



# North South University

Department of Electrical and Computer Engineering

## Virtual Learning Nexus

**CSE482 INTERNET AND WEB TECHNOLOGY**

**Section: 01**

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## Contents

Abstract.....	1
Introduction .....	2
Objectives .....	2
System Design .....	4
Data Flow Diagram (DFD).....	4
DFD 0 Level.....	4
DFD 1 Level.....	4
DFD 2 Level.....	6
UML Diagram.....	7
.....	7
Solution Description.....	8
Front-end and back-end plan .....	8
Input Module.....	8
Output Module .....	8
Modularization Detail .....	9
Without Registration .....	9
With Registration/login.....	9
Student Panel .....	9
Admin Panel.....	10
List of the features which we have done: .....	10
Tools and Technologies.....	12
Advantages.....	13
Future Scope .....	16
Conclusion.....	16

# **Abstract**

Virtual Learning Nexus is a project that aims to develop an online application to provide Online Education, maintain Study Materials, keep Student records, and collect Payments. This project has login features; Educators as Admin and Students as a user can log in to their portal separately. The Admin can log in, and the Admin can monitor the whole System. This System can be used to search for courses, add new courses, edit courses, check payment status, etc. After logging into his account, the Admin can generate reports such as sell Reports. The User can log into his account to follow their purchased course and share their feedback. Overall, this project of ours is being developed to help the Educator (Admin) and Students (User) provide a Teaching-Learning platform in the best way possible.

# Introduction

Finding time for the training necessary to gain new skills and boost your productivity can be challenging. With **virtual learning nexus**, you can learn at a pace that is comfortable for you. **Virtual learning nexus** is a powerful learning management system that implements the latest trends in e-learning. E-learning utilizes electronic technologies to access educational curricula outside of a traditional classroom. Usually, it refers to a course or program delivered entirely online. We define eLearning as courses specifically delivered via the internet to somewhere other than the classroom where the professor is teaching. E-learning has been proven to be a successful training method, and education is becoming a way of life for many citizens in Bangladesh and worldwide. **Virtual learning nexus** Publisher is a professional team development environment that allows the rapid development of e-courses independently.

Anyone who wants to gain new skills can join **the virtual learning nexus**. A Person/Student/Learner has to fill out a registration form, which is Free. Once the Learner registers successfully, they will get the UserID/Email and Password for logging into the Student/Learner Panel. After logging in, they can buy any course as per their choice or requirement, which is available in iSchool. They can watch purchased video courses online and can submit their feedback. They can also update their profile and change their password. The admin of this system will upload new courses, which will be available for everyone. Admin can delete or edit student/learner details. The admin can modify course details and check sales reports.

## Objectives

A flexible web-based learning experience allows you to review a guided curriculum or choose lessons as needed. The following are the main objectives:-

- **Ability to recall previously learned material** – Students/learners can watch video courses as often as needed. If they forget something during the course, they can come back and watch that specific part anytime.
- **A creative way to present lessons** – It is a very innovative way to present lectures. It will surely enhance the teaching ability of the tutor.
- **Low Cost** – Nobody needs to travel or rent anything, so it's cost-efficient.
- **High Quality** – The tutor does not have time boundaries to teach in his comfort zone.
- **Learn anytime from anywhere** – Students/Learners can start learning anytime from anywhere. They require an internet connection with a compatible device.
- **Improve course quality according to learner's feedback** – Tutor can improve their course as per student's feedback. It will help tutor to improve their Ability to teach.
- **Earn Money Online**– As courses are paid, we can say it's an online teaching business with no boundaries, meaning students/learners can join from across the world so that this system can create a good quality company.

# System Design

## Data Flow Diagram (DFD)

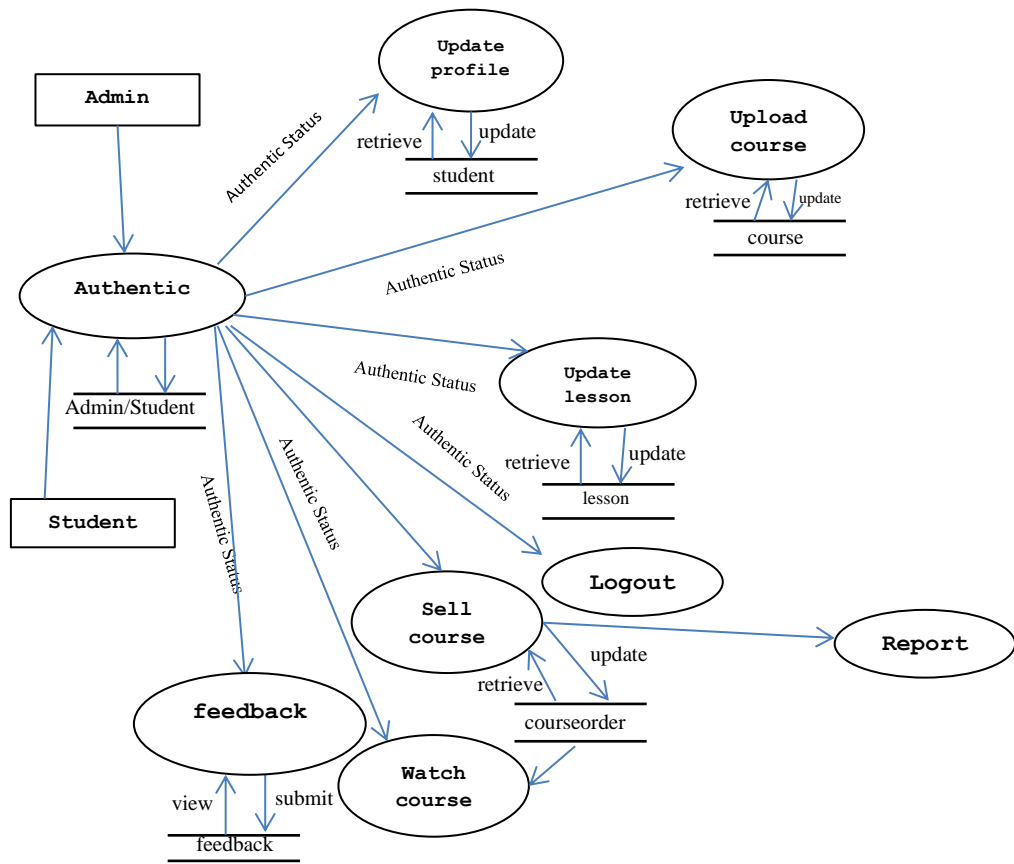
### DFD 0 Level

The 0 Level DFD shows flow of data of application. DFD Level 0 is also called a Context Diagram. It's a basic overview of the whole system or process being analyzed or modeled.



### DFD 1 Level

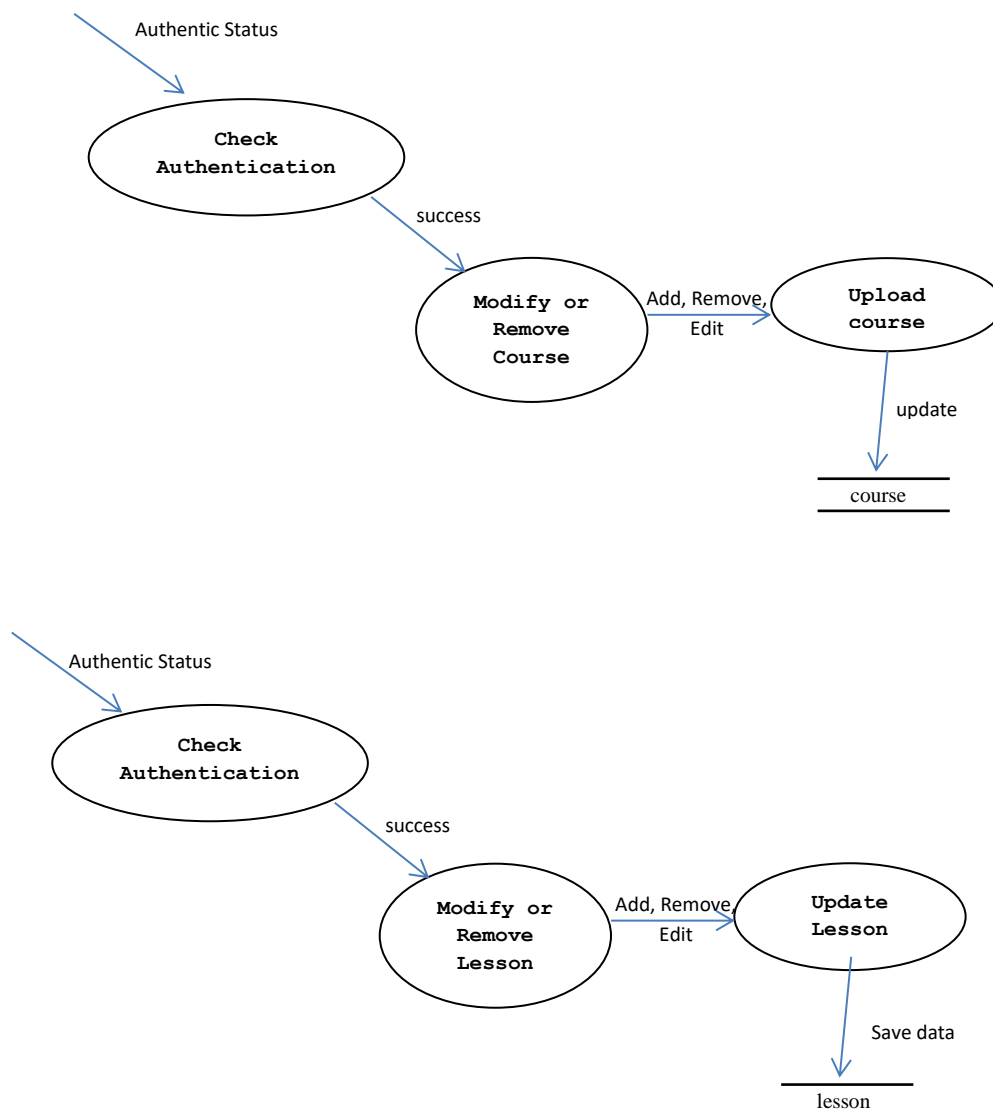
DFD Level 1 provides a more detailed breakout of pieces of the Context Level Diagram. This DFD describes main functions carried out by the system, as we break down the high-level process of the Context Diagram into its sub-processes.



**1 Level DFD**

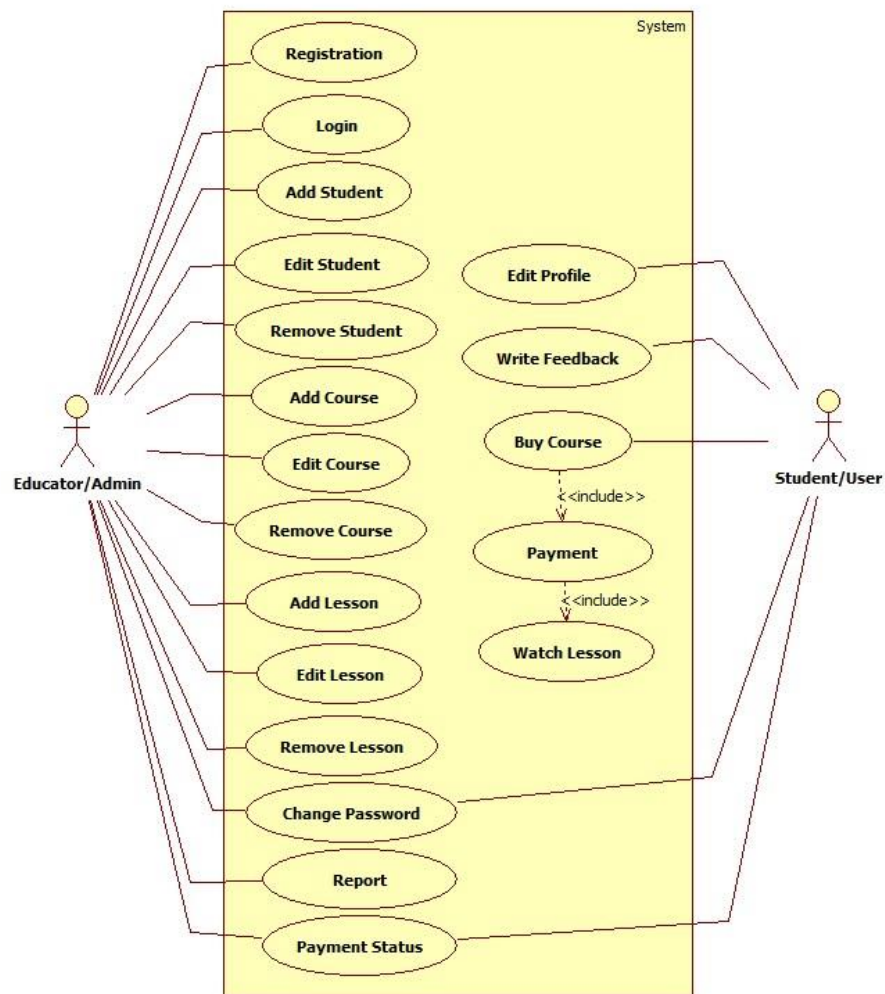
## DFD 2 Level

The DFD 2 Level describes flow of data in more detail. DFD Level 2 goes one step deeper into parts of Level 1. It may require more text to reach the necessary level of detail about the system's functioning.





# UML Diagram



# Solution Description

## Front-end and back-end plan

### Input Module

To successfully use the Virtual Learning Nexus application and obtain the desired output, it is necessary to provide specific inputs tailored to the tasks at hand. Different types of inputs are needed for other purposes.

- Student/Learner Registration
- Course
- Lesson
- Feedback
- Payment
- Contact page
- Watchlist
- Coupon

### Output Module

The project "**Virtual Learning Nexus**" is being developed to address the needs of the education sector. With this system, the admin can easily perform various tasks such as:

- Course Order list
- Total course, total students, and total sold courses
- Student/Learner List
- Course Detail/list
- Lesson Detail
- Sell Report
- Payment Receipt

- Feedback list

## Modularization Detail

### Without Registration

- **Home** – This module contains all the application links, such as Courses, Payment Status, Login, Sign Up, Feedback Section, and Contact.
- **Courses** – This module contains a list of all the courses available at iSchool.
- **Login** – This module logs into the Student/Learner Panel.
- **Sign Up** – This module is used to register for the Student/Learner Panel.
- **Feedback** – This section shows feedback given by registered students/learners.
- **Watchlist** - students can add their favorite courses to the watchlist. Further, they can find the courses from the watchlist and purchase and remove the course from the watchlist.
- **Search field** - Students can also search for their desired courses from the course's page using the search field.
- **Lesson list** - Students can see the lessons for the specific course.

### With Registration/login

- **Contact page** – Students can directly contact the admin using the contact page. This feature is only available when students are logged in.
- **Payment option** - Students can see payment options for payment after logging in.
- Users also can access the user panel's features after logging in.

### Student Panel

- **Profile** - This module contains all the details about the student/learner. Students can update their details, such as name and occupation, and upload a profile pic.
- **My Courses** – This module contains a list of all purchased courses.

- **Feedback** – This module is used to write feedback.
- **Change Password** – Students can use this module to change their password.
- **Logout** – This module is used to return to Home Page.

## Admin Panel

- **Dashboard** – This module displays an overview of the whole site. The admin can see the total courses, students, and sold courses from here and the total course ordered list.
- **Courses** – This module contains all the courses. Admin has access to edit, delete, and add courses.
- **Lessons** - This module contains all the lessons depending on the course ID, and lessons can be added for the specific course.
- **Students** – This module displays all the registered student details. The admin can add students without registration, edit information for specific students, and remove specific students.
- **Sell Report** – This module is used to view and print sales reports.
- **Payment Status** – This module displays payment status in more detail.
- **Feedback** – This module displays feedback given by students.
- **Change Password** – Admin can use this module to change password.
- **Course coupon** - Admin can add course coupons using this module.
- **Logout** – This module is used to return to the Home Page.

## List of the features which we have done:

List of the features which we have done in this project.	
<b>Payment Gateway</b>	we integrated a stripe payment gateway into our project
<b>Discount feature</b>	We implemented the discount feature in our project so that students can get specific discounts using coupon codes.
<b>Crud operation</b>	We used crud operations to edit courses, add courses, delete courses, etc.
<b>Feedback</b>	We implemented a feedback feature on our site where students can give feedback from the student panel, shown on the site's homepage.

<b>Watchlist</b>	User can add their desired course to the watchlist. Next, they can view, purchase, and delete this course from the watchlist. This feature's information is stored in the browser cache memory.
<b>Auth-otp, token</b>	Not done; Instead of auth-OTP, we implemented a fully validated login and signup form.
<b>Try free-course for n days</b>	Not done;
<b>Add Notification</b>	Not done;

# Tools and Technologies

<b>Operating System</b>	<b>Windows 10</b>
<b>Front End</b>	HTML, CSS, JavaScript
<b>Back End</b>	PHP
<b>Library/ Framework</b>	Bootstrap, JQuery, AJAX, FontAwesome
<b>Plugins</b>	Owl Carousel
<b>Code Editor</b>	Visual Studio Code
<b>Database</b>	MySQL
<b>Web Server</b>	Apache
<b>Web Browser</b>	Google Chrome
<b>Payment Gateway</b>	Stripe
<b>Drawing Tools</b>	Lucid Chart
	StarUML
<b>Hosting</b>	000webhost.com

# Advantages

## Flexibility

- **Self-Paced Learning:** Students can learn at their own pace, which is ideal for balancing education with other personal or professional commitments.
- **Anytime, Anywhere Access:** Learners can access courses from anywhere in the world anytime, as long as they have an internet connection.

## Cost-Effectiveness

- **Reduced Costs:** Eliminates the need for physical infrastructure and travel, significantly lowering the overall cost of education.
- **Discount Options:** Implementing a discount feature with coupon codes makes courses more affordable for students.

## Enhanced Learning Experience

- **Interactive Features:** Features like feedback and watchlist enhance the user experience, making learning more engaging and interactive.
- **High-Quality Content:** Tutors can deliver high-quality content without the constraints of time and location, ensuring a better learning experience.

## Comprehensive Course Management

- **CRUD Operations:** Admins can easily manage courses, including adding, editing, and deleting courses, providing a dynamic and up-to-date course catalog.

- **Detailed Analytics:** Features like sales reports and feedback analysis help administrators and educators understand user preferences and improve the learning material.

## Secure and Reliable

- **Payment Gateway:** The integration of Stripe ensures secure and reliable transactions, building trust among users.
- **Validated Authentication:** Fully validated login and signup forms provide a secure environment for users.

## User-Friendly Interface

- **Easy Navigation:** Intuitive design and clear navigation paths make the platform accessible and easy for learners of all ages.
- **Profile Management:** Users can easily update their profiles, manage their courses, and track their learning progress.

## Scalability

- **Future Enhancements:** The system is designed to be scalable, allowing for future enhancements like adding multiple tutors, live classes, discussion forums, and quiz facilities.
- **Adaptability:** The platform can be adapted and expanded to meet the evolving needs of both educators and learners.

## Feedback-Driven Improvement

- **Continuous Improvement:** The feedback feature allows for continuous improvement of course content based on learner feedback, ensuring that the courses remain relevant and practical.



- **Student Engagement:** Encourages student engagement and interaction, fostering a more involved and active learning community.

By leveraging these advantages, Virtual Learning Nexus provides a robust and effective e-learning platform that meets the diverse needs of modern learners and educators.

# Future Scope

- **Addition of Multiple Tutors:** Enable multiple tutors to join and contribute their expertise.
- **Discussion Forum:** Create forums for enhanced interaction between students and tutors.
- **Quiz Facility:** Implement quizzes to enhance learning and assessment.
- **Live Classes:** Integrate live class features for real-time teaching and interaction.
- **Mobile Application:** Develop a mobile app version for more accessible learning on the go.
- **Enhanced Security Features:** Implement advanced security measures like two-factor authentication.

# Conclusion

The "Virtual Learning Nexus" E-Learning Maintenance Management System has been successfully developed and tested using "Test Cases." It is user-friendly and has all the necessary options for users to perform their desired operations. The software was developed using HTML, CSS, and JavaScript for the front end, and PHP and MySQL for the back end in a Windows environment.

The goals achieved by the software are:

- simplification of operations,
- reduced processing time,
- user-friendliness, and
- portability for further enhancements.