

Developing a Backend Admin for Learner's Academy

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

Project' Details

This project aims to design and develop a backend administrative portal for the Learner's Academy using Java EE technologies. I developed it as a project of phase 2 for the Become a back-end expert course. The goal of this project is to apply servlet, jsp and JDBC concepts.

Product Backlog:

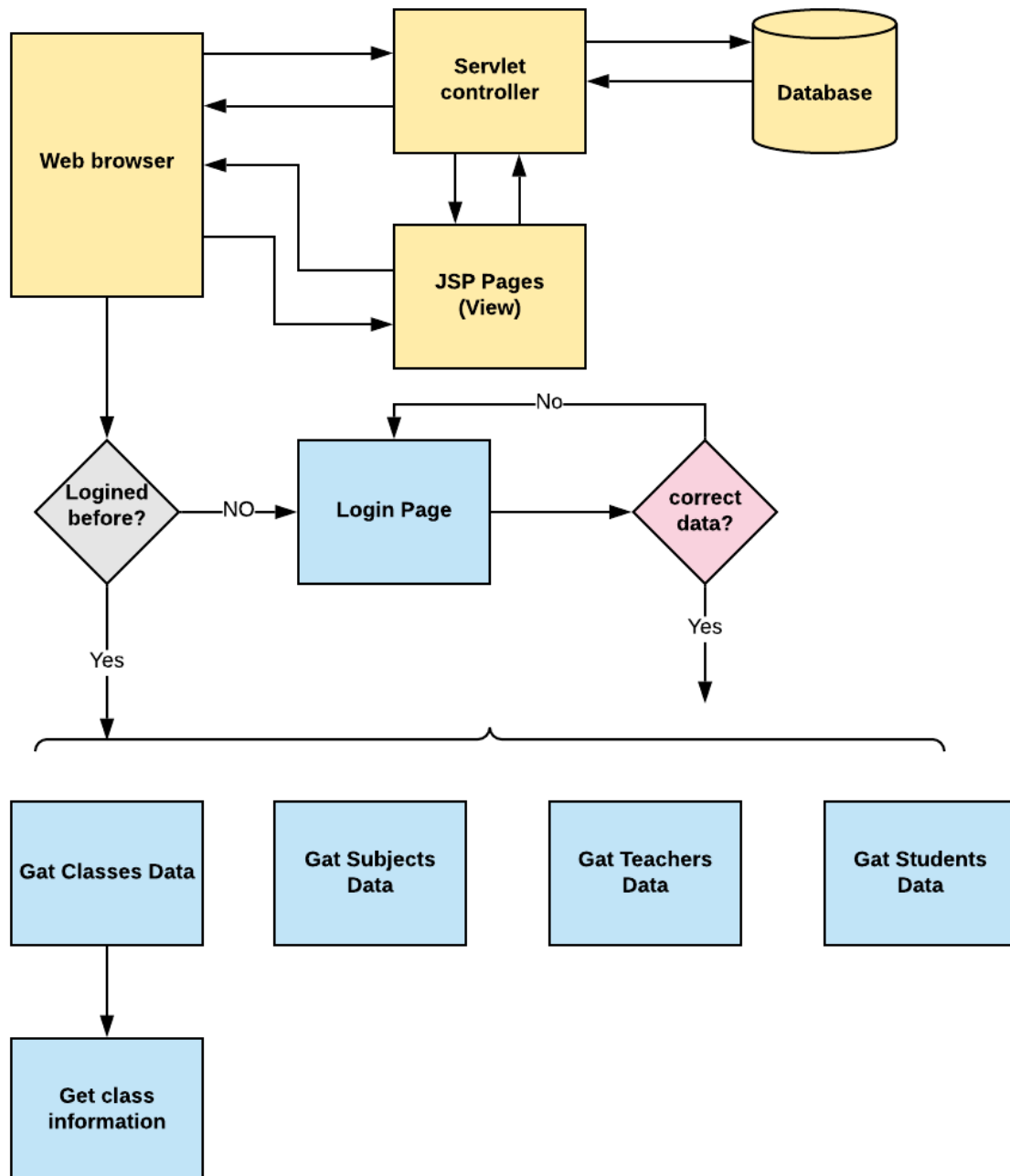
1. Create database and tables.
2. Connect the database to the project.
3. Create models classes.
4. Create a database utility class to retrieve data.
5. Create login page.
6. Create JSP files for all pages of the project.
7. Create a servlet to get requests and send responses to the JSP files.
8. Add cookies.
9. Create a CSS file to format the contents.
10. Debug and Test the project.

Technologies and tools Used

- Servlet: to do the business logic and works as a controller for the project.
- JSP: to handle the presentation view.
- SQL: to create and manage the database.
- JDBC: to make operations on the database for the project.
- CSS: to format the contents.
- phpMyAdmin: to administrate and manage the database manually.
- Eclipse: to write and run the code.

- Tomcat: to run and deploy servlet application.

Flowcharts of The Application



Core concepts used in the project.

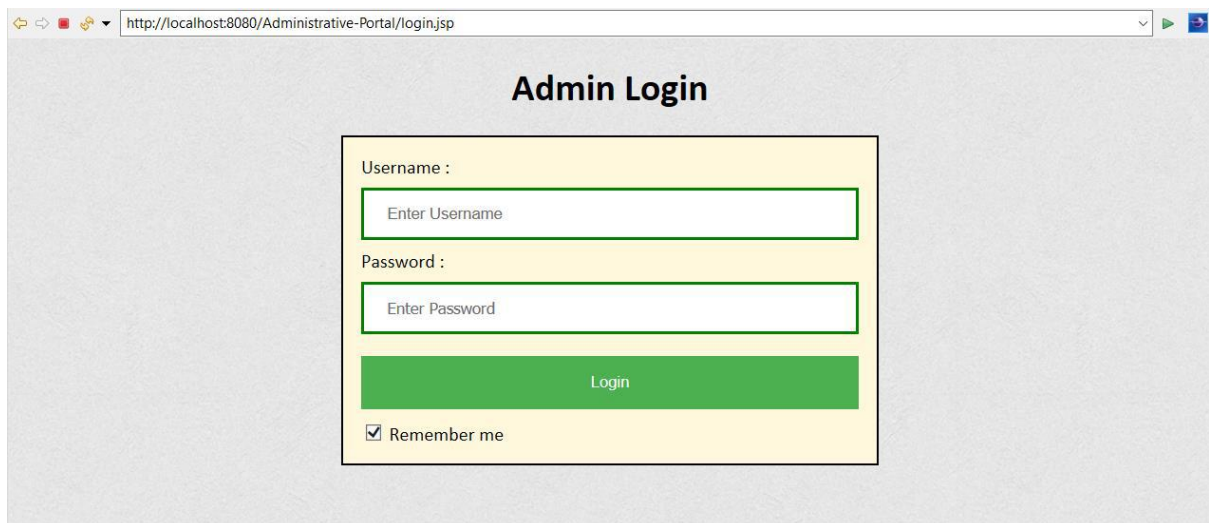
- Object-Oriented: used to create and model objects for users and their credentials.
- Databases: used to store and retrieve data.

- Data Sources: used to define a set of properties required to identify and access the database.
- Collections: used some collections such arraylist to store collection of data.
- Exception Handling: used to catch problems that arises in the code especially in I/O blocks.
- Cookies: to store log-in data on the client browser.

How to run the program

- clone project
- Import the “database\database.sql” file to your database administration tool.
- Go to “\src\main\webapp\META-INF\context.xml” file and open it.
- Edit the database’ properties such as username, password and driverClassName to be suit to your database administration tool.
- Now run program on a server.
- To login you must enter admin for both username and password.

Screenshots:



The screenshot shows a web browser window with the address bar displaying `http://localhost:8080/Administrative-Portal/login.jsp`. The page content is titled "Admin Login" in bold black text. Below the title is a yellow rectangular form box containing the following elements:

- A label "Username :" followed by a text input field with the placeholder text "Enter Username".
- A label "Password :" followed by a text input field with the placeholder text "Enter Password".
- A green rectangular button with the text "Login".
- A checkbox labeled "Remember me" which is currently checked.

Administrative Academy Portal

Classes

Subjects

Teachers

Students

Log out

Classes

Section	Subject	Teacher	Time	List of Students
1	English	Sami Rashed	9:00	List
3	Mathematics	Rami Sari	11:30	List

Administrative Academy Portal

Classes

Subjects

Teachers

Students

Log out

Students of English class section 1

First Name	Last Name	age
Ali	Ahsan	21
Gazi	Dani	21
Lami	Saro	24

Administrative Academy Portal

Classes

Subjects

Teachers

Students

Log out

Subjects

Name	Shortcut
English	ENG
Mathematics	MATH

http://localhost:8080/Administrative-Portal/AdminControllerServlet?command=TEACHERS

Administrative Academy Portal
Classes
Subjects
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Students
Log out

Teachers

First Name	Last Name	age
Sami	Rashed	55
Rami	Sari	66

http://localhost:8080/Administrative-Portal/AdminControllerServlet?command=STUDENTS

Administrative Academy Portal
Classes
Subjects
Teachers
Students
Log out

Students

First Name	Last Name	age
Ali	Ahsan	21
Hassan	Ahmed	23
Gazi	Dani	21
Tony	Fadel	18
Lami	Saro	24
Yazen	Rawn	24