Project report submitted to the

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License degree in Computer Science

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Project title

A web application for primary education.

Under the direction of

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Introduction General

A web application for a school is a platform that provides a range of services and features to students, teachers. It is a centralized system that allows for easy communication, access to information, and management of various aspects related to school activities. This web application can be used to manage attendance, grades, assignments, and schedules. It can also facilitate communication between teachers and students, provide access to learning resources.

- In the first chapter, we present the specifications of this project, its objective, the study of the existing, its criticism and the proposed solutions.

- The second chapter will be devoted to the design of this project.

- In the third chapter, we will study the implementation of the application, describe the hardware and software environment, and give an overview of the interfaces realized.

Chapter I
Presentation of the Project

Introduction

The coronavirus virus is one of the important events in the history of the world, as it has caused significant change in many systems and fields. One such area is education, as the pandemic has led to the closure of schools and universities around the world. To meet this challenge, solutions have been developed for distance education, which is known as distance education. This system is based on the use of technology and the Internet to enable students to study in a virtual environment. Distance education is an important solution to the challenges of the pandemic and can lead to improved quality of education in the future.

In this chapter, we start by defining the specifications and objectives to be achieved for this project. Therefore, we are interested in studying strengths, providing advice and proposing possible solutions.

Advantages and disadvantages of Distance School

The advantages

Dans un premier temps, nous allons donc analyser les avantages que l'e-commerce procure à ses clients.

- Flexibility: Students can work at their own pace ;
- Accessibility: Students can take courses from anywhere, as long as they have an internet connection;
- Customization: Students can choose courses that interest them;
- Advanced Learning Opportunities: Some distance high schools offer advanced courses that may not be available at traditional high schools,).

Disadvantages

- Isolation: Distance high school students may feel isolated and have less social interaction with peers and teachers.

- Need for computer and internet access: Distance high school students need access to a reliable computer and internet

-distractions at home that can interfere with learning, such as noise or family members Problems de charge.

-Technical difficulties can also be a problem, such as poor internet connectivity or issues with the online learning platform

Presentation of the project

The objective

The objective of the project is to develop a website for a distance high school. This site will allow you to carry out the following operations:

√ Include features such as online courses in all secondary phases,

√ Discussion forums, online assignments and assignments, online exams,

√ designed with accessibility features for students with disabilities, be responsive,

√ Platform for students to continue their distance education,

In fact, this site gives students the opportunity to register and see the files and all new uploads by the teacher. In addition, they can communicate with professors of any subject.

Study of the existing

Traditional working methods include:

√ Face-to-face classes, textbooks.

√ Homework, classroom tests and exams in Paper.

√ Face-to-face communication with teachers and Teachers use blackboards or whiteboards to teach students.

√ Teachers can also use printed lecture notes to help students follow lessons.

Therefore, we are sure that with the development of Internet technology, online study has become an inevitable necessity for students.

Criticism and suggestions

Criticisms of the existing

The current solution is manual, and therefore poses various problems, namely:

- Difficulty concentrating, paying attention and time pressure.
- Problems communicating with teacher and getting help when needed.

  In some cases, the study may be temporarily suspended to prevent the spread of diseases.

- Absenteeism due to illness or special circumstances can lead to a student falling behind in their studies.

Proposed solution

Thanks to the Internet, distance learning can be used as an alternative solution to traditional learning. Students can take advantage of the various educational tools available online and communicate with teachers and peers remotely. In addition, students can select a quiet place to study and set aside a specific time for daily study. And a lot of advantages like:

1-Studying online has several advantages, including flexibility in scheduling and location.

2-lower costs, and access to a wider range of courses and programs

3-lower costs, and access to a wider range of courses and programs. Online courses allow students to study at their own pace and on their own schedule

Conclusion

With the specifications that we have mentioned above, we understand that the web site that we are going to create is a website but to implement it we need a conceptual study.

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Chapter II

Application design

Introduction

It is important to follow a methodological approach to ensure the success of implementing an IT application. Analysis and design are crucial steps to ensure that the application meets the needs of users and is effective in its operation. The use of UML for design is a common method to represent the different components of the application and their relationship.

UML

Origin and definition

Unified Modeling Language (UML) is a modular modeling language consisting of an integrated set of graphics developed to help system and software developers identify, visualize, create, and document software system artifacts, as well as for business modeling and other software systems.

The diagrams offered by UML are

Reading the statice view:

1) Class Diagram: Represents the structure of a system
2) Use Case Diagram: Describes the functionality of a system by modeling interactions between actors (users or external systems) and the system..
3) Sequence Diagram: Illustrates the interactions and message exchanges between objects or components over time.
4) Activity Diagram: Represents the flow of activities or processes within the system, including decisions, branching, and concurrency.
5) State Machine Diagram: Models the behavior of an object or component by depicting its states and transitions between them.
6) Component Diagram: Illustrates the high-level components of the

   System and their dependencies.
7) These UML diagrams help in visualizing different aspects of a software system and facilitate effective communication and understanding among software development teams.

Modeling UML

C’est une méthode qui consiste à créer une représentation simplifiée d’un problème:
La modélisation s’articule autour de deux étapes :

- L’étape d’analyse.
-L’étape de conception.

Analyse and conception

Analyse

In the context of UML, the "analyse" phase refers to the initial stage of software development where a deep understanding of the problem domain is obtained. During this phase, UML diagrams and techniques are used to analyze and capture the requirements and specifications of the system.

Objectives of the work

1.1. Having a website for a distance learning high school can provide valuable educational opportunities for students who are unable to attend a traditional physical school. It can also offer flexibility and accessibility for students who require a remote learning environment our system should provide the following services. :

- Every user, whether a student or a teacher, must request user registration from the administrator.
- The teacher shares a Google Meet link for direct communication.
- The student accesses the file containing all the educational subjects and enters to review all the available lessons.
- The teacher can review the list of students or add some comments/remarks.
- Granting the administration (admin) full control such as the ability to modify a password and add a student account.

Some basic definitions

- **An actor:** represents a role that the user can play in the system. The actor is associated with a use case, meaning they can interact with it and participate in its scenario by providing input information and/or receiving output information.

The actors in our system are:

Student : toute personne visitant le site.

Tacher : toute personne ayant un compte sur le site.

Admin: Toute personne responsable de l'affichage des informations.

- **A scenario:** Scenarios consist of a textual description of each use case. All interactions between actors and the system will be described narratively. A set of scenarios for a use case identifies everything that can happen when that use case is implemented.

- **A use case:** The use case is one of the important tools of UML. A use case is simply the description of the interactions between the user and the system. By producing a collection of use cases, we can describe all the functionalities to be developed in a clear and understandable way for all stakeholders in a project. This is therefore a user-centred design of the system and the tasks he can perform.

Specification of tasks

The main tasks performed by each actor in our system are summarized in the following table:

actor	Tasks
Admin	**T0:** Add a student +create an account **T1:** Modify personal information (stud+ teach) **T2 :**Delete a student+ edit information **T3 :** Add teacher **T4:** Log in to the site
Student	**T5 :** Access the student area **T6 :**Consult the link by the **T7:** Send an email by the teacher **T8:** Consult the modules on interface
Teacher	**T9 :**Access the teacher area **T10 :**Add a Google Meet link **T11 :**Add a (course or exercise) file **T12 :** Consult the list of students (Edit+remarque)

Table 1: Summary table of the main tasks performed by each actor

Scenario specification

The scenarios that describe each of the tasks defined earlier are summarized in the following table:

Actor	Taches	Scenarios
Admin	**T0 :** Log in to the site	**S0 :** Enter the URL of the site
	T1: Add student .	**S1** :Click button add student
	T2 : Add Teacher	**S2:** Click button add teacher
Student	**T3 :** Authentication	**S3**: Go to the site Authenticate as a student
	T4: Visit the module page	**S4**: Click bouton
	T5: Consult the teacher's link	**S5:** put the link on Google Meet space
Teacher	**T6:** Access the teacher area	**S6.1:** Go to website **S6.2:** authentic as a teacher
	T7 : Add a (course or exorcise) file	**S7 :** Click Add File
	T8: Consult the list of students	**S8 :** Click on Student

Table 2: Summary table of scenarios

1.3. Specifying Use Cases: Below are some use cases

1.4. 1.5. "add student" use case

Use case : add student.

Scenario: S1.1, S1.2,S1.3,

Role : admin.

Description

1. Enter the URL of Website.

2. click on add student.

3. Fill in all the files of the registration form.

4. validate the entry information by clicking register

5. The system will display the registration result or an error message.

Figure 1: use case « Add student »

Cas d'utilisation «Access to the student area (student) »

Use case: Student.

Scenario S3.1, S3.2.

Role: Student

Description

1. The system display the login page.

2. The student enter their username and password.

3. Validate the information entered by clicking « Login ».

4. The system displays the member interface if the authentication is valid otherwise returns an error message.

Figure 2: use case « Login Student ».

Use case Join google meet

Use case : Modifier les Produits.

Scenario: S7, S5.1, S5.2.

Role: Teacher, Student.

Description

1. The teacher shares a file Thant containing the live link.

2. The student go to the file.

3. Copy the Link.

4. Poste it in the join google meet space.

Figure 3: Use Cas «Join Google meet».

Use case diagram

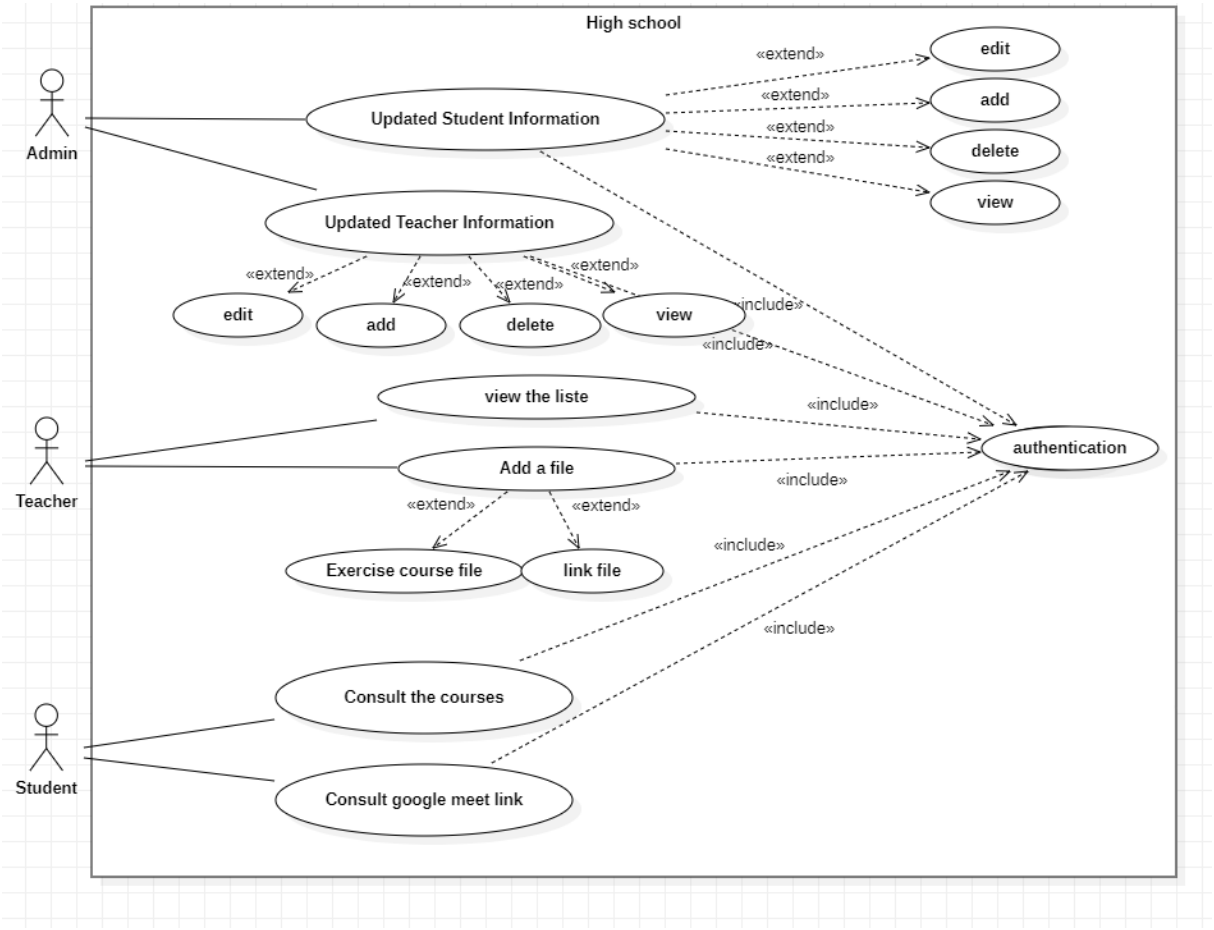

Figure 4: General use case.

Conception

The software design involves a set of activities that, starting from an information request from a process (ranging from a simple verbal question to a complete specification document), enable the design, coding, and testing of software (and therefore computer programs) until its delivery to the requester. The process of designing a system involves moving from the general to the specific, passing through "refinement stages."

Development of sequence diagrams

The elaboration of sequence diagrams is part of the software design process. Sequence diagrams are used to visually represent the interactions and order of messages between different objects or components in a system. They illustrate the flow of actions or behaviors in a particular scenario or use case, showing the chronological sequence of events. Sequence diagrams help in understanding and documenting the dynamic behavior of the system and are valuable tools for communication among stakeholders, developers, and designers during the software development lifecycle.

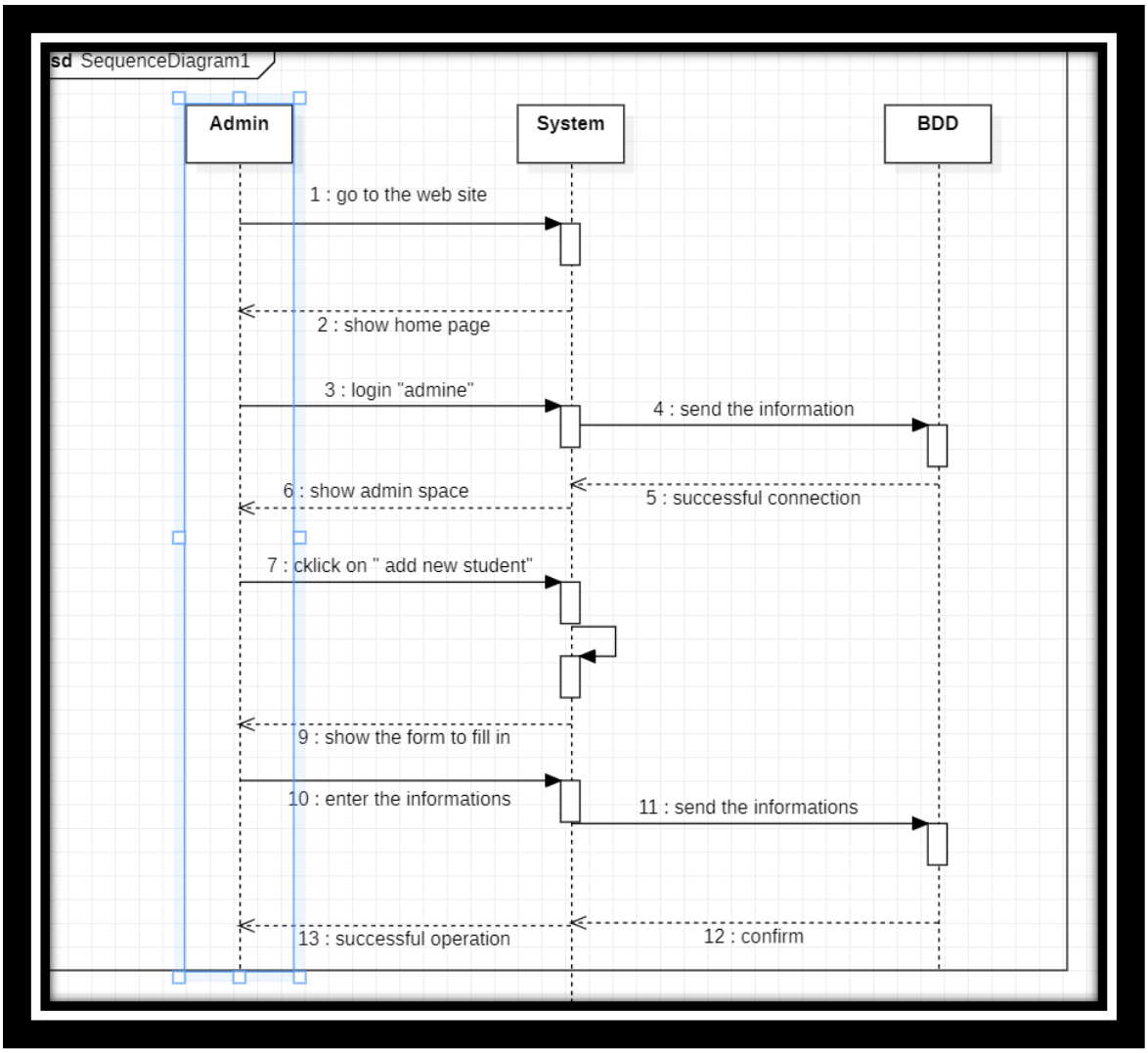

Figure 5: Sequence diagram for the use case "Add new student"

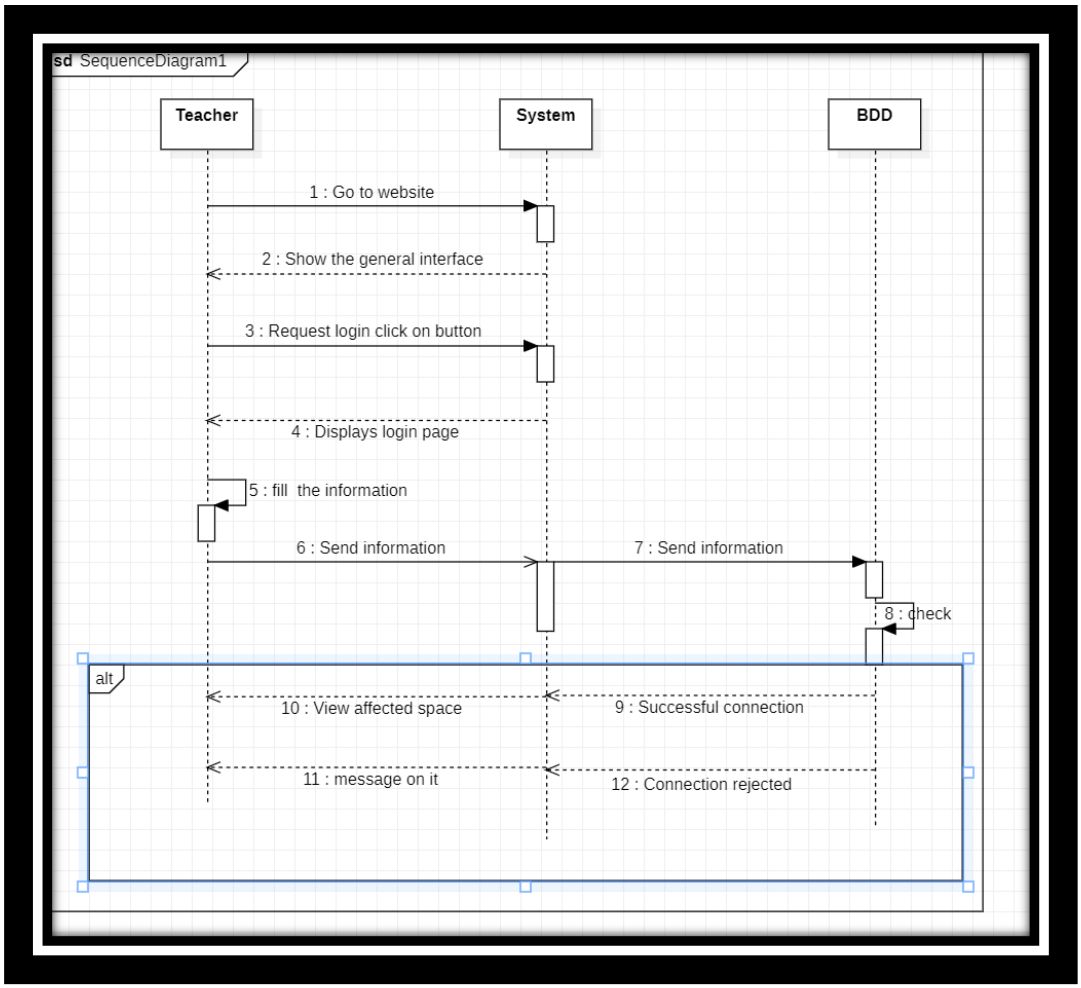

Figure 6: Sequence diagram for the use case "Teacher authenticate".

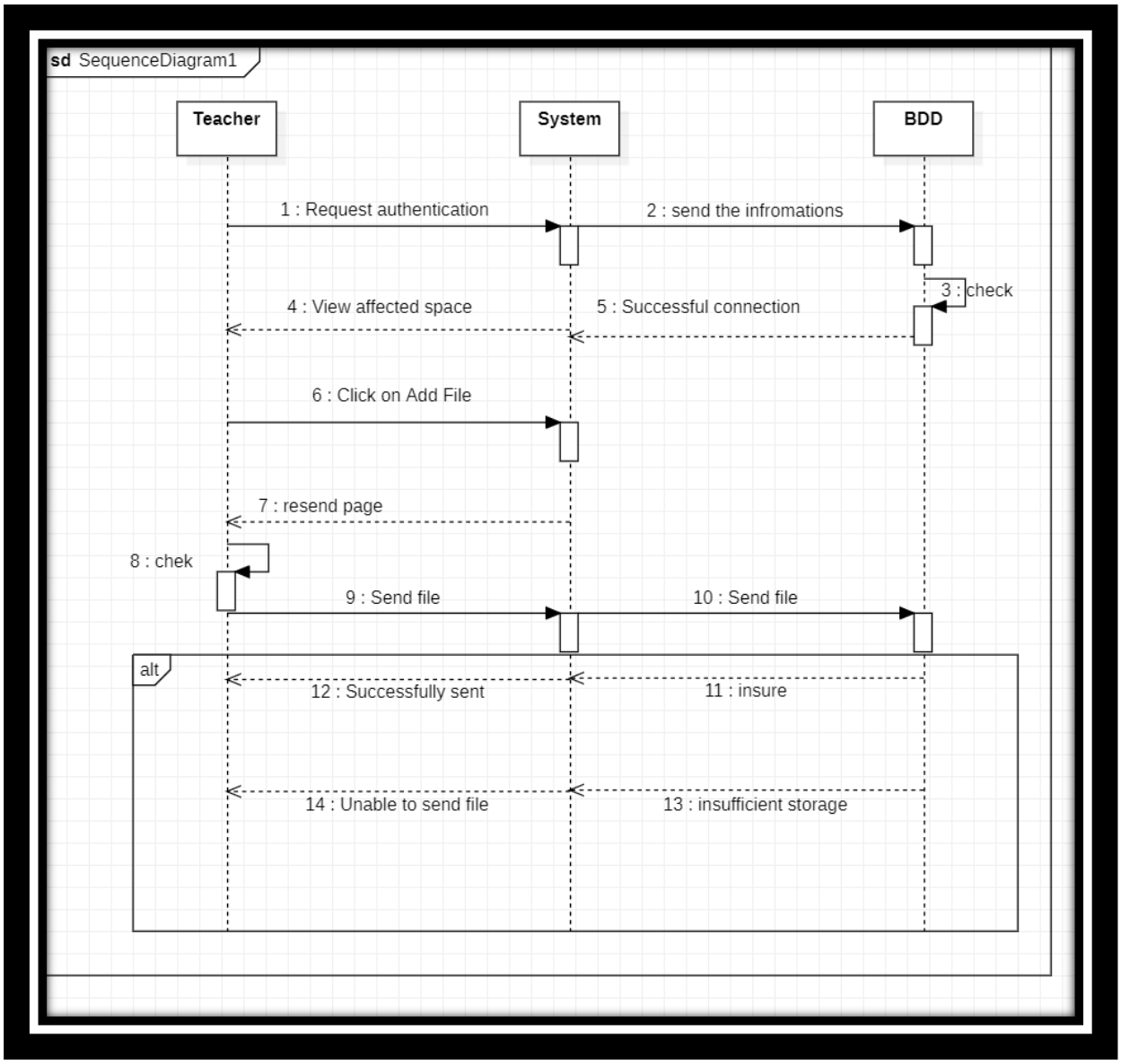

Figure 7: Sequence diagram for the use case «Add file ».

Development of the class diagram

The elaboration of a class diagram is an important step in software design. A class diagram is a visual representation of the classes, relationships, and attributes in a system. It illustrates the static structure of the system by showing the classes, their attributes, methods, and the relationships between them. In a class diagram, classes are represented as boxes, with their attributes and methods listed inside. Relationships between classes, such as associations, inheritances, or dependencies, are depicted using lines and arrows. The class diagram provides an overview of the system's structure, allowing developers to understand how classes are organized and how they interact with each other. The process of creating a class diagram involves identifying the classes in the system, determining their attributes and methods, and establishing relationships between them. It helps in visualizing the overall structure of the system and aids in the design and implementation of software by providing a blueprint for developers to follow.

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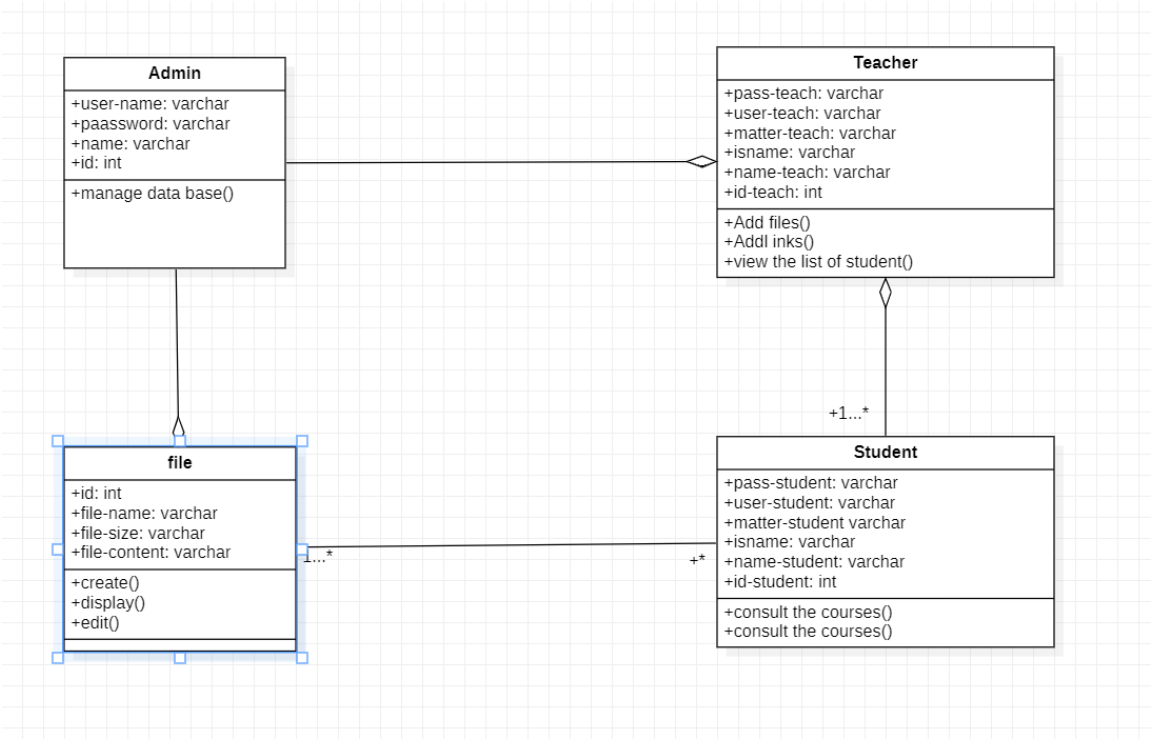


Figure 8: General Class Diagram

Conclusion

At the end of this chapter, we have identified the objectives of our application. To achieve them, we have followed a solution based on analysis and design modeled with the UML method. We have used UML to specify use cases, design sequence diagrams, and elaborate class diagrams. Furthermore, in this chapter, we have defined the different tables of our database and identified the various tools for the development and execution environment of our system. These aspects will be the subject of the next chapter.

Chapter III

Application

Introduction

In this chapter, we will discuss the development environment and the tools chosen for the implementation of our application. We will also present screenshots of some interfaces that show the different functionalities of our system described in the previous chapter.

Work Environment

For the software environment, we have opted for the following configuration:

Software Requirements

- Operating system: Windows 10.
- Visual Studio Code.
- - Data base server: Wamp, contenant :

  The SGBD MySQL

  An Apache server

  A PHPMyAdmin interface.

Programming languages

- HTML: For the management and creation of interfaces.
- PHP : For data processing.
- MySQL: For querying the database.
- CSS: To describe the presentation of HTML and XML documents.
- JS: Enables dynamic interactivity on websites when applied to an HTML document.

Below are some brief definitions defining all the software, languages and tools used.

Software Environment

Wamp (Windows Apache MySQL Php) [2]: Wamp Server is a Windows web development environment. It allows you to create web applications with Apache2, and a MySQL database. At the same time, PhpMyAdmin makes It easy to manage data bases.

Visual Studio Code: Visual Studio Code is a free coding editor that helps you start coding quickly. Use it to code in any programming language, without changing editors. Visual Studio Code supports many languages, including Python, Java, C++, JavaScript, and so on.

The tools used

Apache web server [3]: apache is a popular open-source, cross-platform web server that is, by the numbers, the most popular web server out there. It is actively maintained by the Apache Software foundation.

The PhpMyAdmin database manager [3]: phpMyAdmin is a free software tool written in PHP to manage the administration of a MySQL or MariaDB database server. You can use phpMyAdmin to perform most administrative tasks, including creating a database, running queries, and adding user accounts

The programming languages used

Hypertext Markup Language (HTML) [5]: is the set of symbols or Markup codes inserted into a file intended for display on the Internet. Markup ells web browsers how to display words and images on a web page.

Hypertext Preprocessor (PHP) [6]: A Scripting language used to create dynamic and interactive HTML Web pages. A server processes PHP commands when a web site visitor opens a page and then sends the results to the visitor's browser.

Structured Query Language (SQL) [7]: is the most commonly used database language and can therefore be used by almost any company that needs to store relational data. Queries in SQL are used to retrieve data from the data base, but queries vary in efficiency.

Cascading Style Sheets (CSS) [8] : is used to style and layout web pages for example, to change the font, color, size and spacing of your content, divide it into several columns or add animations and other decorative elements.

JavaScript (JS) [9]: is a scripting language that allows you to create dynamically Updated content, control multimedia, animate images, and about...

Presentation of application

The Distance Learning High School Application is an innovative solution designed to facilitate remote learning for high school students. In response to the challenges posed by the global pandemic and the need to continue education under such circumstances, this application provides a comprehensive and user-friendly platform for distance education. In this presentation, we will explore the key features of the Distance Learning High School Application like:

√ Download files and lessons,

√ Access to all Materials,

√ Communication with Teacher.

This web application will enable to offer better quality of service in the field of study. This site contains three interfaces:

· Admin parte

In this section, the data and information of the managed teachers and students are stored on the Internet. This mechanism is carried out by the site administrator who must authenticate using his username and password from the home page. After being authenticated as an administrator, he will be able to access the page that will allow him to manage management tools. The site will display all the tasks that can be performed by the administrator who:

√ Create account: Each account is characterized by its name and personal information

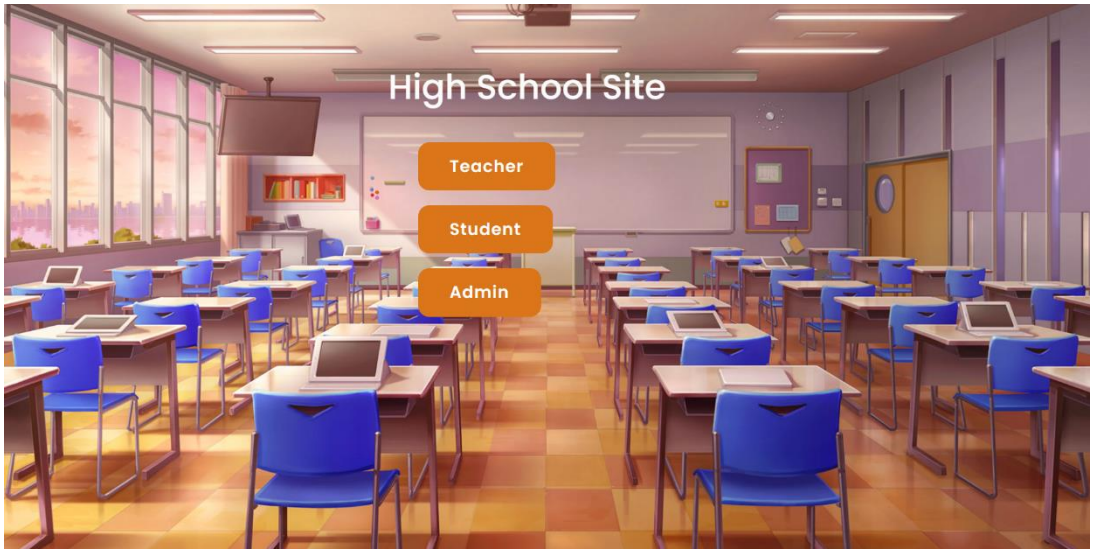
√ Manage accounts: Add or remove an account. Each account is characterized by the username, password.

Teacher part

This interface is available to any user who accesses the site.

Presentation of some interfaces

- **Home page:** It is the home page of the website where each user can access their interface



Interface Teacher: we are in the teacher's interface in the page menu: where he put the user name and password

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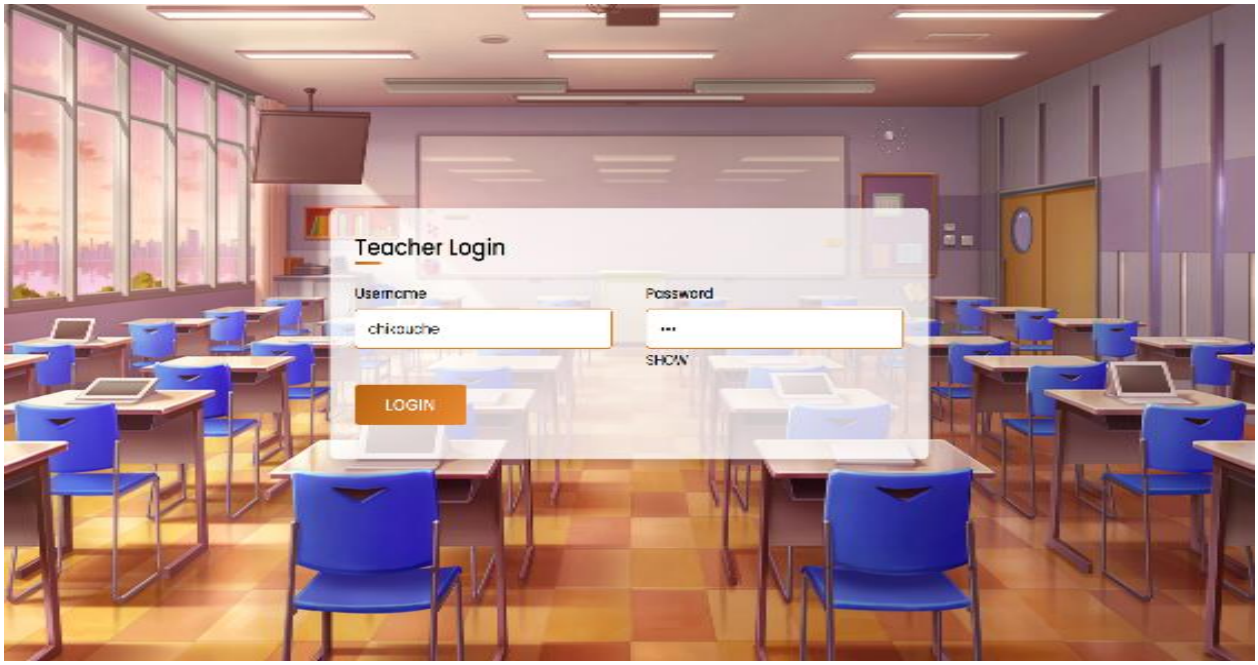

Interface Teacher

In this interface, the teacher adds a file and sees the list of students

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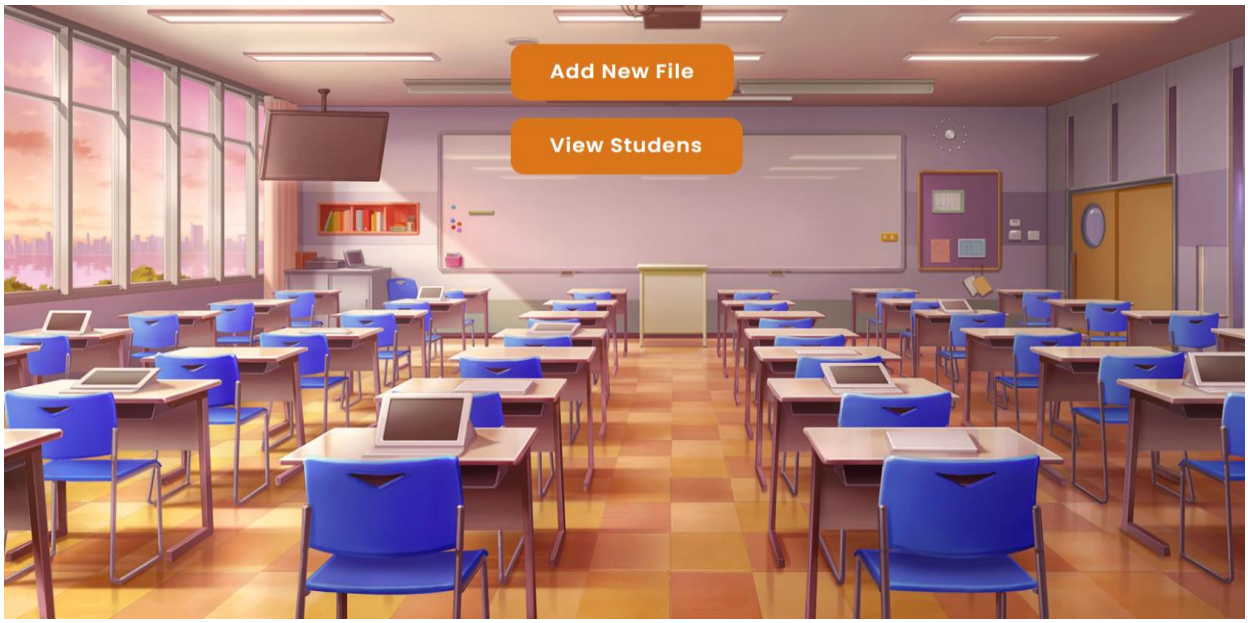
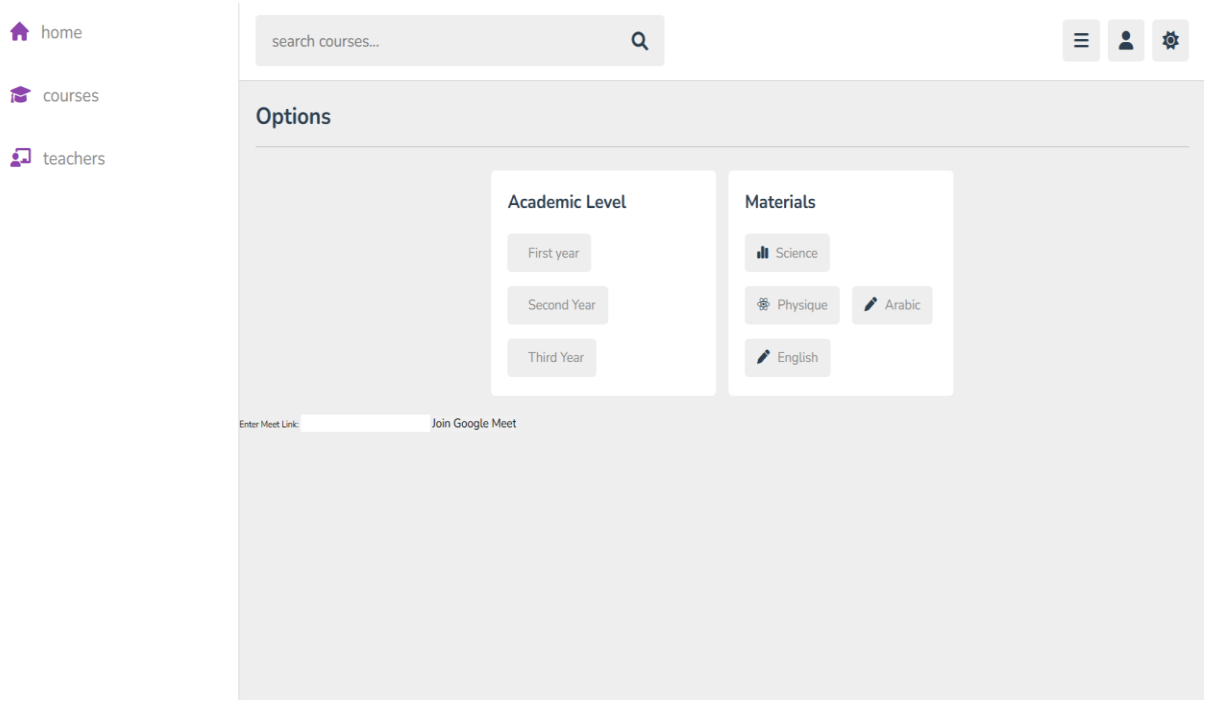


Student home: In this interface, students can view the lessons and files uploaded by the teacher and enter the direct study with the teacher (google meet).



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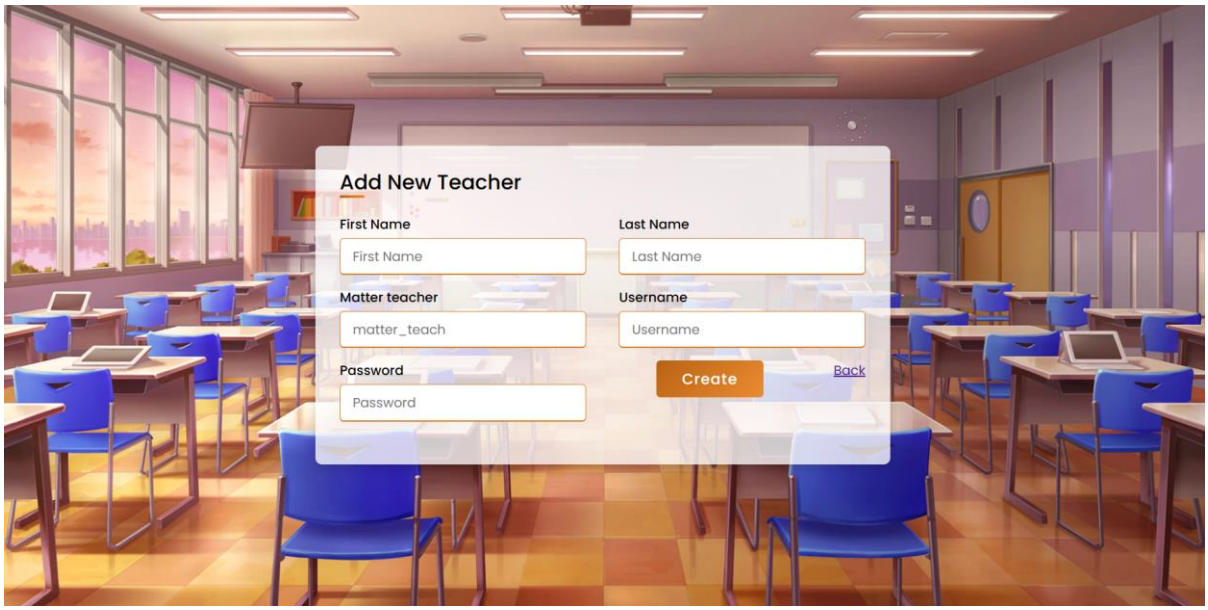
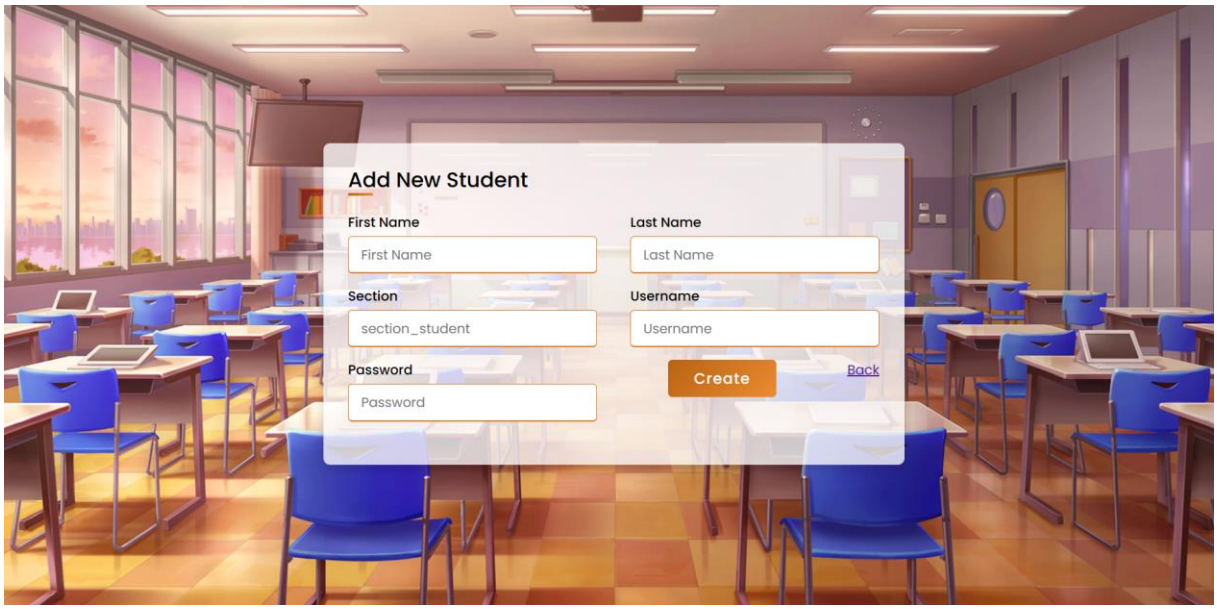
- **Admin page:** In this interface, admin can create an account for a student or teacher by entering all personal information and creating a username and password for him.





Conclusion

In this chapter, we presented the software environment, the tools used to implement our web application as well as some interfaces of our project.

General Conclusion

The goal of our work was to develop a web application aimed at creating an online study site "High school site". For this, we suggested Distance Study Overview The application we have provided meets many of these features are:

Online attendance, searching for lessons, communicating with Teachers, uploading files uploaded by Teachers, studying directly with Google meet, etc.

In conclusion, the application of distance study has revolutionized education by providing flexible access to learning materials, interactive online classes, and seamless communication between students and teachers. It has allowed students to continue their education despite physical limitations or unforeseen circumstances, such as the global pandemic (corona virus). The availability of educational resources, progress tracking, and online assignments have facilitated a personalized learning experience, Overall, the application of distance study has proven to be an invaluable tool in ensuring continuous education and expanding access to learning opportunities for students worldwide.

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ملخص

في الختام، أحدث تطبيق الدراسة عن بعد ثورة في التعليم من خلال توفير وصول مرن إلى المواد التعليمية والفصول التفاعلية عبر الإنترنت والتواصل السلس بين الطلاب والمعلمين. لقد سمح للطلاب بمواصلة تعليمهم على الرغم من القيود المادية أو الظروف غير المتوقعة، مثل الوباء العالمي (فيروس كورونا). سهل توفر الموارد التعليمية وتتبع التقدم والواجبات عبر الإنترنت التعلم الشخصي. بشكل عام، أثبت تطبيق الدراسة عن بعد أنه أداة لا تقدر بثمن في ضمان التعليم المستمر وتوسيع نطاق الوصول إلى فرص التعلم للطلاب في جميع أنحاء العالم. الافتراضية.

Php, sql, html, js, Uml,

Résumé

En conclusion, l'application de l'enseignement à distance a révolutionné l'éducation en fournissant un accès flexible au matériel d'apprentissage, des cours interactifs en ligne et une communication transparente entre les étudiants et les enseignants. Il a permis aux étudiants de poursuivre leurs études malgré des limitations physiques ou des circonstances imprévues, telles que la pandémie mondiale (corona virus). La disponibilité de ressources éducatives, le suivi des progrès et les devoirs en ligne ont facilité une expérience personnalisée, Dans l'ensemble, l'application de l'étude à distance s'est avérée être un outil inestimable pour assurer une formation continue et élargir l'accès aux possibilités d'apprentissage pour les étudiants du monde entier.

Mots clés : technologies d'informatique, éducation, éducation en distance, PHP, SQL, html, js Uml,