate-core-5.3.7.Final
7. jandex-2.0.5.Final
8. javassist-3.23.1-GA
9. javax.activation-api-1.2.0
10. javax.persistence-api-2.
11. jaxb-api-2.3.1
12. jboss-logging-3.3.2.Final
13. jboss-transaction-api_1.2_spec-1.1.1.Fina
14. jsp-api-2.2
15. jstl-1.2
16. mysql-connector-java-8.0.13
17. protobuf-java-3.6.1
18. servlet-api (From apache-tomcat-8.5.78 lib folder)

Sprint 2:

In the second sprite we will create project structure, Hibernateutil, and prepare the database using HeidiSQL. Afterwards we are going to create POJOs and DAOs with all the functionality for the ADMIN so we can work and make CRUD for ADMIN and a Login Page.

To be able to make it all work we will need to create SERVLETs for START app and another one to manage Learners Academy flow.

Sprint 3:

In the third sprite we will create all the functionality and test it so we can make sure that the Admin options are working fine.

Inside POJOs we will have fields, getters, setters and few options for constructors. For DAOs we will make methods to validateAdmin(), saveAdmin(), updateAdmin(), deleteAdmin(), getAdmin(), getAllAdmin() in the case of Admin for other classes we will have same methods.

In SERVLETs we will have two sets: In the START SERVLET we will have a method to create an initial Admin registration and there we will also manage initial instances to fill the database.

In the Learners Academy SERVLET we will create methods which are going to first of all validate an admin when registering it. Afterwards we need methods to Login and to logout. And at the end we need methods to show register page, to register an instance, to list instances, to show edit form, to confirm edits and to delete an admin. Same methods are needed for all the instances of a Student, Subject, Teacher and Class.

We also need few JSPs:

admin-registration-initial.jsp,
admin-registration.jsp,
admin-list.jsp and
admin-edit-form.jsp

portal.jsp
login.jsp
logout.jsp
styles.css

Sprint 4:

In the 4th sprite we will create all the functionality for the Teacher section of the portal.

We will also create all needed JSPs:

teacher-registration.jsp,
teacher-list.jsp and
teacher-edit-form.jsp

After creation it is very important to test everything.

Sprint 5:

In the 5th sprite we will create all the functionality for the Subject section of the portal.

We will also create all needed JSPs:

subject-registration.jsp,
subject-list.jsp and
subject-edit-form.jsp

After creation it is very important to test everything.

Sprint 6:

In the 6th sprite we will create all the functionality for the Student section of the portal.

We will also create all needed JSPs:

student-registration.jsp,
student-list.jsp and
student-edit-form.jsp

After creation it is very important to test everything.

Sprint 7:

In the 7th sprite we will create all the functionality for the Class section of the portal.

We will also create all needed JSPs:

class-registration.jsp,
class-list.jsp and
class-edit-form.jsp

class-student-list.jsp
welcome.jsp

After creation it is very important to test everything.

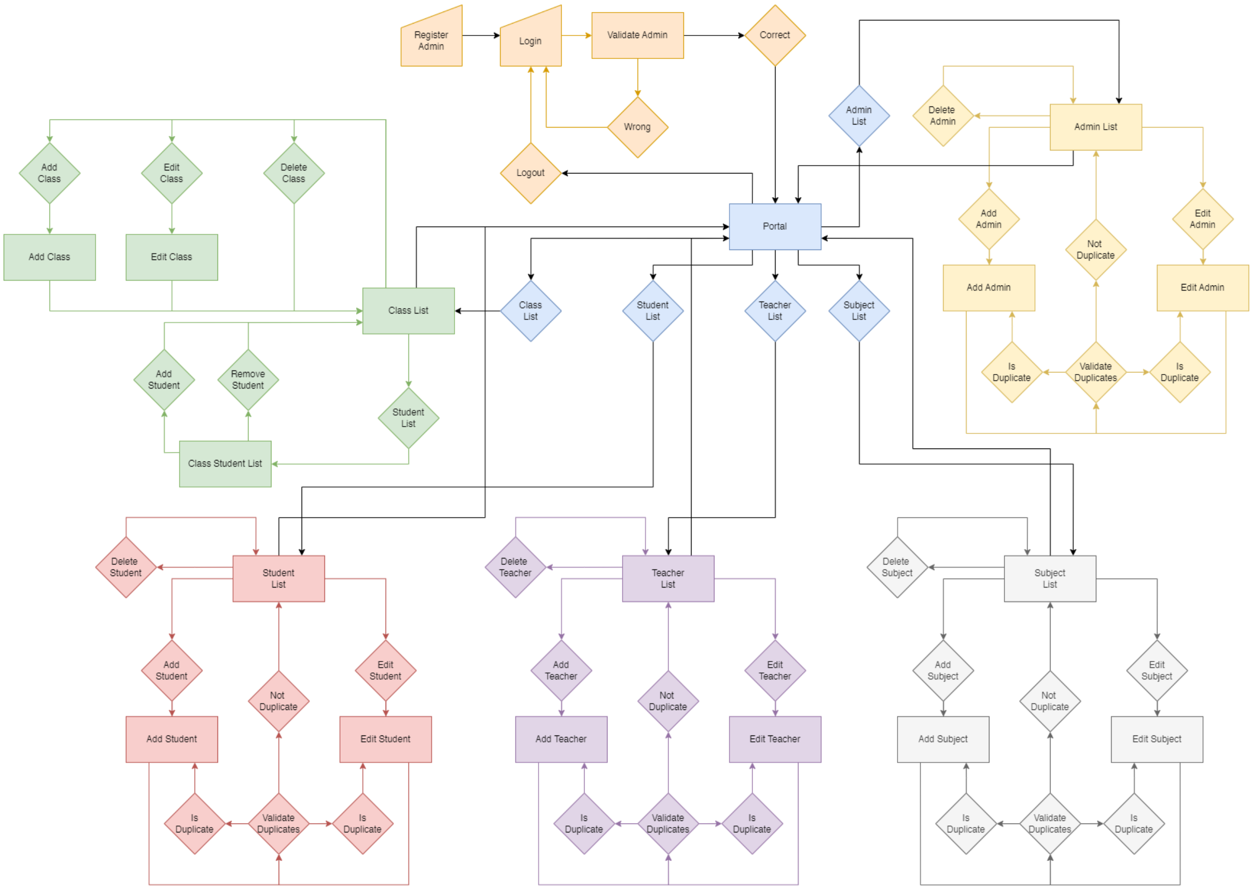
Sprint 8:

In the last 8th sprite we are going to test the portal fully and to create functionality snips. After testing we are going to create necessary documentation.

Concepts in use

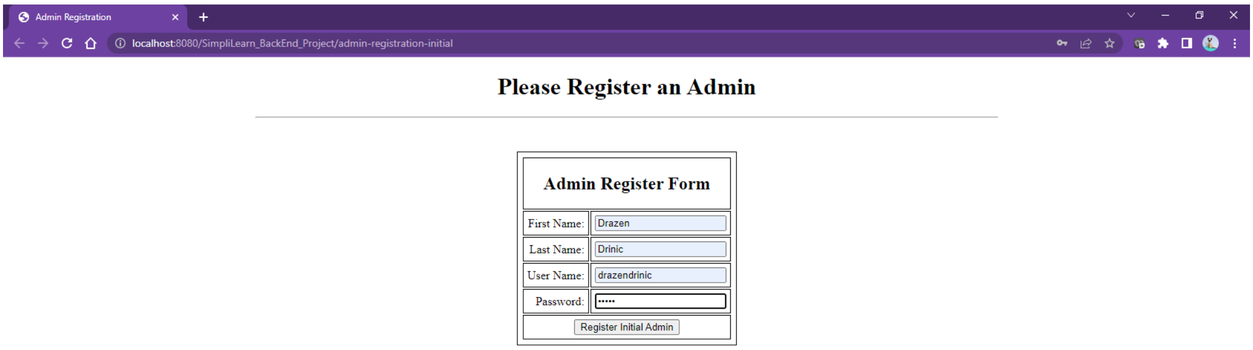
- Java core
- Hibernate and JPA
- DAO
- Servlet
- JSP
- JSTL
- CSS and HTML
- And other concepts

App WorkFlow Chart



App sample snips

This is the first interaction of the user with the Learners Academy Admin Portal. To see Admin registration in action we are going to register an Admin.

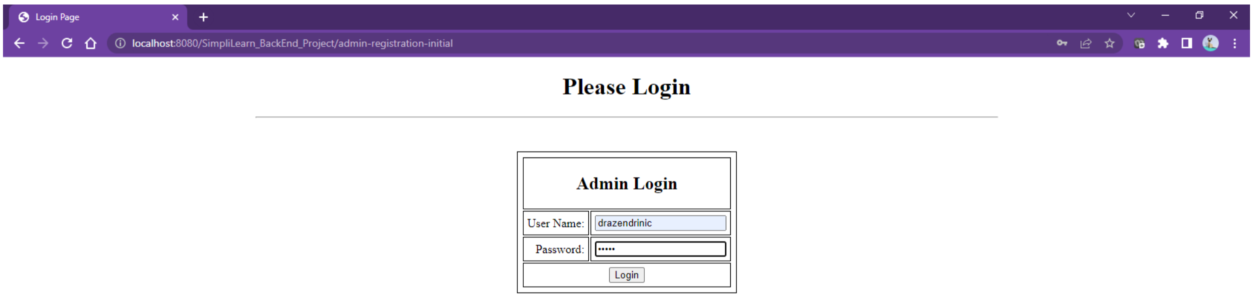


localhost:8080/SimpliLearn_BackEnd_Project/admin-registration-initial

Please Register an Admin

Admin Register Form	
First Name:	Drazen
Last Name:	Drinic
User Name:	drazendrinic
Password:	•••••

Login Page.

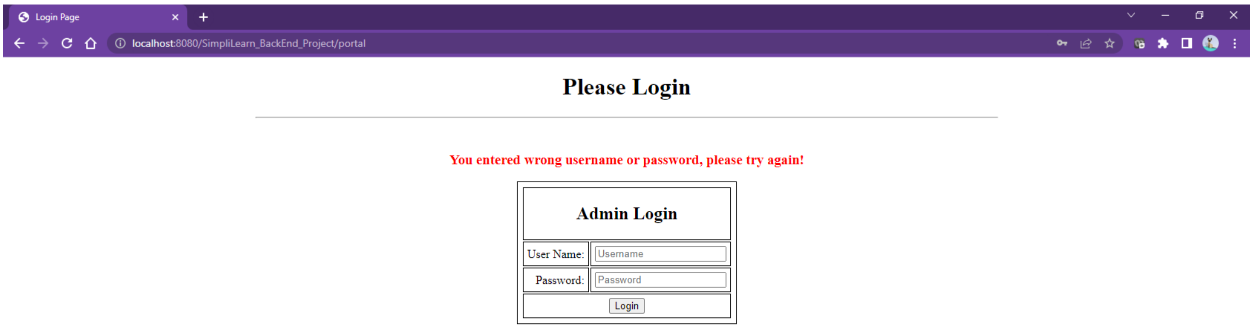


localhost:8080/SimpliLearn_BackEnd_Project/admin-registration-initial

Please Login

Admin Login	
User Name:	drazendrinic
Password:	•••••

Login checks for username and password validation and prompts an error if there is no username and its related password in the database.

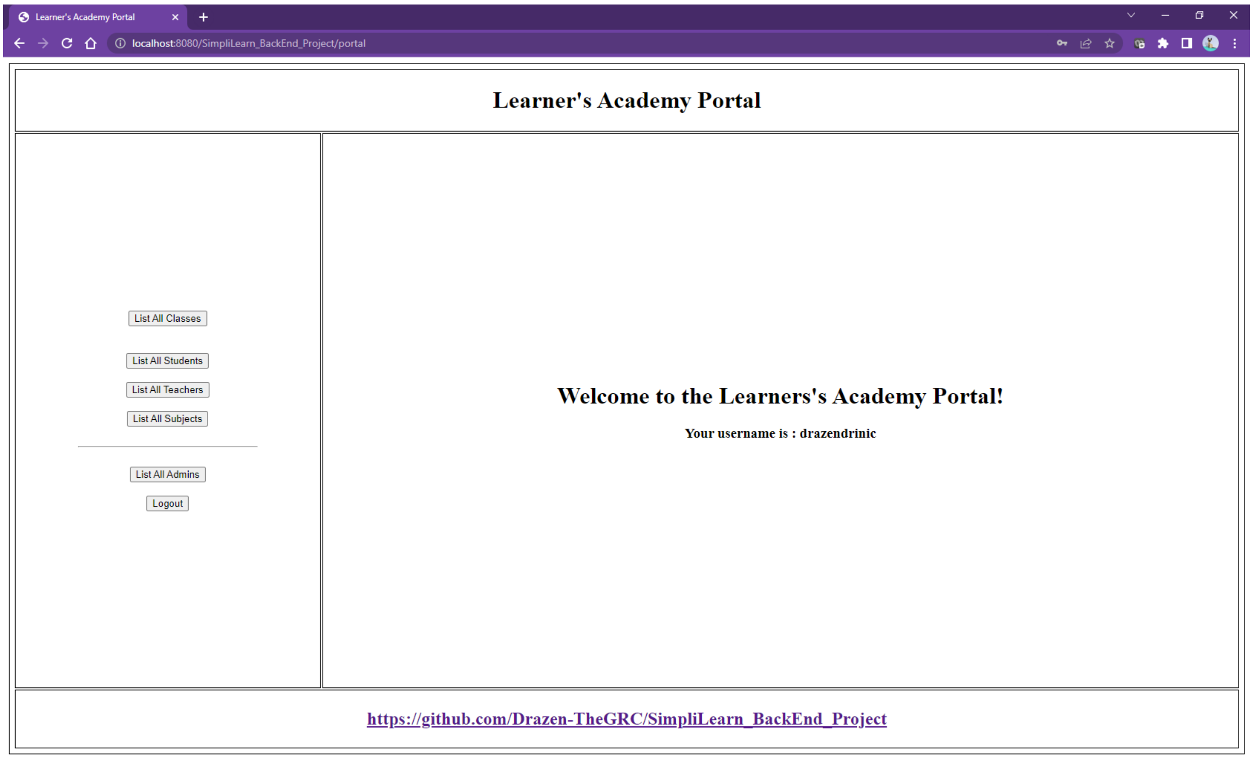


Please Login

You entered wrong username or password, please try again!

Admin Login	
User Name:	Username
Password:	Password
Login	

After successful Login we will se the Portal and its Welcome Page.



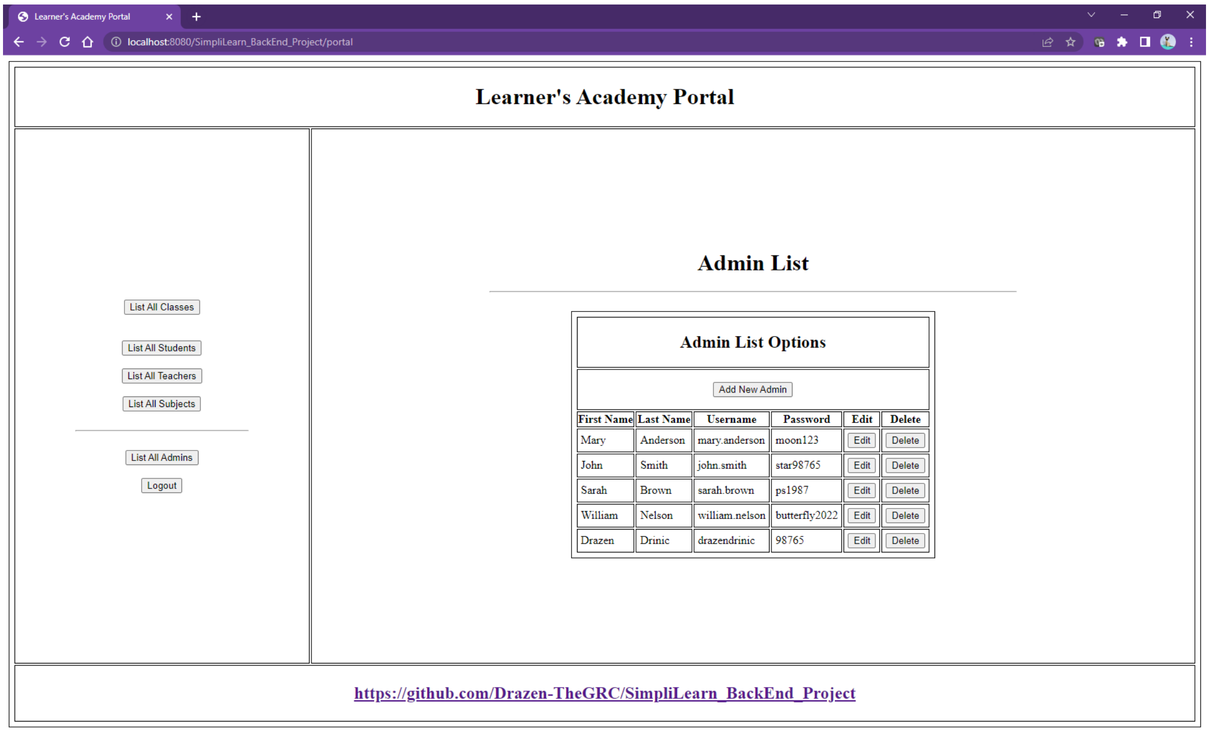
Learner's Academy Portal

Welcome to the Learners's Academy Portal!

Your username is : drazendrinic

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Admin can list all Admins and manage them from the Admin List Page.



Learner's Academy Portal

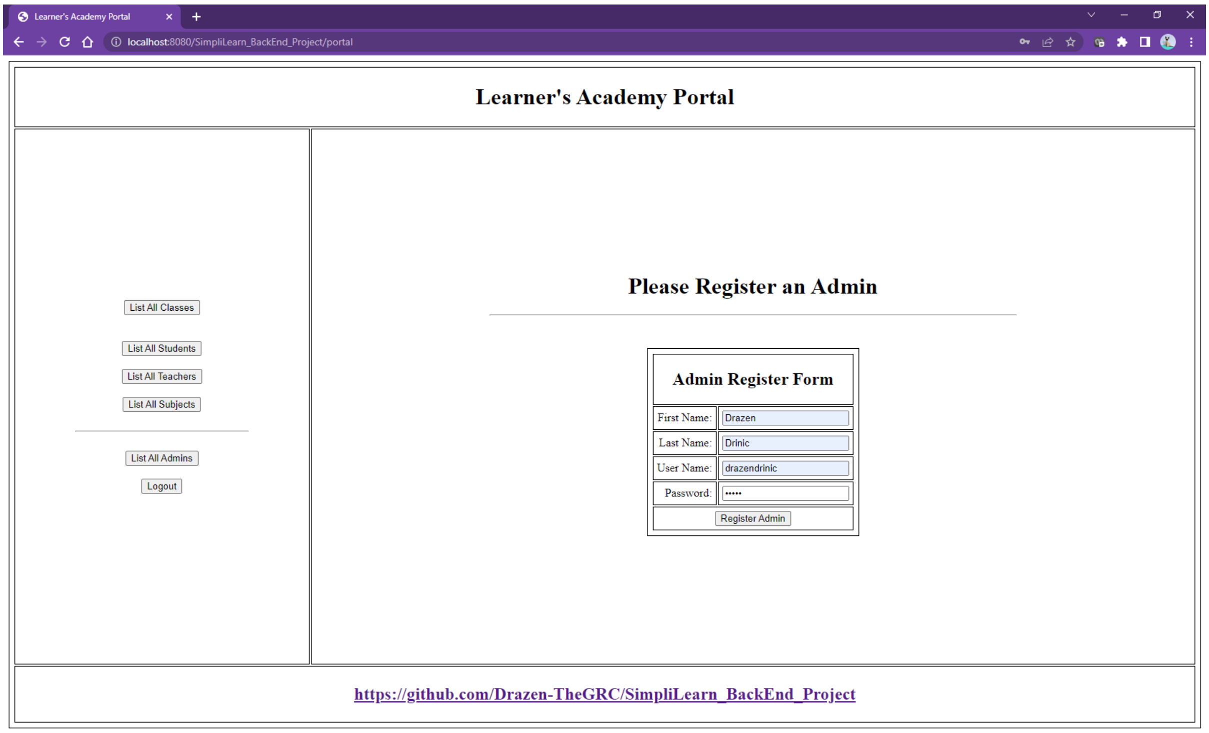
Admin List

Admin List Options

First Name	Last Name	Username	Password	Edit	Delete
Mary	Anderson	mary.anderson	moon123	Edit	Delete
John	Smith	john.smith	star98765	Edit	Delete
Sarah	Brown	sarah.brown	ps1987	Edit	Delete
William	Nelson	william.nelson	butterfly2022	Edit	Delete
Drazen	Drinic	drazendrinic	98765	Edit	Delete

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Adding another admin from the Portal.



Learner's Academy Portal

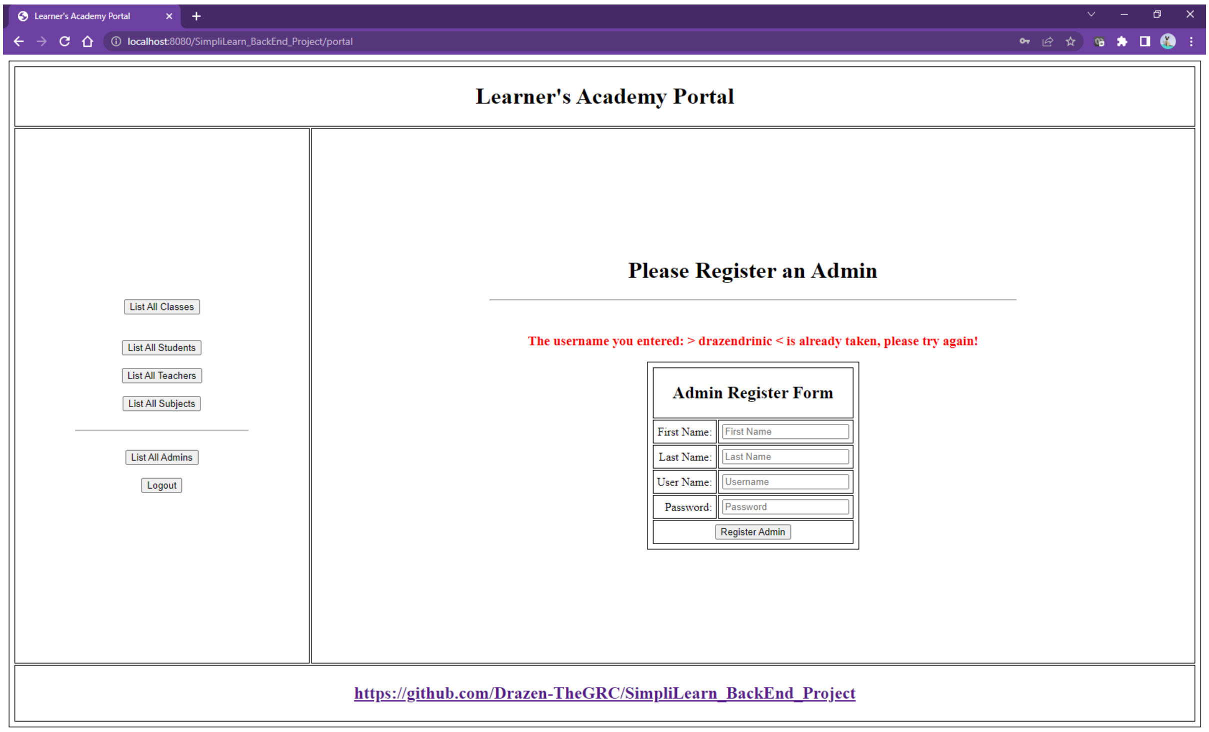
Please Register an Admin

Admin Register Form

First Name:	Drazen
Last Name:	Drinic
User Name:	drazendrinic
Password:	•••••

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

In case a username already exists in the database, an error message will be shown.



Learner's Academy Portal

Please Register an Admin

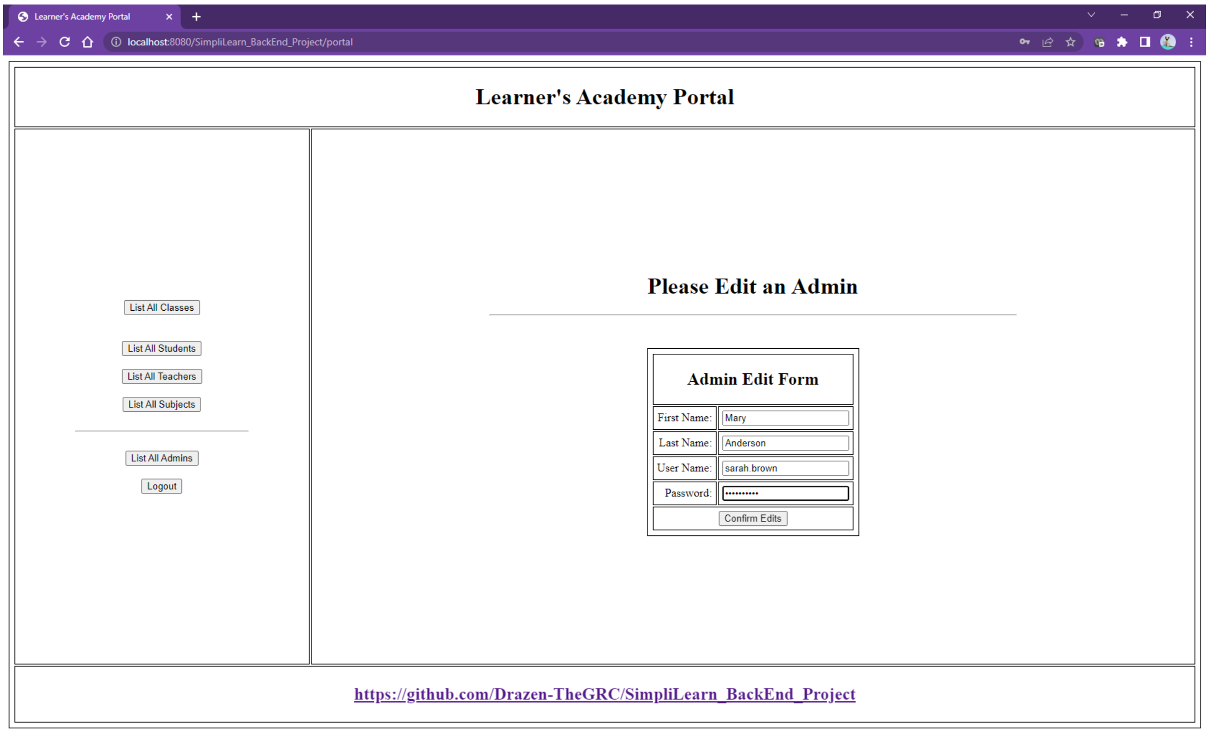
The username you entered: > drazendrinic < is already taken, please try again!

Admin Register Form

First Name:	First Name
Last Name:	Last Name
User Name:	Username
Password:	Password

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Admin can also edit existing Admins.



Learner's Academy Portal

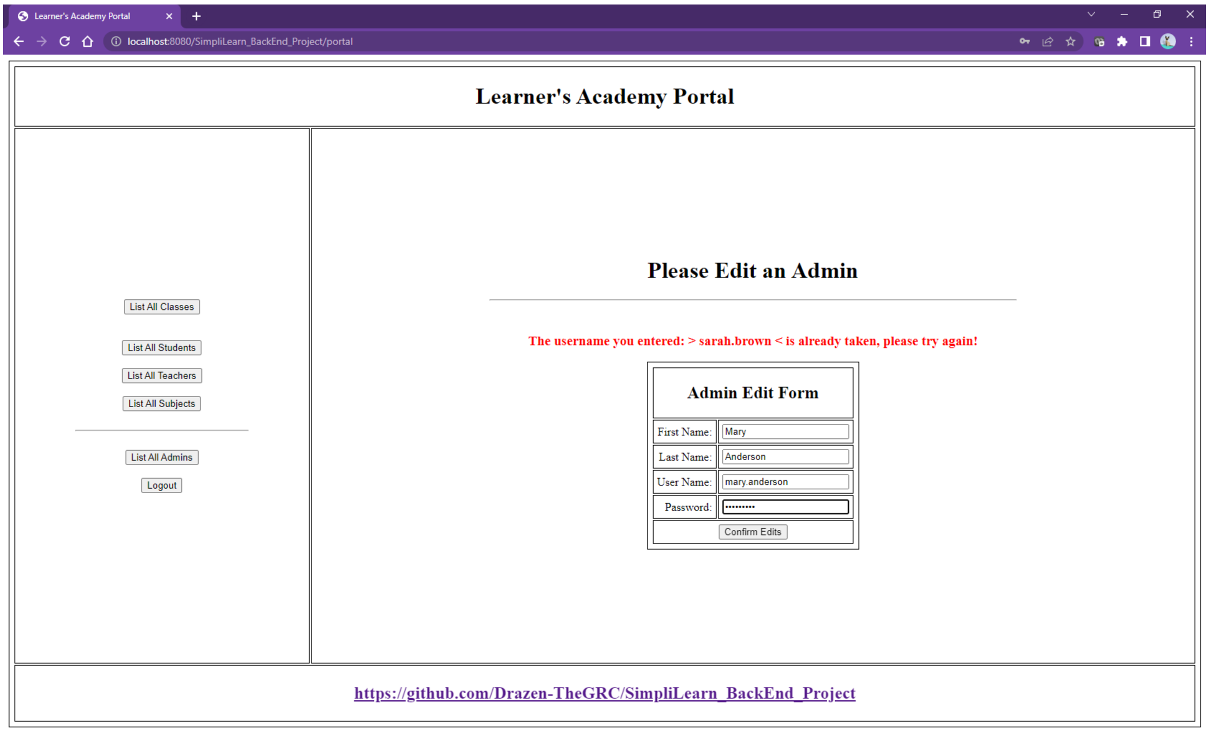
Please Edit an Admin

Admin Edit Form

First Name:	Mary
Last Name:	Anderson
User Name:	sarah.brown
Password:	••••••••••

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

If during Admin Edit operations a duplicate username is edited we will get and error message.



Learner's Academy Portal

Please Edit an Admin

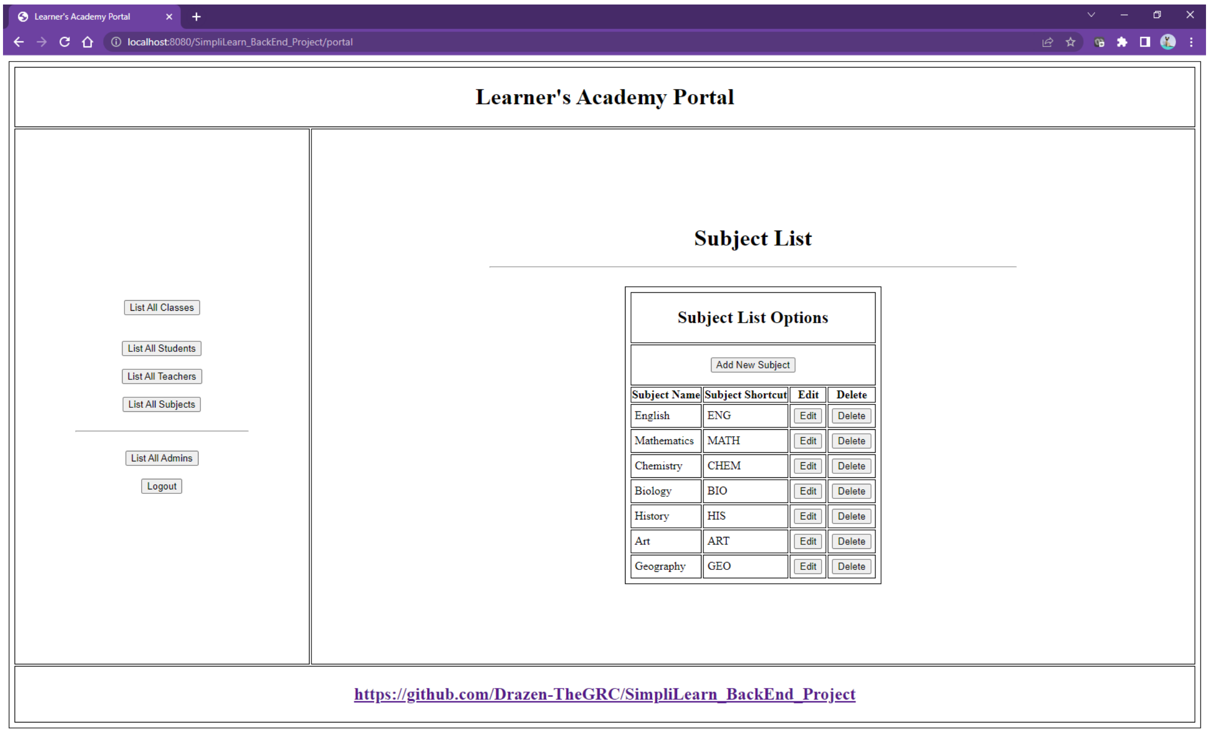
The username you entered: > sarah.brown < is already taken, please try again!

Admin Edit Form

First Name:	Mary
Last Name:	Anderson
User Name:	mary.anderson
Password:	••••••••••

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Amin can list all the Subject and manage them through the Portal.



Learner's Academy Portal

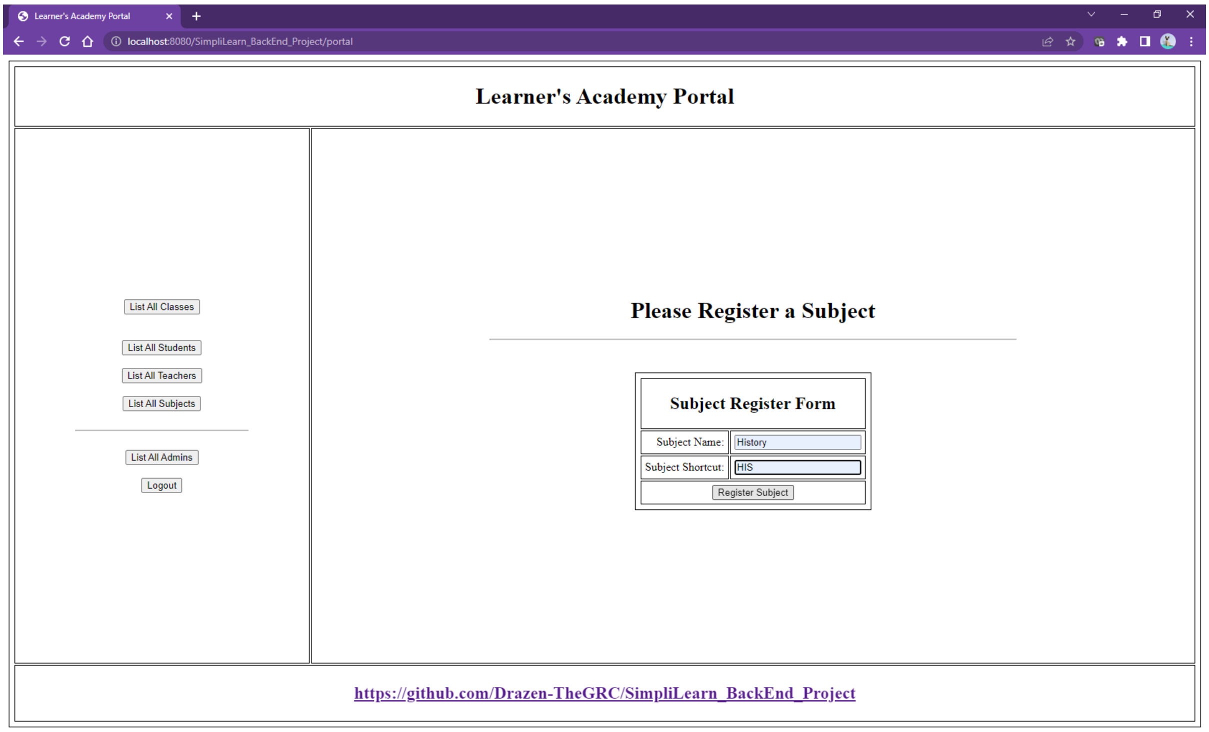
Subject List

Subject List Options

Subject Name	Subject Shortcut	Edit	Delete
English	ENG	Edit	Delete
Mathematics	MATH	Edit	Delete
Chemistry	CHEM	Edit	Delete
Biology	BIO	Edit	Delete
History	HIS	Edit	Delete
Art	ART	Edit	Delete
Geography	GEO	Edit	Delete

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Admin can add new Subjects to the Portal



Learner's Academy Portal

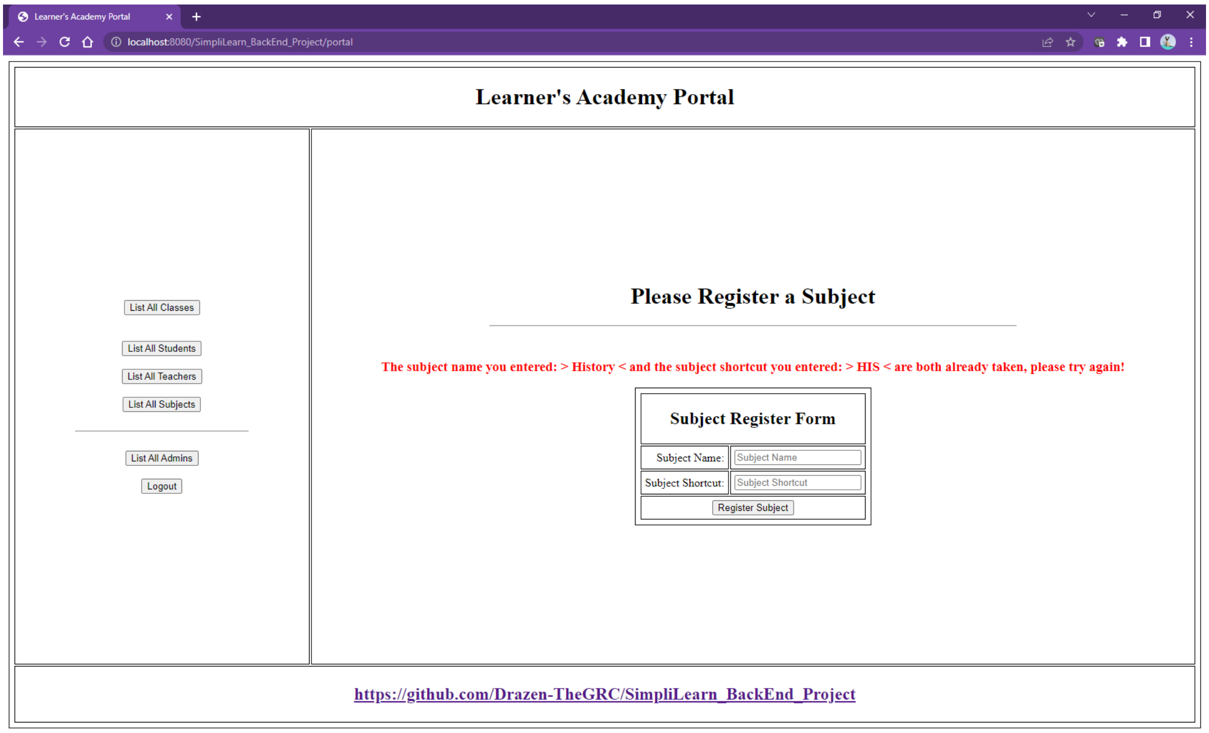
Please Register a Subject

Subject Register Form

Subject Name:	History
Subject Shortcut:	HIS

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

If Admin tries to add an existing Subject an error message will inform the user.



Learner's Academy Portal

Please Register a Subject

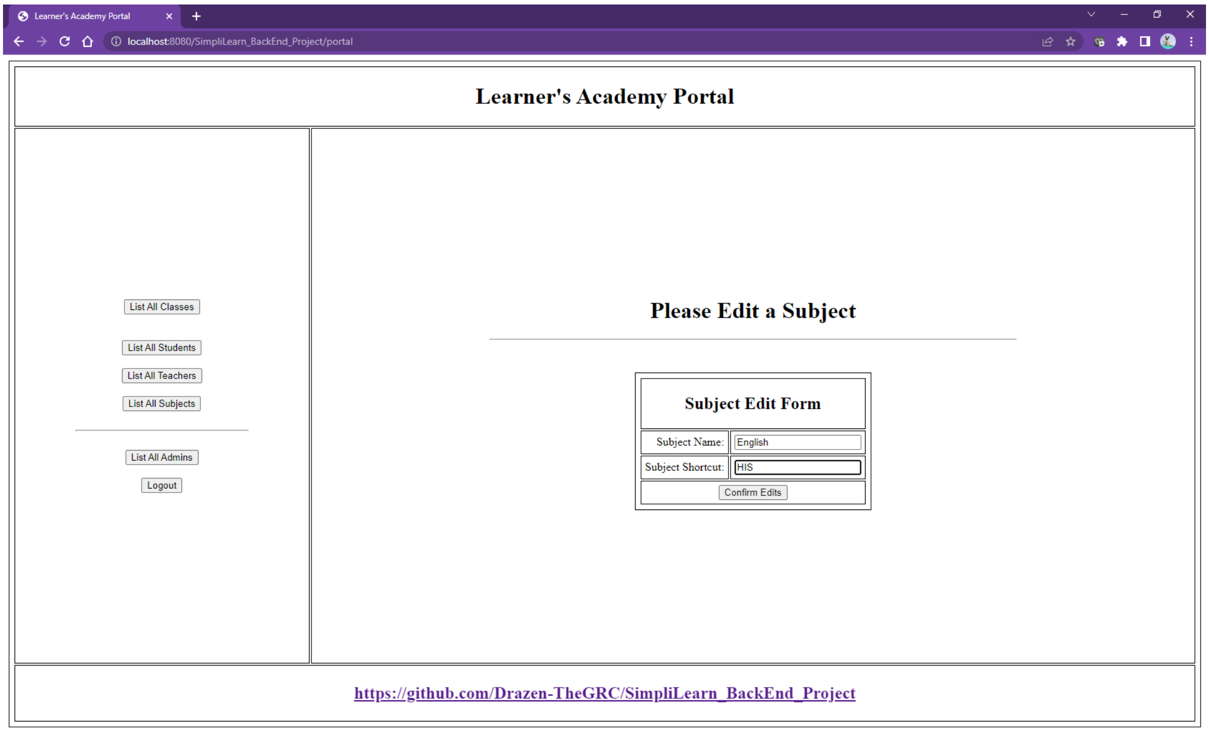
The subject name you entered: > History < and the subject shortcut you entered: > HIS < are both already taken, please try again!

Subject Register Form

Subject Name:	Subject Name
Subject Shortcut:	Subject Shortcut

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Subject can be also edited and edits are going to reflect the classes.



Learner's Academy Portal

Please Edit a Subject

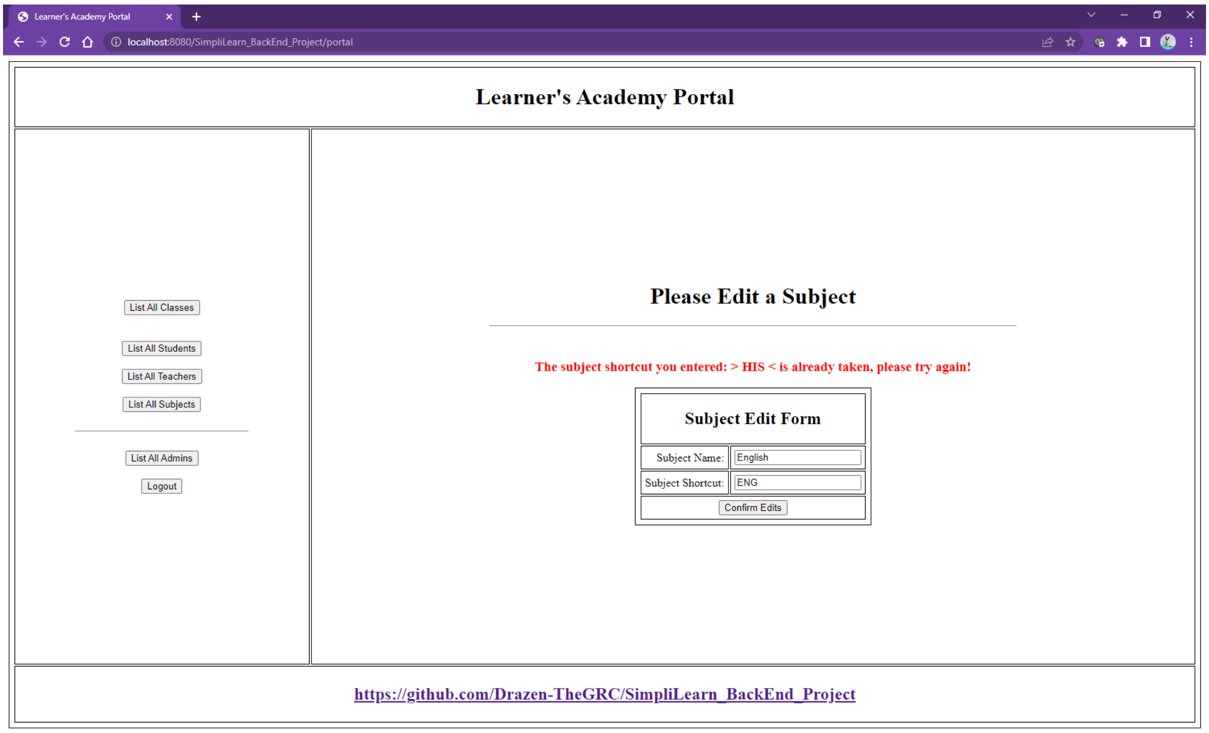
Subject Edit Form

Subject Name: English

Subject Shortcut: HIS

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Again, if we try to edit an existing subject to another existing subject there will be an error.



Learner's Academy Portal

Please Edit a Subject

The subject shortcut you entered: > HIS < is already taken, please try again!

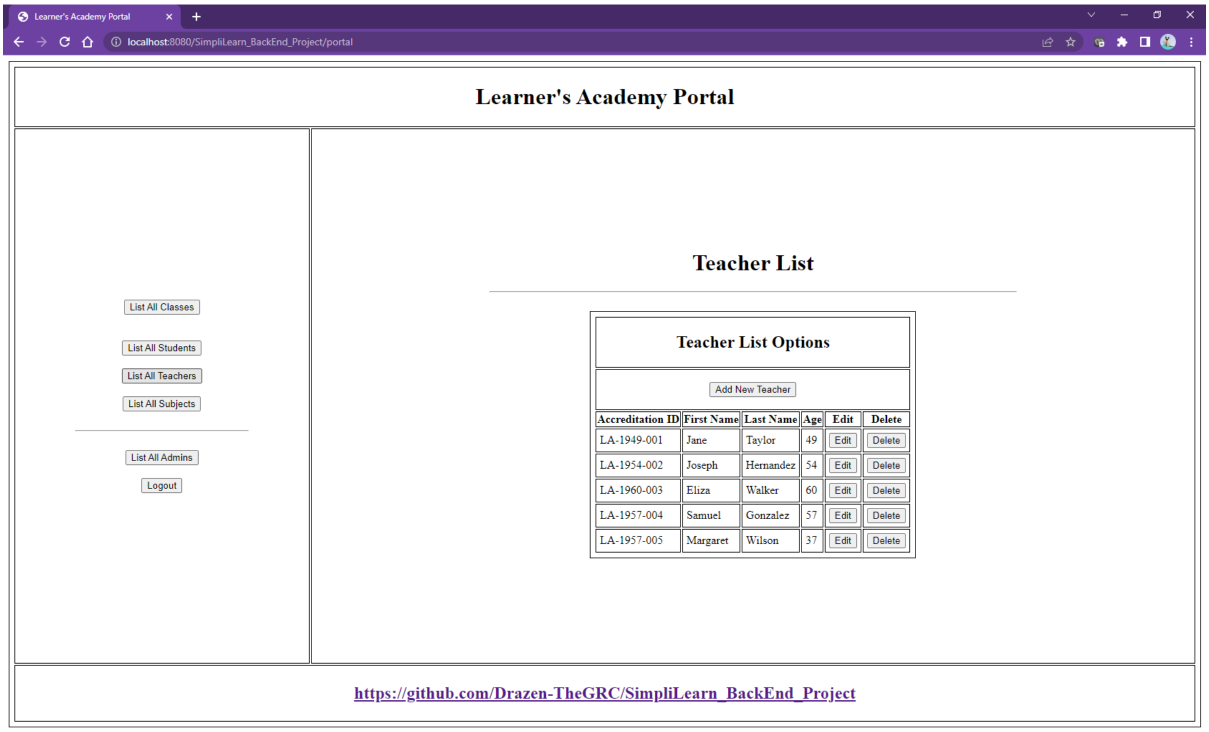
Subject Edit Form

Subject Name: English

Subject Shortcut: ENG

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Admin can manage Teachers on the Portal viewing and manipulating Teacher List



Learner's Academy Portal

Teacher List

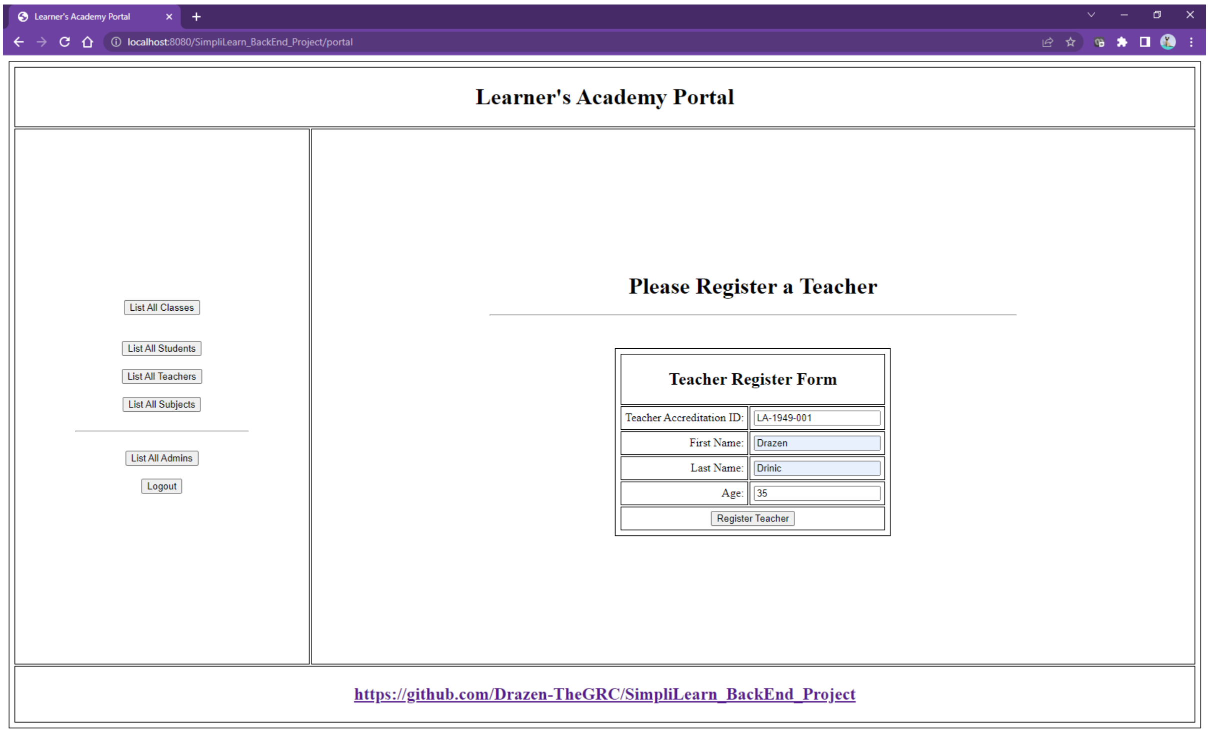
Teacher List Options

Add New Teacher

Accreditation ID	First Name	Last Name	Age	Edit	Delete
LA-1949-001	Jane	Taylor	49	Edit	Delete
LA-1954-002	Joseph	Hernandez	54	Edit	Delete
LA-1960-003	Eliza	Walker	60	Edit	Delete
LA-1957-004	Samuel	Gonzalez	57	Edit	Delete
LA-1957-005	Margaret	Wilson	37	Edit	Delete

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

New Teachers can be added.



Learner's Academy Portal

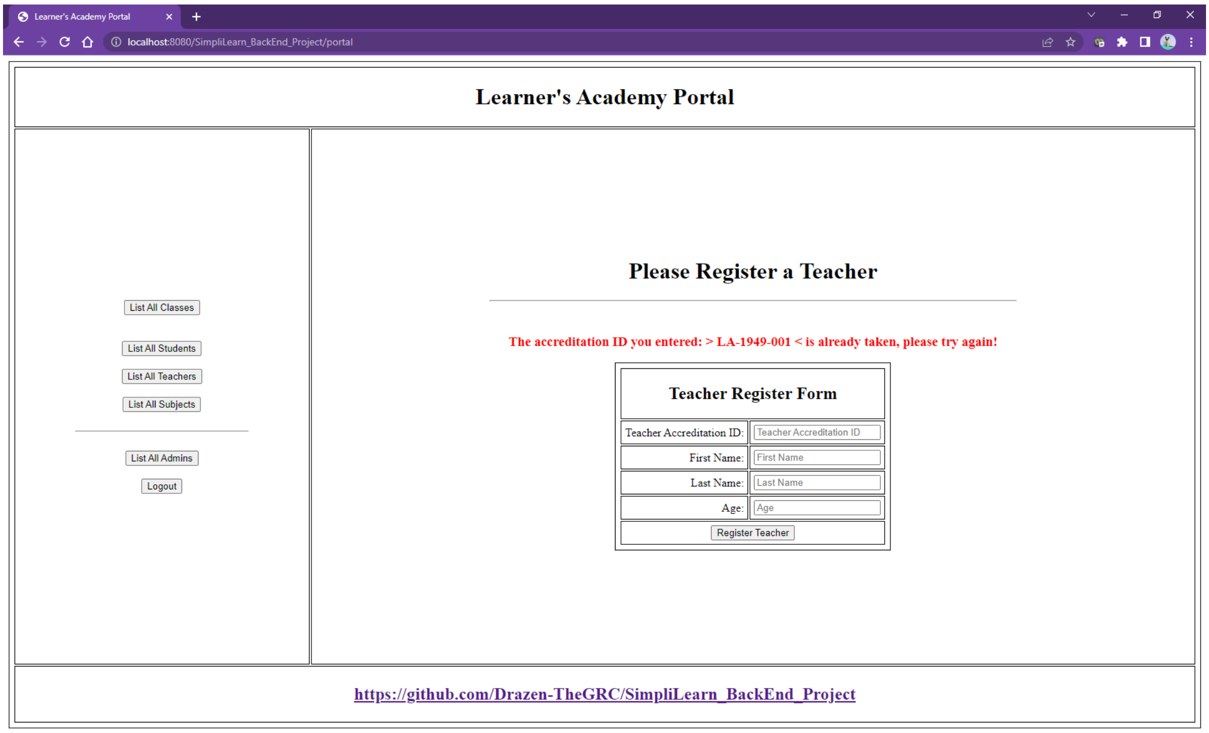
Please Register a Teacher

Teacher Register Form

Teacher Accreditation ID:	LA-1949-001
First Name:	Drazen
Last Name:	Drinic
Age:	35

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Each teacher has a unique teacher accreditation ID and in case we enter a duplicate there will be an error message preventing the Admin to enter duplicates.



Learner's Academy Portal

Please Register a Teacher

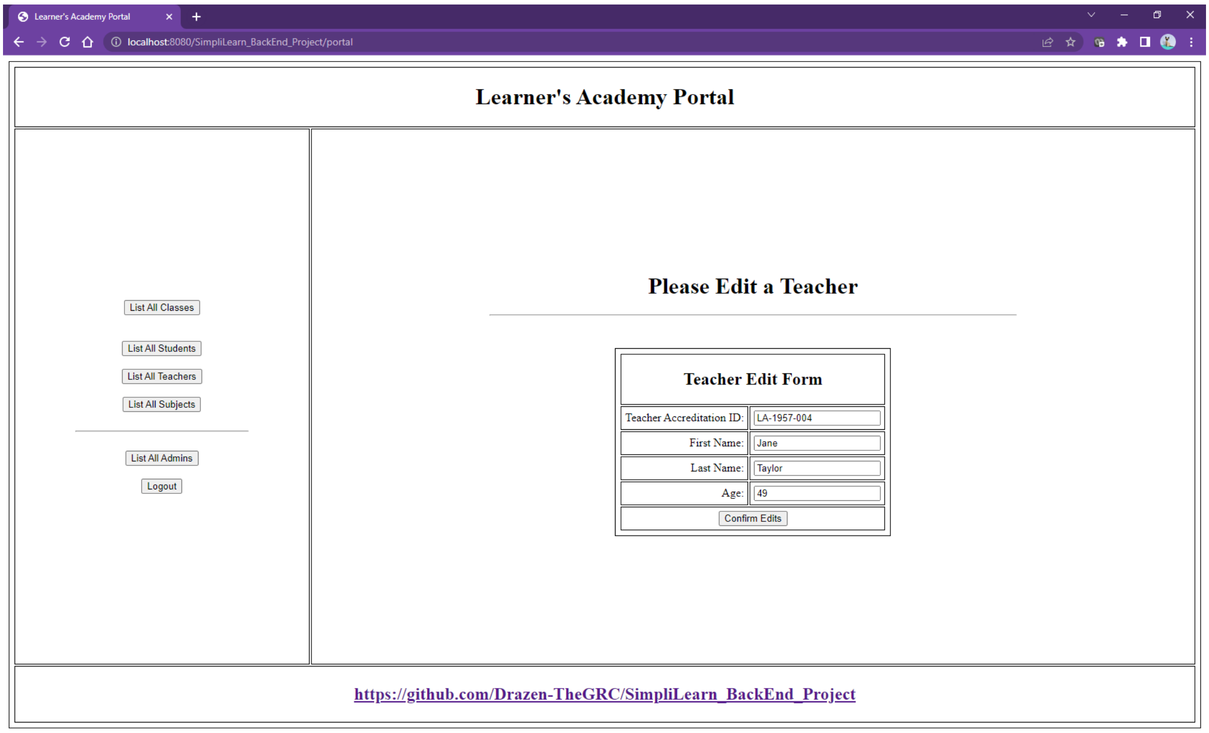
The accreditation ID you entered: > LA-1949-001 < is already taken, please try again!

Teacher Register Form

Teacher Accreditation ID:	Teacher Accreditation ID
First Name:	First Name
Last Name:	Last Name
Age:	Age

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Teacher info can be edited.



Learner's Academy Portal

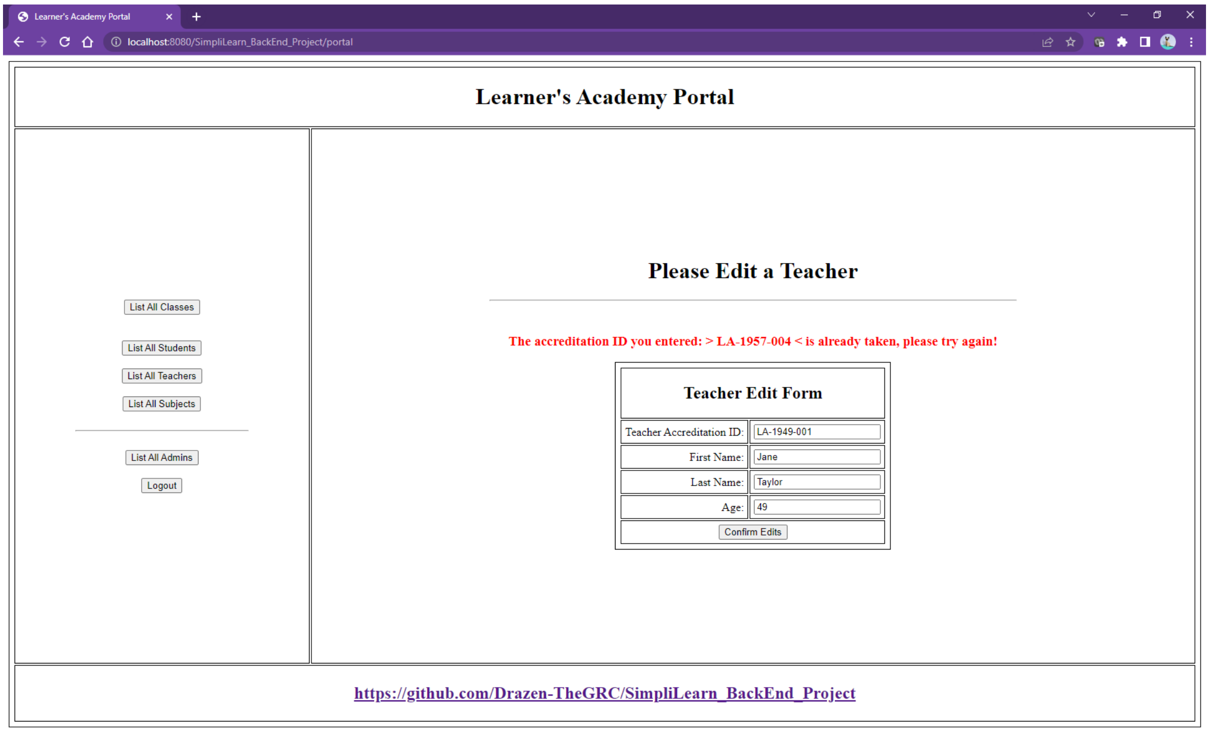
Please Edit a Teacher

Teacher Edit Form

Teacher Accreditation ID:	LA-1957-004
First Name:	Jane
Last Name:	Taylor
Age:	49

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

When editing teacher info, we can't enter existing teacher accreditation IDs.



Learner's Academy Portal

Please Edit a Teacher

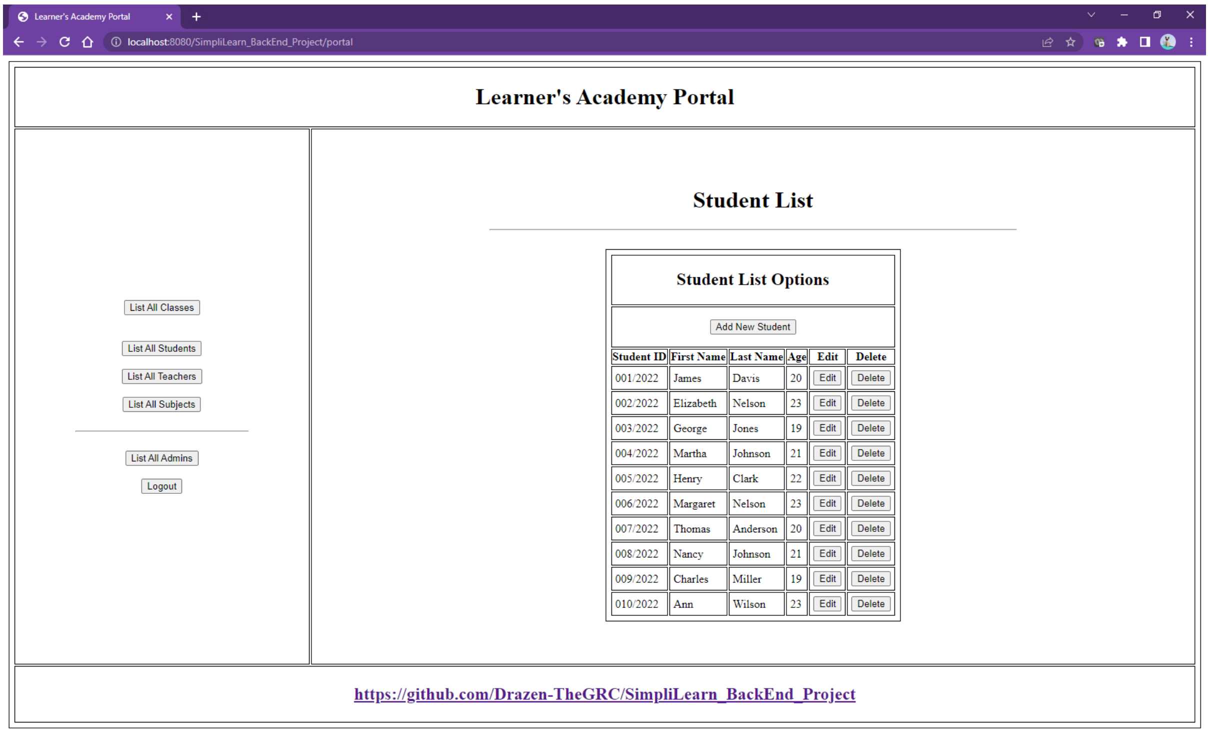
The accreditation ID you entered: > LA-1957-004 < is already taken, please try again!

Teacher Edit Form

Teacher Accreditation ID:	LA-1949-001
First Name:	Jane
Last Name:	Taylor
Age:	49
Confirm Edits	

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Without students there would not be a need for anything so Admin can also manage Students.



Learner's Academy Portal

Student List

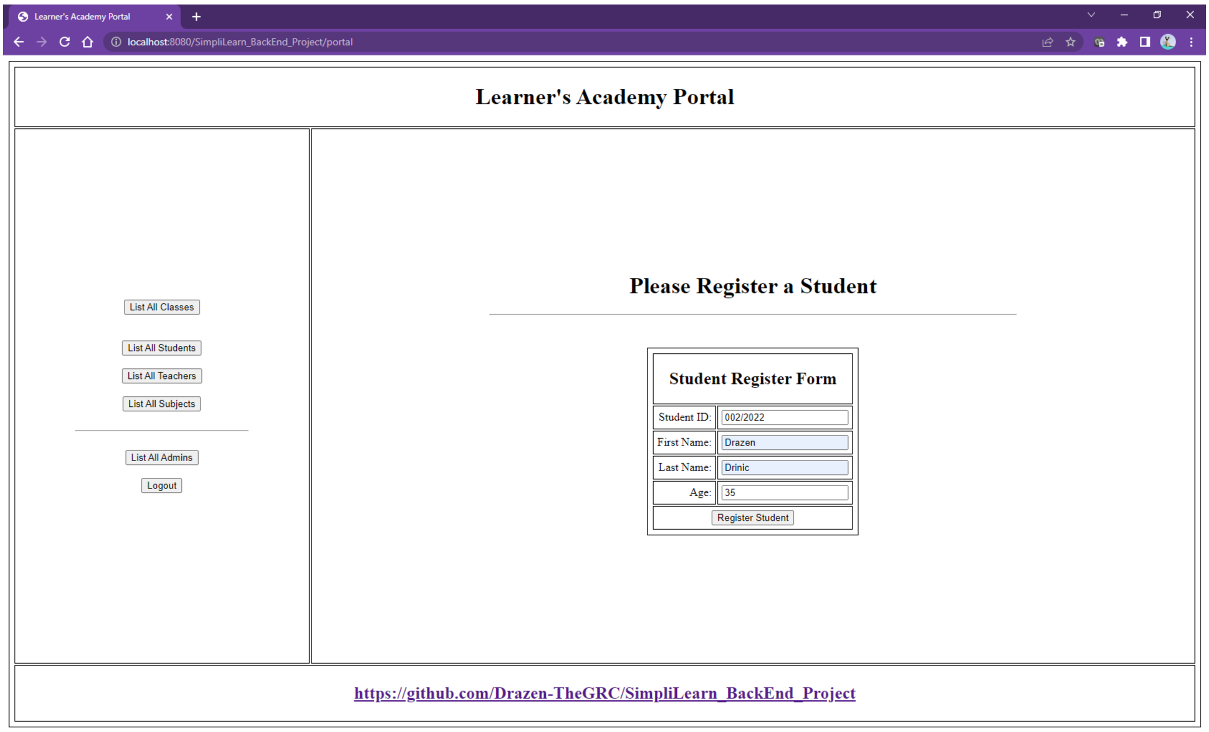
Student List Options

Add New Student

Student ID	First Name	Last Name	Age	Edit	Delete
001/2022	James	Davis	20	Edit	Delete
002/2022	Elizabeth	Nelson	23	Edit	Delete
003/2022	George	Jones	19	Edit	Delete
004/2022	Martha	Johnson	21	Edit	Delete
005/2022	Henry	Clark	22	Edit	Delete
006/2022	Margaret	Nelson	23	Edit	Delete
007/2022	Thomas	Anderson	20	Edit	Delete
008/2022	Nancy	Johnson	21	Edit	Delete
009/2022	Charles	Miller	19	Edit	Delete
010/2022	Ann	Wilson	23	Edit	Delete

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

New students can be added.



Learner's Academy Portal

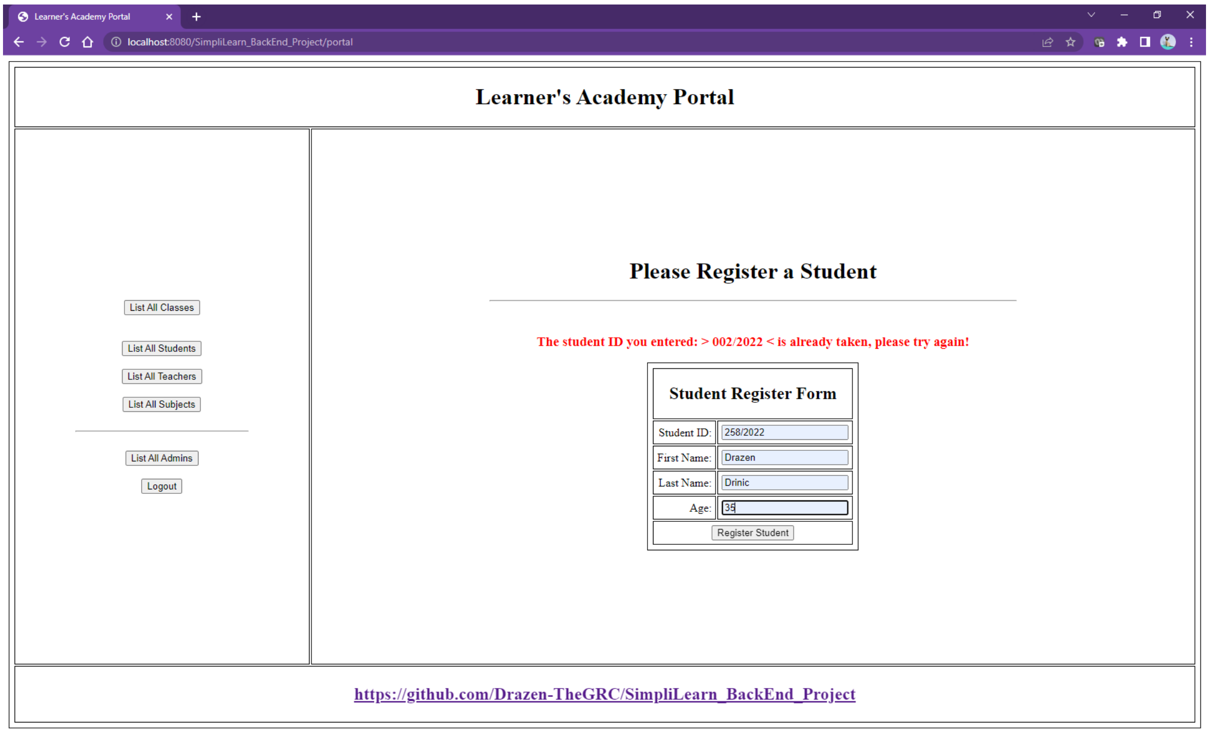
Please Register a Student

Student Register Form

Student ID:	002/2022
First Name:	Drazen
Last Name:	Drinic
Age:	35

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Same as with the Teacher unique accreditation ID students have their unique student IDs.



Learner's Academy Portal

Please Register a Student

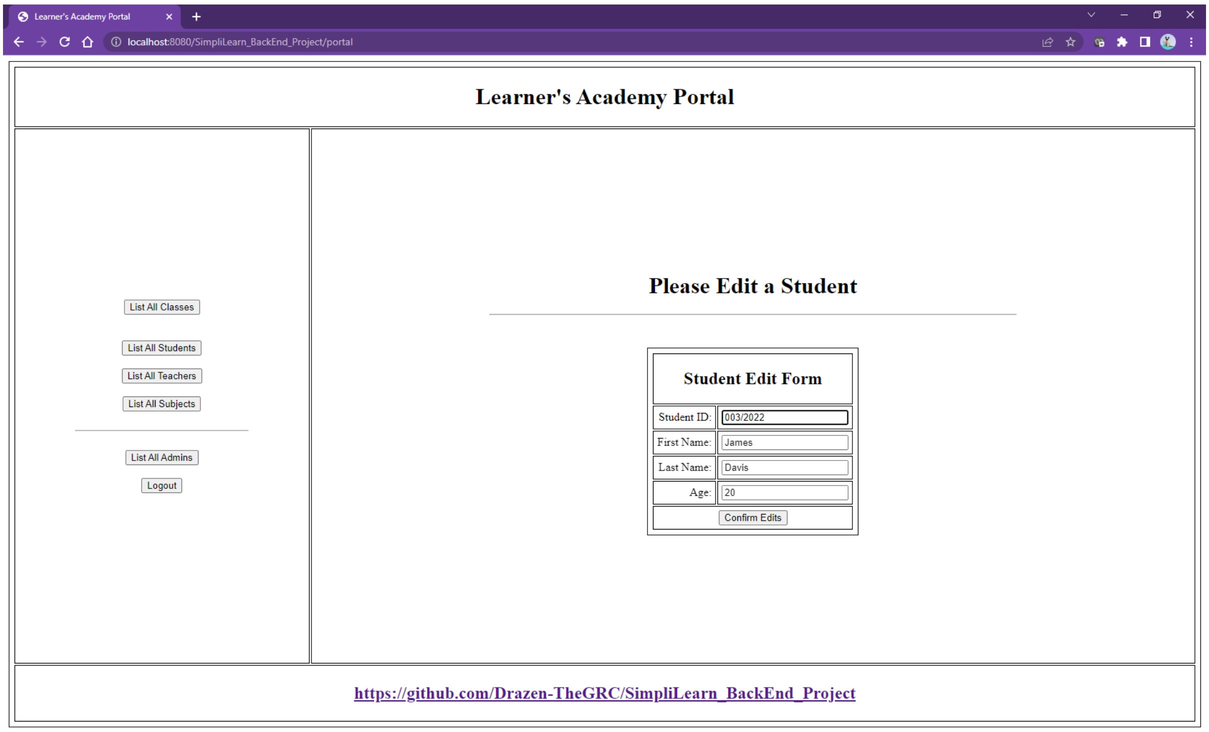
The student ID you entered: > 002/2022 < is already taken, please try again!

Student Register Form

Student ID:	258/2022
First Name:	Drazen
Last Name:	Drinic
Age:	35

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Student info can be edited.



Learner's Academy Portal

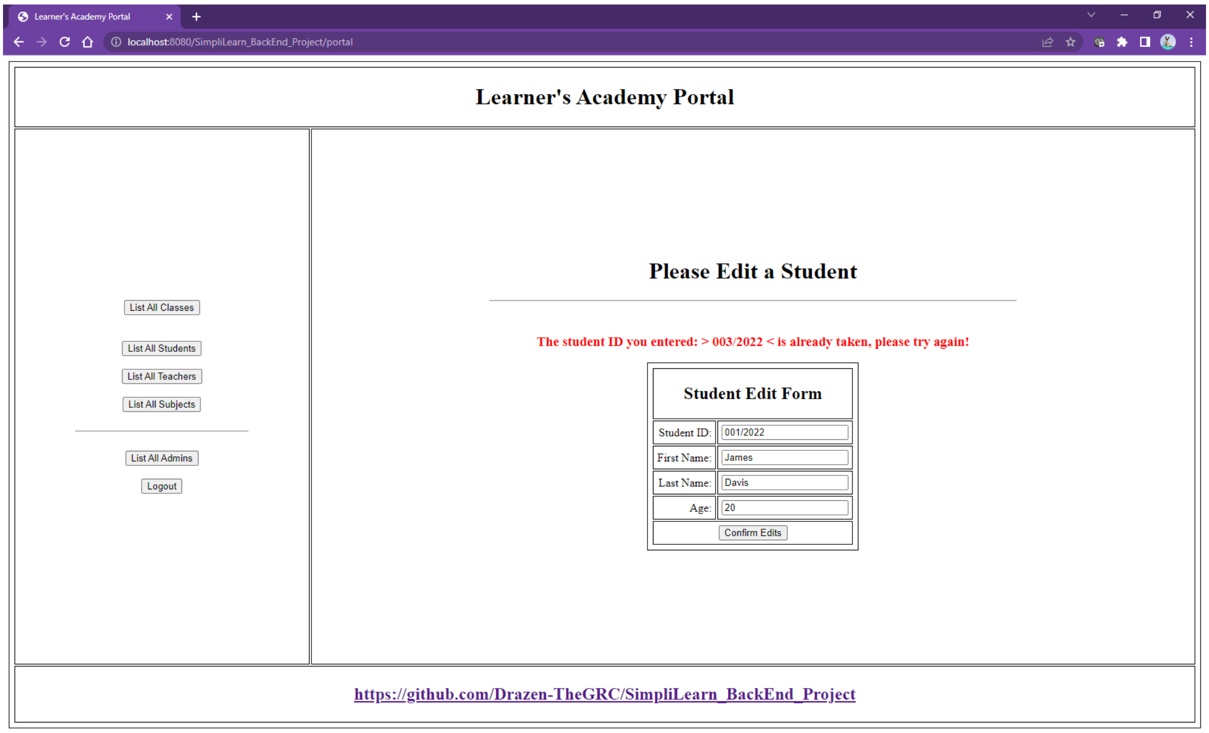
Please Edit a Student

Student Edit Form

Student ID:	003/2022
First Name:	James
Last Name:	Davis
Age:	20

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

When editing students, it is important to prevent assigning already used Student IDs



Learner's Academy Portal

Please Edit a Student

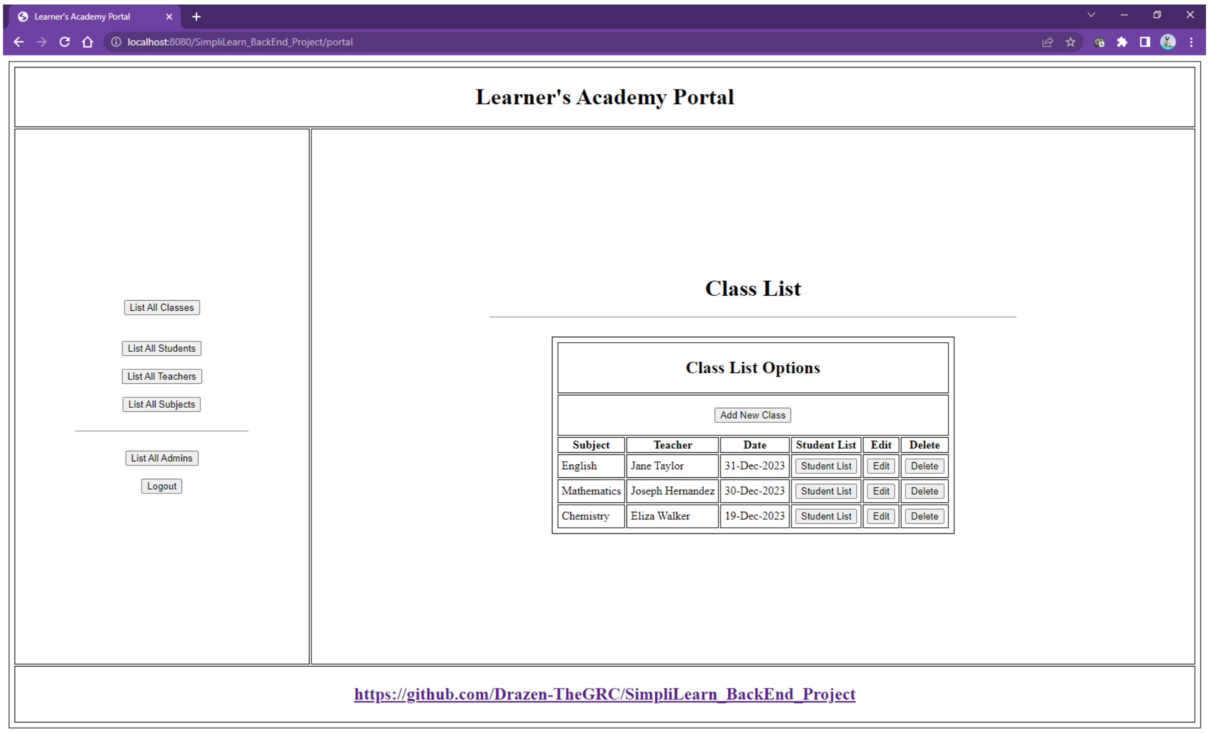
The student ID you entered: > 003/2022 < is already taken, please try again!

Student Edit Form

Student ID:	001/2022
First Name:	James
Last Name:	Davis
Age:	20

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

And at the end we come to Classes which are also managed based on available subjects, teachers and student.



Learner's Academy Portal

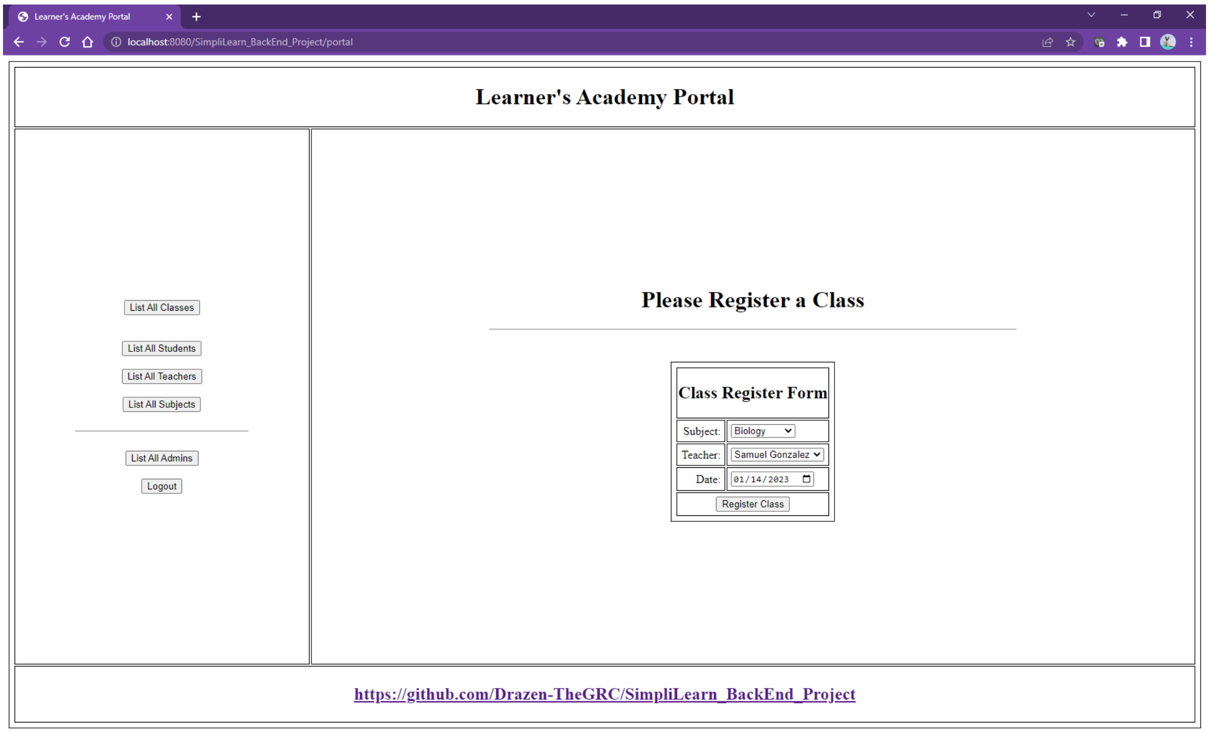
Class List

Class List Options

Subject	Teacher	Date	Student List	Edit	Delete
English	Jane Taylor	31-Dec-2023	Student List	Edit	Delete
Mathematics	Joseph Hernandez	30-Dec-2023	Student List	Edit	Delete
Chemistry	Eliza Walker	19-Dec-2023	Student List	Edit	Delete

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

New classes can be added.



Learner's Academy Portal

Please Register a Class

Class Register Form

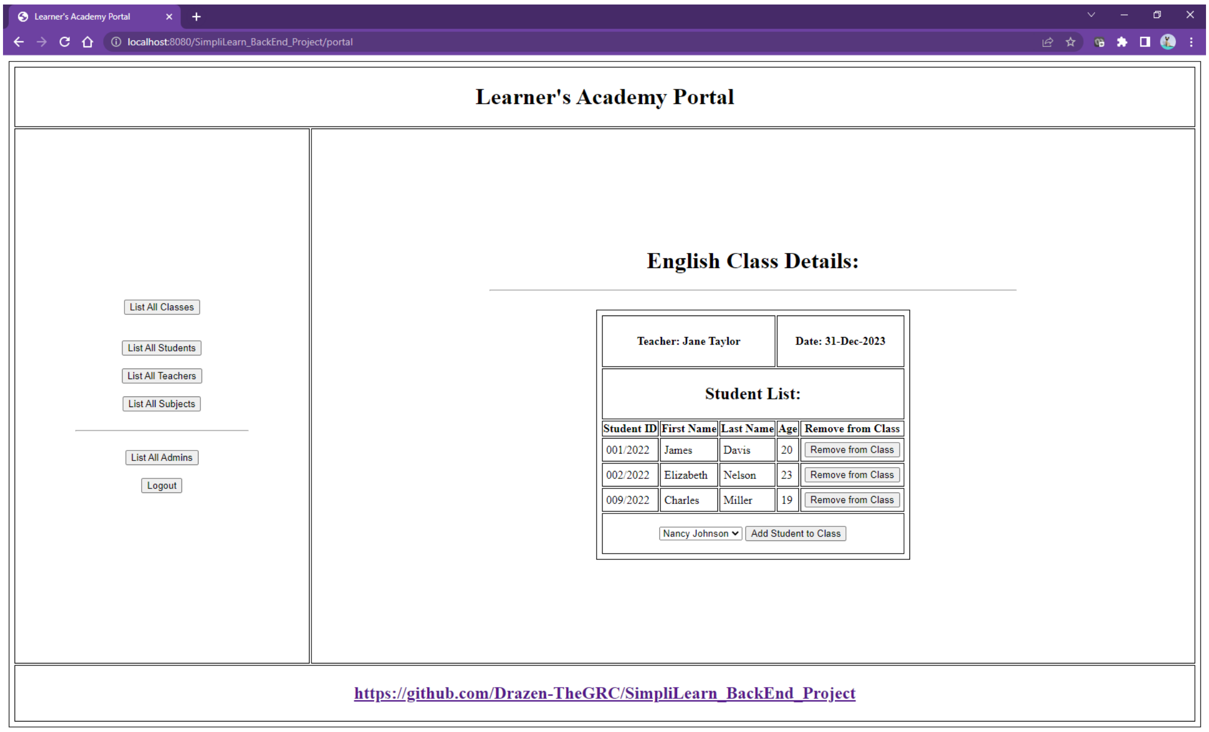
Subject: Biology

Teacher: Samuel Gonzalez

Date: 01/14/2023

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Students can be added or removed from classes.



Learner's Academy Portal

English Class Details:

Teacher: Jane Taylor	Date: 31-Dec-2023

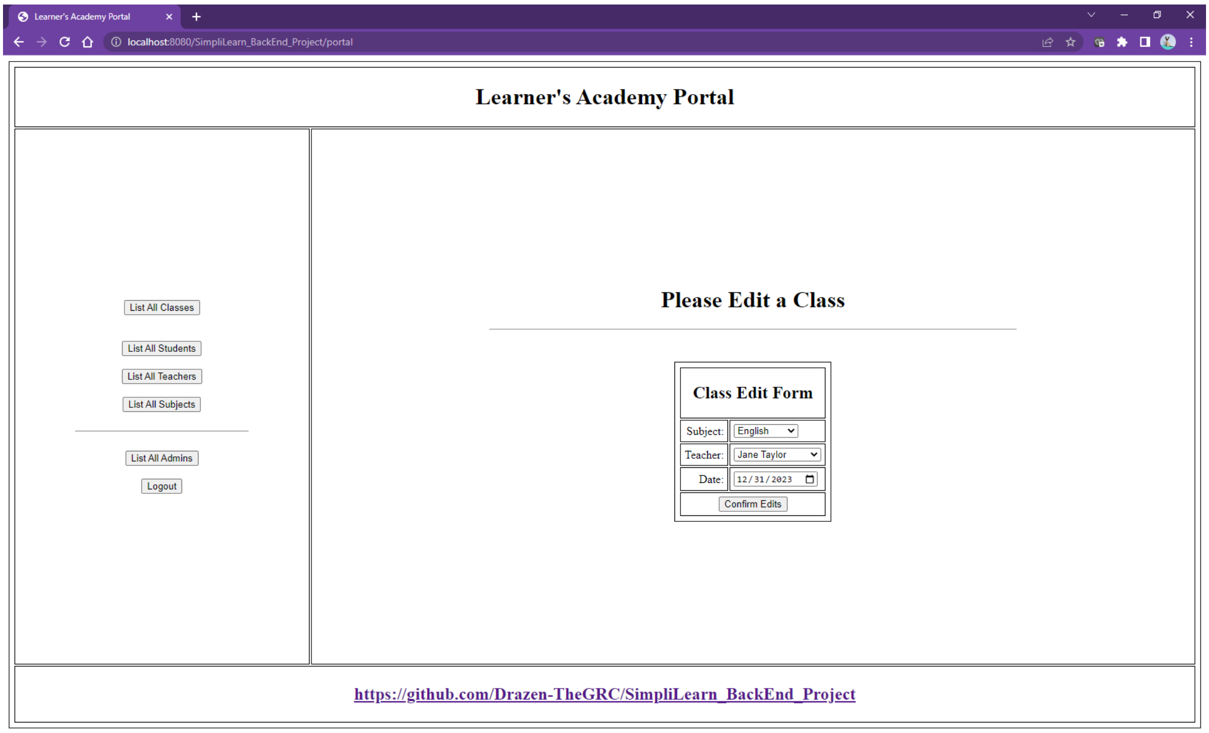
Student List:

Student ID	First Name	Last Name	Age	Remove from Class
001/2022	James	Davis	20	Remove from Class
002/2022	Elizabeth	Nelson	23	Remove from Class
009/2022	Charles	Miller	19	Remove from Class

Nancy Johnson ⌄ Add Student to Class

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

And at the end it is important to be able to edit those classes.



Learner's Academy Portal

Please Edit a Class

Class Edit Form

Subject:	English
Teacher:	Jane Taylor
Date:	12/31/2023

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Algorithms with comments

For algorithms please visit the GitHub repository since the code is very large and it would take dozens of pages in this document.

https://github.com/Drazen-TheGRC/SimpliLearn_BackEnd_Project

Unique selling points

- App has great presentation,
- App is very simple to use,
- User interaction is very simple with minimal input

Conclusion

Application is prepared according to required features and tested. App project directory contains all the needed and extra documentation including a report, app use snips and workflow charts.