



A Project Report On
“Online Academy”

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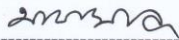
This thesis/project/internship titled on "Online Academy", submitted by Md. Jakaria Hossain, ID: 181-35-2309 to the Department of Software Engineering, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of Bachelor of Science in Software Engineering and approval as to its style and contents.

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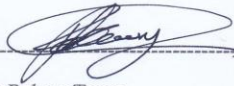
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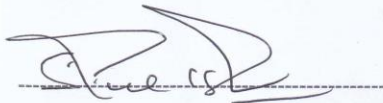
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DECLARATION

I hereby declare that I have done this project under the supervisor of Afsana Begum, Assistant Professor, Department of Software Engineering and Daffodil International University. I also declare that this project or any part of this is unique and has not been submitted elsewhere for the award of any degree.

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At first, I am blessed that I successfully moved towards the last semester. I am pleased with my almighty. First, at beginning of university life, I have learned a lot about software development as well as computer science-related knowledge from my university's knowledgeable teachers and helpful course mates. Teachers teach us ethics, morality, and politeness as well as software knowledge and related knowledge. I must be thankful to my parents and my family to give me the opportunity and always be to myself. My family always supports me. I am highly indebted to Afsana Begum for his guidance and constant supervision as well as for providing necessary information regarding the project & for his support in completing the project. My supervisor supports me to make this project ("Online Academy") a successful end. My thanks and appreciations go to my course mates in developing the project and people who have willingly helped me out with their abilities.

ABSTRACT

“Online Academy” is a web-based online learning platform to help students to ensure a measurable online learning platform through open learning with huge educational resources. This platform boosts learning facilities and brings a change in the remote learning system. This tool allows registered users to create a new educational course & alongside to choose and attend a course added by another user. Every development of the software industry follows some rules and methods; I also followed some methods to develop this project. I finished all way of development by following the Agile Methodology. I think & choose this methodology as the most suitable software development model to develop my “Online Academy”. I choose it because my whole project needs to implement partially then test it and Agile Methodology helped me to reduce the project risk.

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CHAPTER 1: INTRODUCTION

1.1 Project Overview

The "Online Academy" is developed to overcome the problems prevailing in the old manual learning system. This software is to eliminate and in some cases reduce the hardships faced by another existing system. Moreover, this system is designed for the particular need of online learners smoothly and effectively.

The system suggests as much as possible avoid errors while entering user credentials. It also provides an error message while the user enters invalid data. No technical knowledge is needed for the user to use this system. This way I can call this system a user-friendly creation.

Every online learning platform, big or small, faces challenges to overcome and managing the information of User, Course Materials, and Quick Test. Every E-learning Management System has different needs, therefore; I design a user-friendly & easy to use the system.

Besides, for those busy learner who is always on the go, my system comes with remote access features, which will allow him to manage his way of learning anytime, at all times. These systems will ultimately allow you to better service resources.

1.2 Project Purpose

The purpose of “Online Academy” is to digitalize the existing old system with the help of information technology and full-fledged computer software, covering their requirements so that users can get a user-friendly and easy-to-use learning platform. The required environment to use this system are available for every user. “Online Academy”, as mentioned above, is error-free, secure, reliable, and user-friendly. It helps the user to concentrate on their online learning with a fresh UI. It helps users in better utilization of educational resources.

Functionalities provided by “Online Academy”:

- An online open learning platform
- Fresh User Interface with better user experience
- Everyone in this platform is both instructor & student
- Anyone can share resources & anyone can learn from here
- After learning, the student can attend the exam on that topic

1.2.1 Background

Based on some E-learning systems I want to create a user-friendly environment, which will help the user at their satisfactory level. Here the user can be enrolled in their desired course and access course material provided by the course instructor for easy learning. I tried to create a full system, which will be reliable, secure, and above all user friendly.

1.2.2 Benefits & Beneficiaries

This system would be helpful for online learners who are searching for an easy-to-use system. I am mentioning some features below:

- This system helps online learners to learn remotely
- This system keeps records of all user data, course data
- Easy access from anywhere for authorized-user
- Find out any desired course easily with a search
- Users can get a smart User Interface.
- Less the manpower and office management cost.

1.3 Stakeholders

A person who is actively involved in this system and is not a developer. According to project management, project stakeholders “a person, group or organization will be influenced or affected by in a decision, activity or outcome of the project.”

I have an Instructor and User as the stakeholder of this system. Below discuss of stakeholders:

1.3.1 Instructor

The instructor controls the whole system. The instructor can add a new course with course material; the Instructor can view the course details. He also approves the user's post in this system. The instructor also can update all the course information; he can edit or delete any course. He can overview the system's progress.

1.3.2 Student

Registered students can enter the system and access the course resources. He can attend the course end short exam after the end of the course. Students can comment in the course discussion area. Students cannot get the same accessibility as instructors.

1.4 Proposed System Model

I designed this model to meet the desired structure and behavior of my system. I build this model to visualize and control the system's architecture.

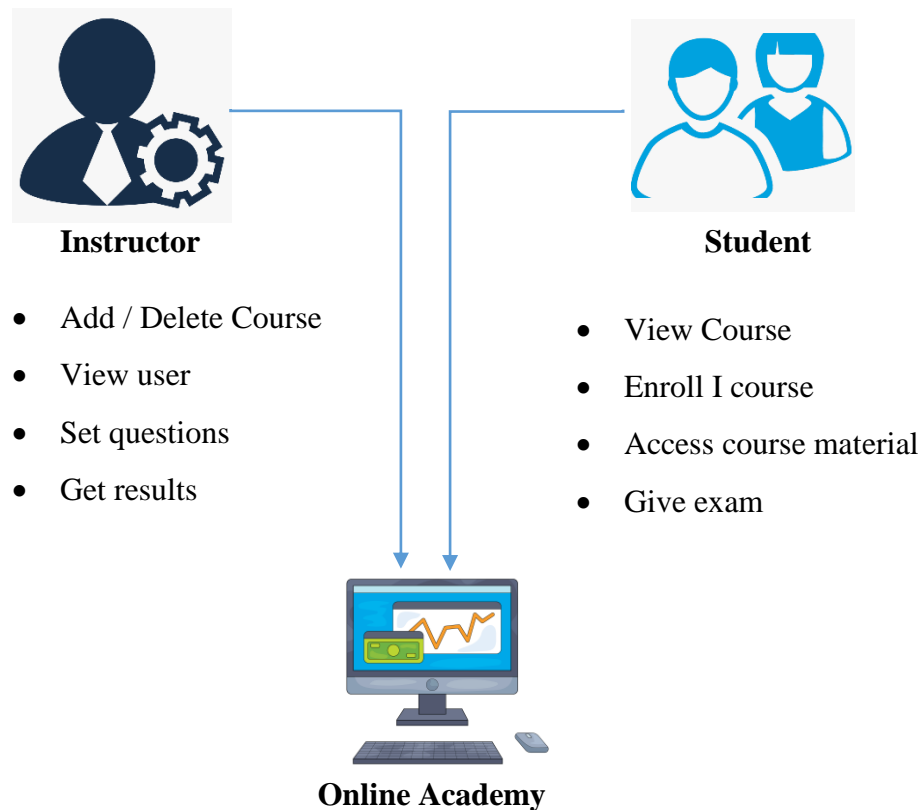


Figure 1.1: Proposed System Model

1.5 Modules of Online Academy

- Course Module: Used for managing the Course-related functions.
- Test Module: Used for managing the course end short test.
- User Module: Used for managing the information and details of the user.
- Login Module: Used for user authentication
- Registration Module: Used for managing the users of the system

1.5.1 Focused Modules

Registration:-

In this, first, the interested user is registered by inserting their name, Email and password. Each person will register only one time. Details of every user's username and password are saved in the database.

Login:-

After providing the correct username and password, the user logs into the “Online Academy” homepage. There the user can select the available courses to enroll. If the user enters a wrong username or password then he cannot enter into the system.

Course:-

After providing the correct username and password, the user log's into the Online Academy's homepage. Here at the homepage, there are many choices for the user to enroll in different courses.

Test: -

The user attends the quiz on the finished course and immediately takes the result. On each question user, get the marks. There is no negative marking on the quiz.

1.6 Project Schedule

Considering a short time, I need to ready a scheduling plan to finish the project on time. It also refers to make communication with what task needs to be done within a short time.

1.6.1 Gantt Chart

Gantt chart is a production time control tool. It remained me to complete my assigned tasks within a certain period. For developing software, it is mostly used. I have designed a Gantt chart for my project:

Activities		W 1	W 2	W 3	W 4	W 5	W 6	W 7	W 8	W 9	W 10	W 11	W 12	W 13	W 14	W 15	W 16	
Planning	Ideas	█																
	Problem Identification	█	█															
	Proposal Planning	█	█															
Requirements	Requirement Specification		█															
	Requirement Analysis		█	█	█													
QA-1	Quality assurance			█														
System Design	Sketching				█	█												
	Design specification				█	█												
	Database design				█		█											
Implementation-1	Write Review				█	█	█	█	█	█								
QA-2	Test cases			█			█	█	█	█	█							
Implementation-2	Impose case & demerits									█	█	█	█		█			
Testing	Unit testing				█		█						█	█		█		
	Black box testing													█	█	█	█	
Delivery	Software release																	█
Scheduled Time		█																
Buffered Time		█																

Table 1.1: Gantt chart

1.6.2 Release Plan or Milestone

The release plan or milestones are given below:

Activities	Duration in week	Total week
Brainstorming	W 1	1
Problem identification	W1, W2	2
Requirement specification	W2	1
Requirement analysis	W2, W3, W 4	3
Sketching	W4, W5	2
Design specification	W5	2
Database design	W4, W 6	2
Write Review	W4, W5, W6, W7, W8	5
Quality assurance	W3	1
Test case	W3, W6, W7, W 8, W 9	5
Impose case & demerits	W9, W 10, W11, W12, W14	5
Unit testing	W3, W6, W7, W8, W 9	5
Black-box testing	W13, W 14, W 15	3
Software release	W 16	1

Table 1.2: Release Plan

1.7 Objectives

The main objective behind the project is to provide a user-friendly environment to provide an online course from the system. The main features that the system can be used as a remote learning platform. Users can find available tutorials related to h/her studies. They can attend online tests and discuss a topic by posting comments in the comment area. Along with this, they can also `create an online course for another user in this system.

CHAPTER 2: REQUIREMENT ENGINEERING

2.1 Functional Requirements (FR):

Functional requirements referred to a mandatory function, which is mandatory to the system. It describes the functions a software must perform. Functional software requirements capture the intended behavior of the system. This behavior can be written as functions, services, tasks, or which system is required to perform. Now, I am showing to mention functional requirements associating with this project:

2.1.1 Registration

FR 1	Registration
Description	Student should be needed registration for login to access the system.
Stakeholders	Student

2.1.2 Login/Logout:

FR 2	Login/Logout
Description	Login and logout should be another criterion for using this application.
Stakeholders	Student, Instructor

2.1.3 Create New Course:

FR 3	Create new course
Description	Instructor can create a new course with a course title and description for the students.
Stakeholders	Instructor

2.1.4 Add Question for Test:

FR 4	Add Question for Test
Description	Instructor will add some questions for a course. When a student finishes the course, he can attend the course end test.
Stakeholders	Instructor

2.1.5 View Course:

FR 5	View Course
Description	When a course is created, any user of this system can view that course in the list of the course area.
Stakeholders	Instructor, Student

2.1.6 Enroll/Un-enroll Course:

FR 6	Enroll/Un-enroll Course
Description	A student can enroll or un-enroll any course at any time.
Stakeholders	Student

2.1.7 Attend Test:

FR 7	Attend Test
Description	Instructor will add some questions for a course. The course, he can attend the course end test.
Stakeholders	Student

2.1.8 View Test Result:

FR 8	View Test Result
Description	Instructor and student both will be able to view the test result after the completion of the test process.
Stakeholders	Student, Instructor

2.2 Non-Functional Requirement (NFR):

2.2.1 Performance

NFR 1	The system will provide all services without any fault.
Description	When admin search to perform a particular job and then this outcome appears must be faster.
Stakeholders	Admin

2.2.2 Capacity

NFR 2	System will able to record up to 10000 profiles.
Description	The information of Online Academy System will be stored in the database.
Stakeholders	Admin

2.2.3 Reliability

NFR 3	The system should accurately perform the various activities of it.
Description	The application should be reliable to perform the tasks, when Admin performs some important action it should be acknowledged with a confirmation. The System must be updated regularly
Stakeholders	Admin

2.2.4 Security

NFR 4	The database should be secured and utilize certain cryptography technique
Description	All the data should be secured and be encrypted with minimum needs so that it's protected from the outside environment also from internal attacks.
Stakeholders	Admin

2.2.5 Maintainability

NFR 5	Admin will be able to reset all options and all stored profile to default Settings.
Description	In these, admin can easily maintain all the profile in a specific area and can update all of the information in a certain activity like edit and delete.
Stakeholders	Admin

2.2.6 Availability

NFR 6	The System must be available 24x7
Description	The application should be available to the admin 24 hours a day.
Stakeholders	Admin

CHAPTER 3: SYSTEM ANALYSIS, DESIGN & SPECIFICATION

3.1 Development Methodology

As a long-term development, I am also new in development so I choose the Agile Model to complete my project. Agile method anticipates change and allows for more flexibility for development than any other traditional model. I can easily change a small part of my system without huge amendments to my tight schedule. Testing in every step was very important to me for ensuring that my system is working perfectly, Agile Model gives me this opportunity to test every unit while the system is in developing condition.

Agile model offers me to create a system, which can be changed easily, minimize the risk by frequent testing, higher quality product, and finish able in a short time.

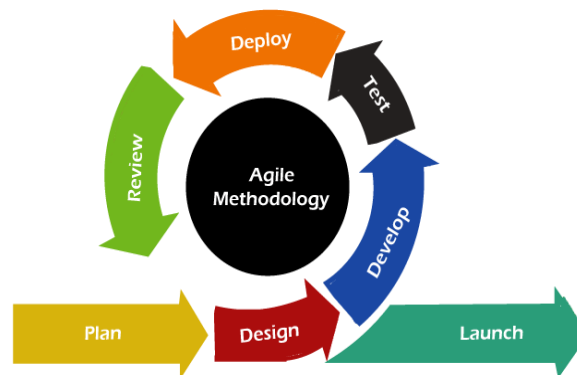


Figure 3.1: Agile Model

3.2 Use Case Diagram

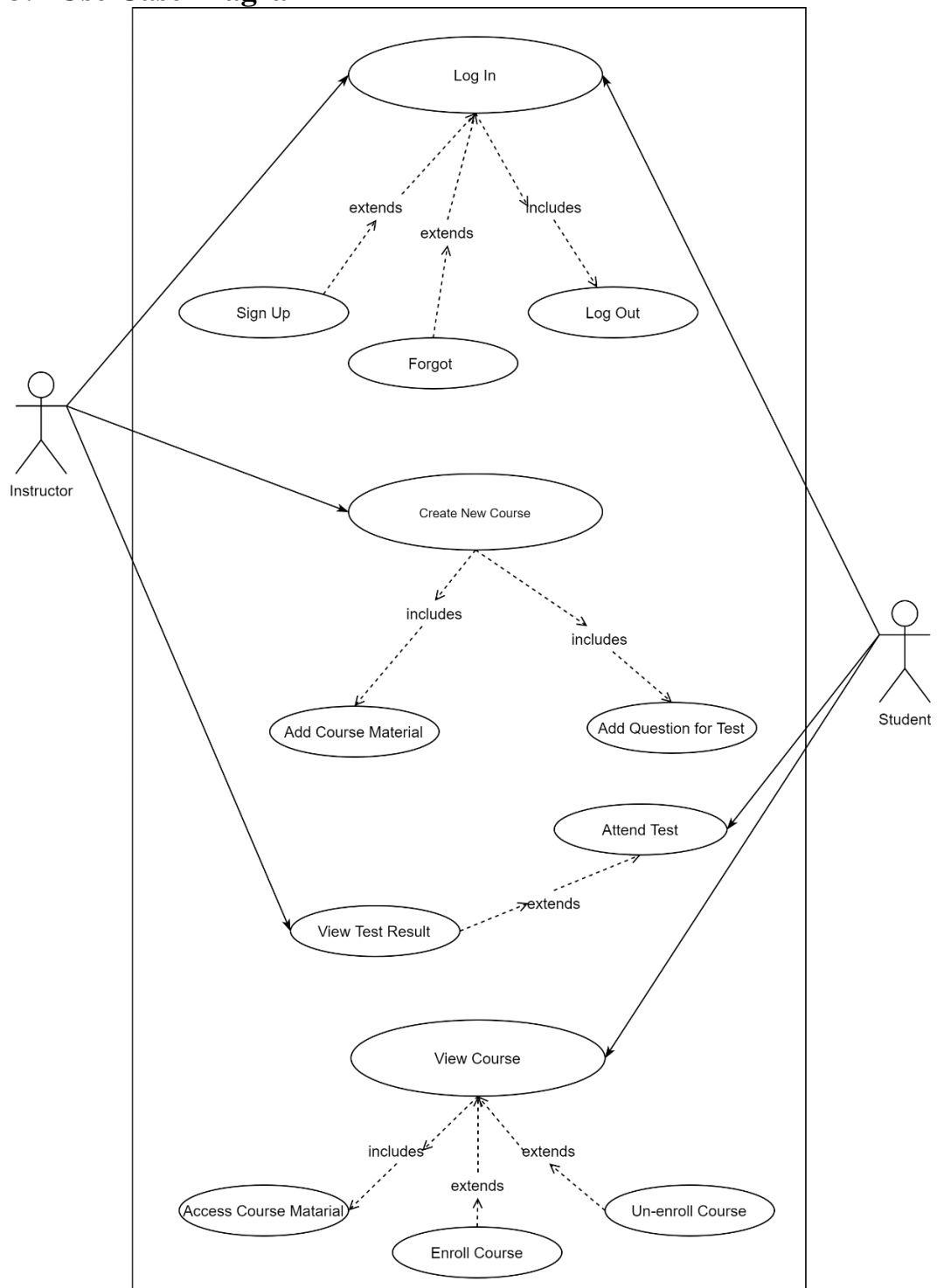


Figure 3.2: Use Case Diagram

Use Case Description

3.2.1 Log In

Users (Instructor & Student) should log in to the system with their username and password to access all features of the Online Academy system. If the user is not registered before, the user has to Sign Up first.

Use case ID	01	
Use Case Name	Log In	
Goal	To allow the user to enter the system.	
Preconditions	User must be Registered with email and password.	
Primary Actor Secondary Actor	Student, Instructor	
Trigger	Button	
Description / Main Success Scenario	Step	Action
	1	To enter into the system
	2	To access all features available for a user
Post Condition	Users can Log Out anytime.	
Alternative Flow	Sign Up	

3.2.2 Sign Up

If anyone wants to log in to the system to access all features of Online Academy system. They must log in first, if they are new to this system; they have to create their user profile by signing up.

Use case ID	02	
Use Case Name	Sign Up	
Goal	To create a new user profile in the system.	
Preconditions	The user must have an email address.	
Primary Actor Secondary Actor	Student, Instructor	
Trigger	Button	
Description / Main Success Scenario	Step	Action
	1	Log into the system
	2	To access all features available for a user
	3	To create a new user profile
Post Condition	Users can Log In.	
Alternative Flow	Log In	

3.2.3 Create New Course

Registered users can create new courses by attaching some files or links. He has to write a course name & a short description of the course. He can link up any videos related to his course.

Use case ID	03	
Use Case Name	Create New Course	
Goal	To create a new online course in the system.	
Preconditions	The user must be logged in with an email and password.	
Primary Actor Secondary Actor	Instructor	
Trigger	Form	
Description / Main Success Scenario	Step	Action
	1	Add course name & description
	2	Add attachments files & links
Post Condition	Add course material, Add a question for test	
Alternative Flow	N/A	

3.2.4 Add Course Material

While a user creates a new course, he has to add some study materials, which will be helpful for remote studies. Materials can be images, docs, PDF, or video links.

Use case ID	04	
Use Case Name	Add Course Materials	
Goal	To provide remote study helping materials.	
Preconditions	User must create a course to add materials	
Primary Actor Secondary Actor	Instructor	
Trigger	Form	
Description / Main Success Scenario	Step	Action
	1	Add files as attachments
	2	Add video link of discussion
Post Condition	The course is ready to publish	
Alternative Flow	N/A	

3.2.5 Add Question for Test

For a successful course completion, a course end test is important for an online learning platform. In Online Academy, there is an option for a course end test. Therefore, the course creator has to set up a few questions to conduct a course-end short test.

Use case ID	05	
Use Case Name	Add Question for Test	
Goal	To set the questions for a short test	
Preconditions	The instructor must have to create a course first	
Primary Actor Secondary Actor	Instructor	
Trigger	Form	
Description / Main Success Scenario	Step	Action
	1	Insert Question and answer
	2	Assign marks for each question
Post Condition	Attend Test, Get Test Result	
Alternative Flow	N/A	

3.2.6 Attend Test

A student while successfully ends a course, he has to test himself and have to get a satisfactory mark. After finishing learning a course, the student can attend a short test to measure his level of learning.

Use case ID	06	
Use Case Name	Attend Test	
Goal	To measure a student's level of learning	
Preconditions	The student must enroll & finish a course	
Primary Actor Secondary Actor	Student	
Trigger	Button	
Description / Main Success Scenario	Step	Action
	1	Enroll a course and finish the course
	2	Attend course end test
	3	Answer Questions and submit them in time
Post Condition	View Test Result	
Alternative Flow	Log Out	

3.2.7 View Test Result

After finishing the test, the user can see the test result instantly. The result will be stored also in the user profile.

Use case ID	07	
Use Case Name	View Test Result	
Goal	To project the test result instantly.	
Preconditions	The student must attend the test and submit answers successfully	
Primary Actor Secondary Actor	Student, Instructor	
Trigger	Button	
Description / Main Success Scenario	Step	Action
	1	Finish the exam
	2	Submit answers successfully
Post Condition	Enroll Course, Attend Test	
Alternative Flow	Log Out	

3.2.8 View Course

When someone enters into the system, the system will show all the courses available in the Online Academy. If anyone wants to enroll in the course, he should log in first.

Use case ID	08	
Use Case Name	View Course	
Goal	To show all the course available in the system	
Preconditions	N/A	
Primary Actor Secondary Actor	Student, Instructor	
Trigger	Home	
Description / Main Success Scenario	Step	Action
	1	Enter into the system with web address
	2	A list of all courses will appear
Post Condition	User can Log In to access the course	
Alternative Flow	N/A	

3.2.9 Enroll Course

The student should log in to the system with their username and password to get themselves enrolled in the Online Academy system. Then students can access all course materials uploaded by the Course Instructor. Students can attend the test after finishing learning.

Use case ID	09	
Use Case Name	Enroll Course	
Goal	To allow the student to access course materials and attend the test	
Preconditions	The student must be Logged in with an email and password.	
Primary Actor Secondary Actor	Student	
Trigger	Button	
Description / Main Success Scenario	Step	Action
	1	To access the course material
	2	To attend test
Post Condition	Log In	
Alternative Flow	Un Enroll Course	

3.2.10 Un-Enroll Course

The student should log in to the system with their username and password to get themselves enrolled in the Online Academy system. Then students can access all course materials uploaded by the Course Instructor. Students can attend the test after finishing learning.

Use case ID	10	
Use Case Name	Un-Enroll Course	
Goal	To un-enroll from any course	
Preconditions	The student must enroll in this course.	
Primary Actor Secondary Actor	Student	
Trigger	Button	
Description / Main Success Scenario	Step	Action
	1	To un-enroll from any course
	2	Successfully Un-enrolled
Post Condition	Log In, Enroll Course	
Alternative Flow	N/A	

3.2.11 Log Out

User (Instructor & Student) should log out from the system to terminate his sessions of the Online Academy system. Closing the browser window also log out the user instantly.

Use case ID	11	
Use Case Name	Log Out	
Goal	To terminate the session from the system.	
Preconditions	User must be Logged In with username and password	
Primary Actor Secondary Actor	Student, Instructor	
Trigger	Button	
Description / Main Success Scenario	Step	Action
	1	To escape from the system
	2	To finish user session
Post Condition	Users can Log In anytime.	
Alternative Flow	Closing window	

3.3 Activity Diagram

I have prepared some activity diagrams according to my Online Academy's use case. These activity diagrams are properly referring to the flow of the individual conditions of my learning system:

3.3.1 Log In

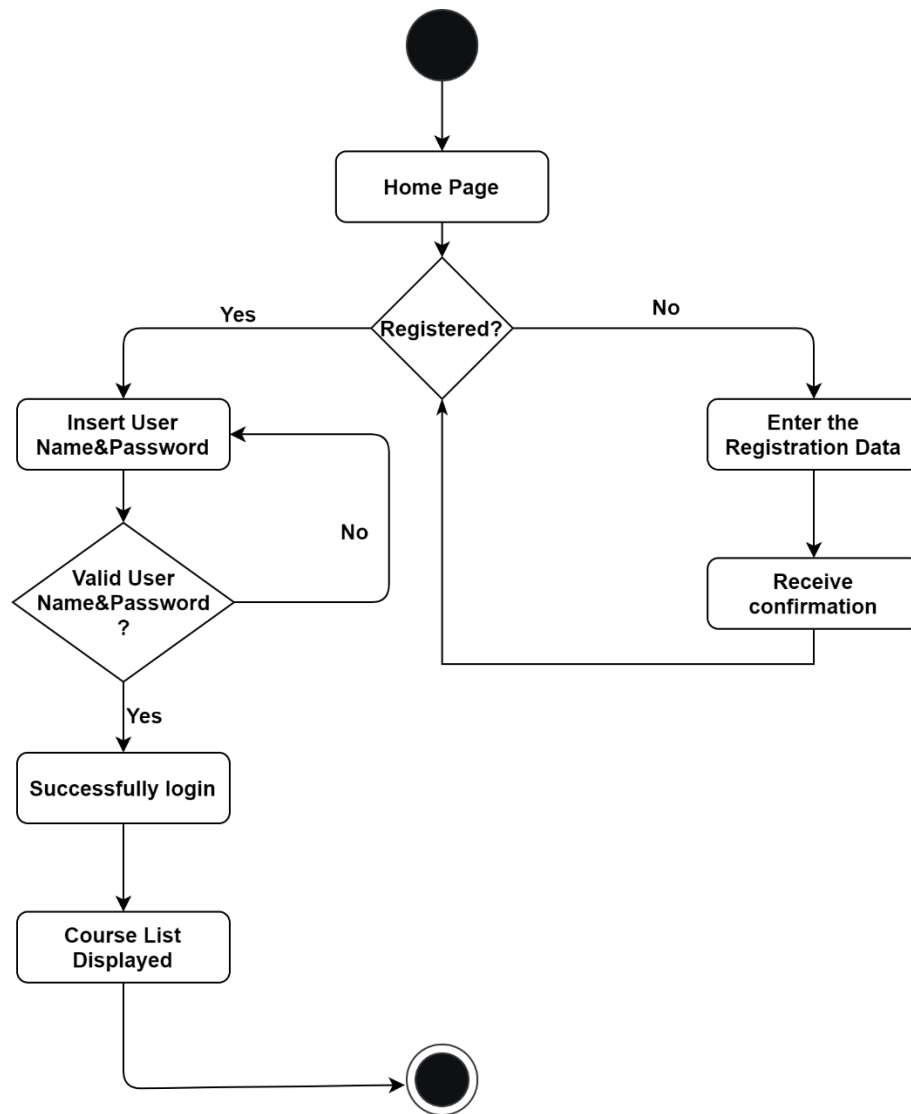


Figure 3.3: Activity Diagram: Log In

3.3.2 Sign Up

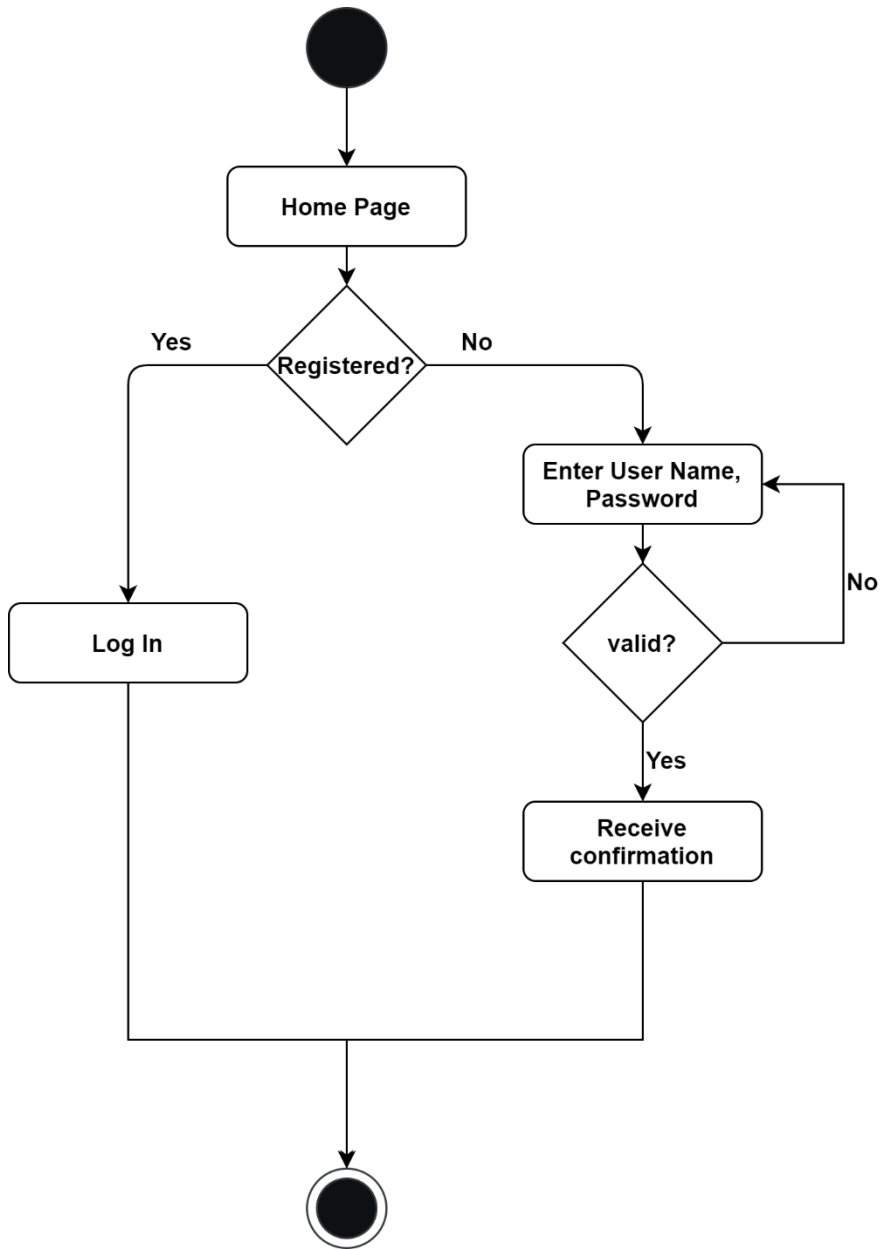


Figure 3.4: Activity Diagram: Sign Up

3.3.3 Create New Course

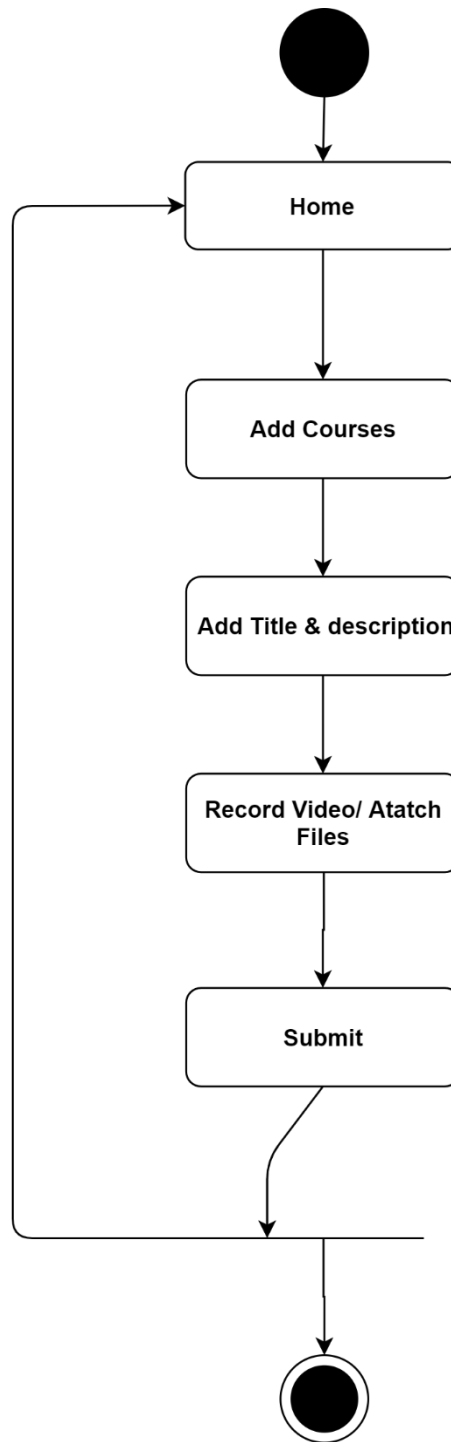


Figure 3.5: Activity Diagram: Create New Course

3.3.4 Add Course Material

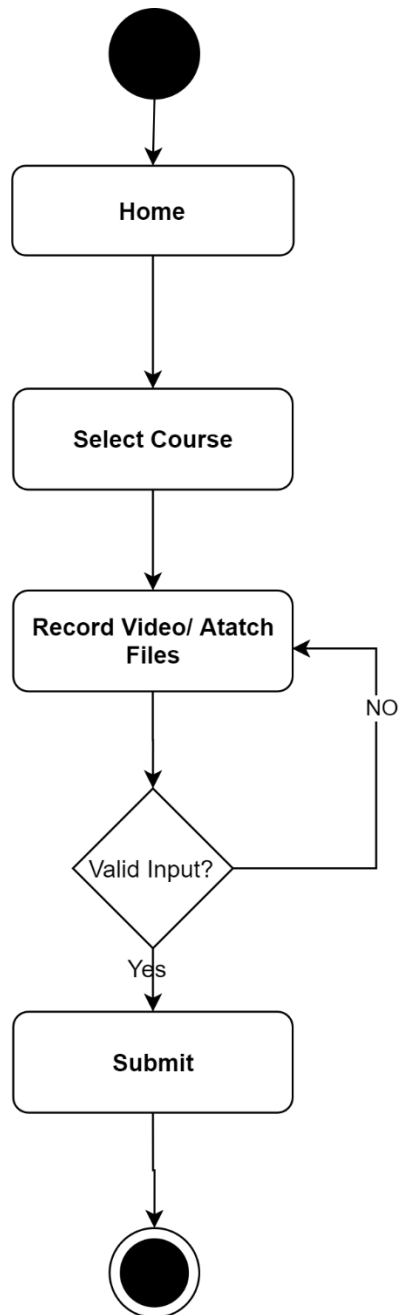


Figure 3.6: Activity Diagram: Add Course Material

3.3.5 Add Question for Test

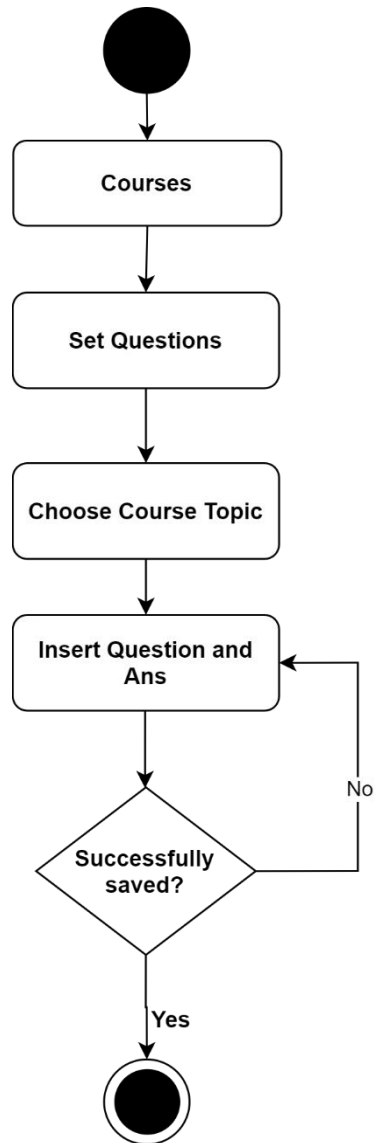


Figure 3.7: Activity Diagram: Add Questions for Test

3.3.6 Attend Test

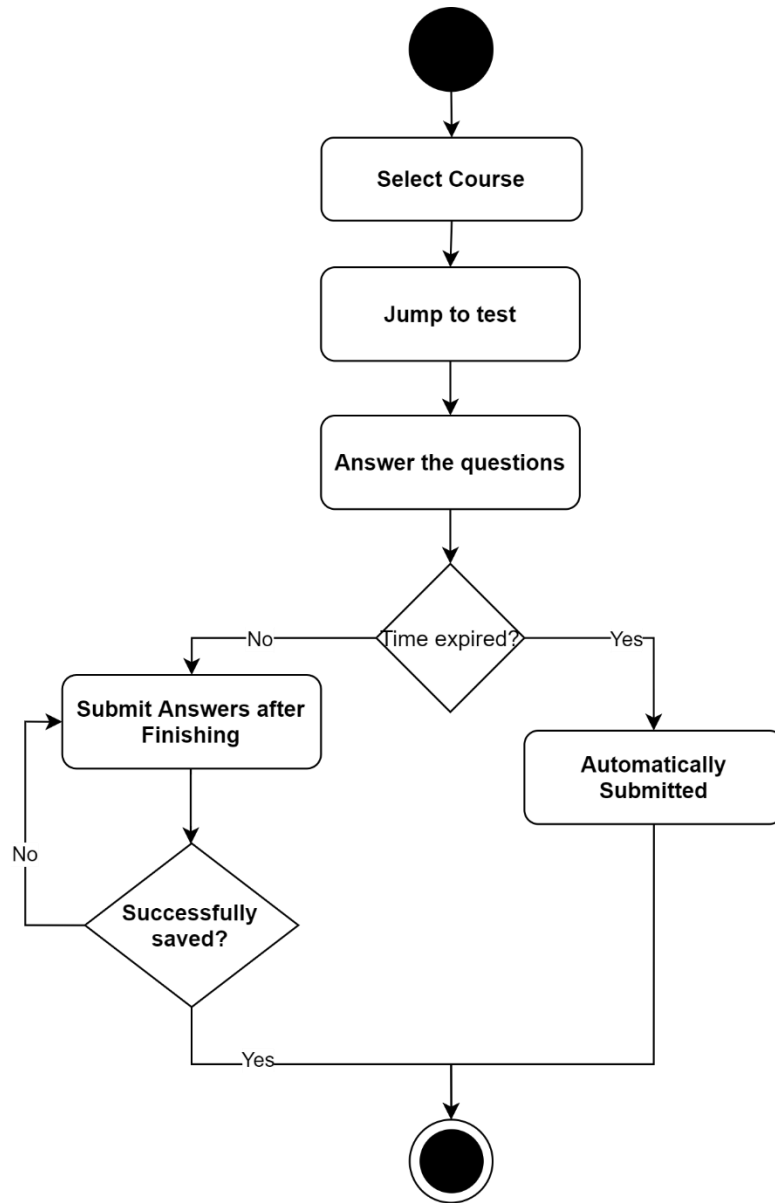


Figure 3.8: Activity Diagram: Attend Test

3.3.7 View Test Result

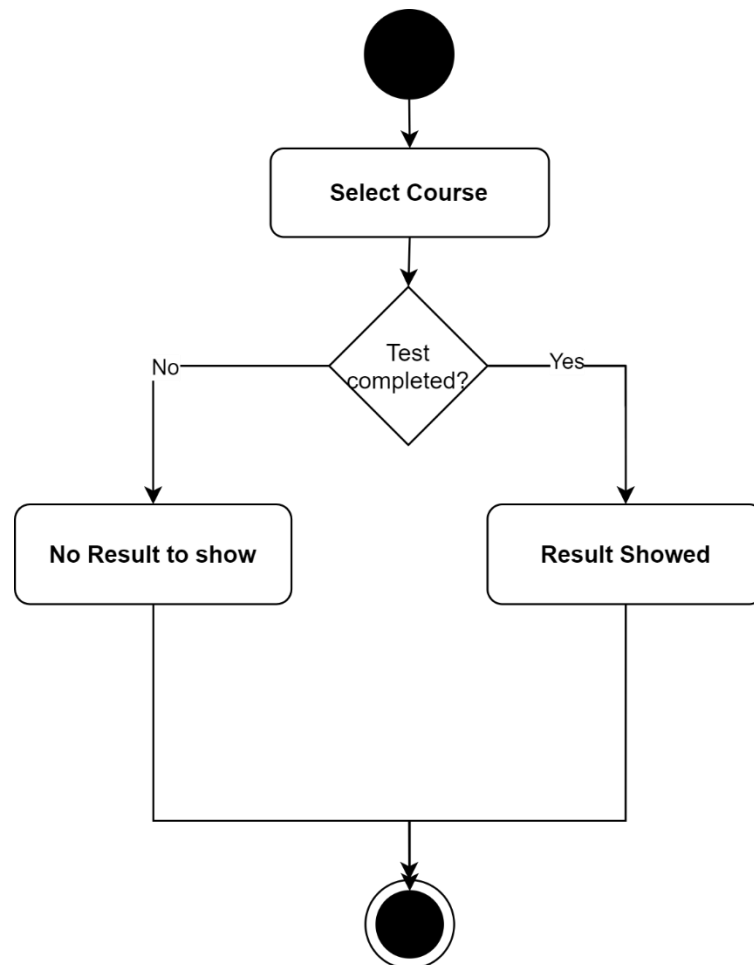


Figure 3.9: Activity Diagram: View Test Result

3.3.8 View Course

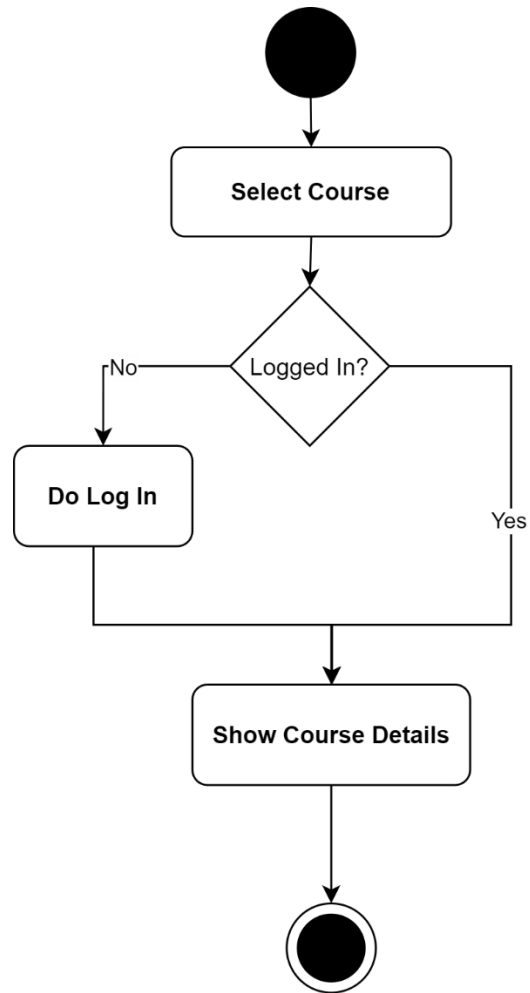


Figure 3.10: Activity Diagram: View Course

3.3.9 Enroll Course

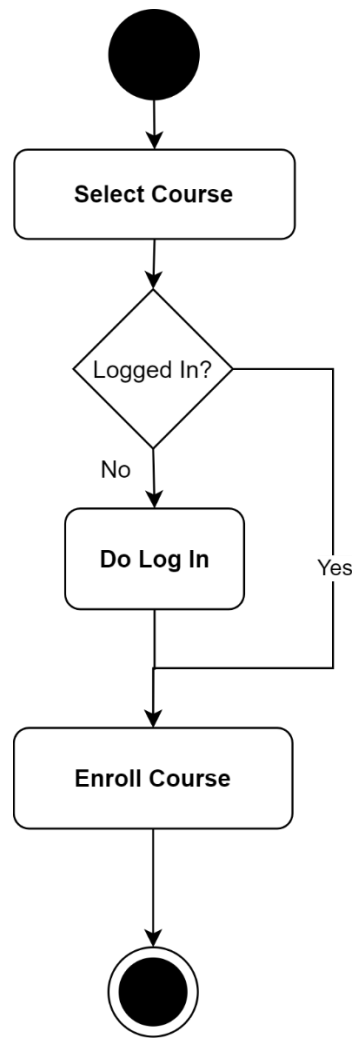


Figure 3.11: Activity Diagram: Enroll Course

3.3.10 Un-Enroll Course

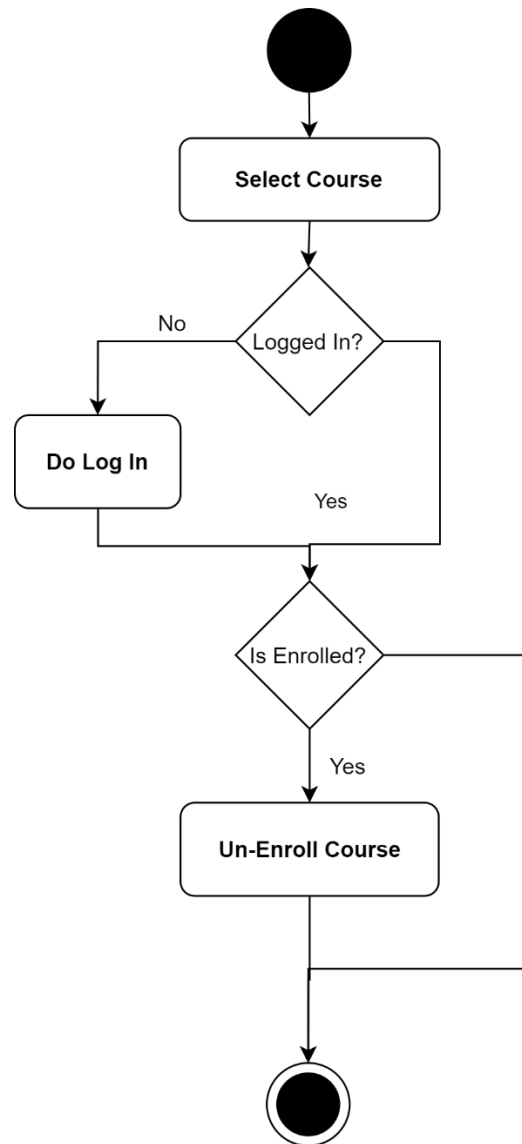


Figure 3.12: Activity Diagram: Un-enroll Course

3.3.11 Log Out

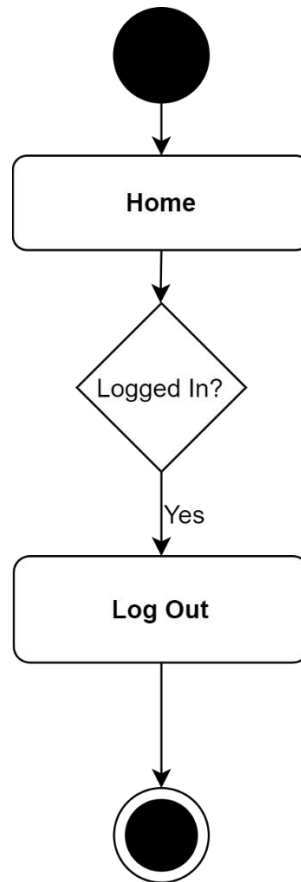


Figure 3.13: Activity Diagram: Log Out

3.4 Sequence Diagram

3.4.1 Sign Up, Log In

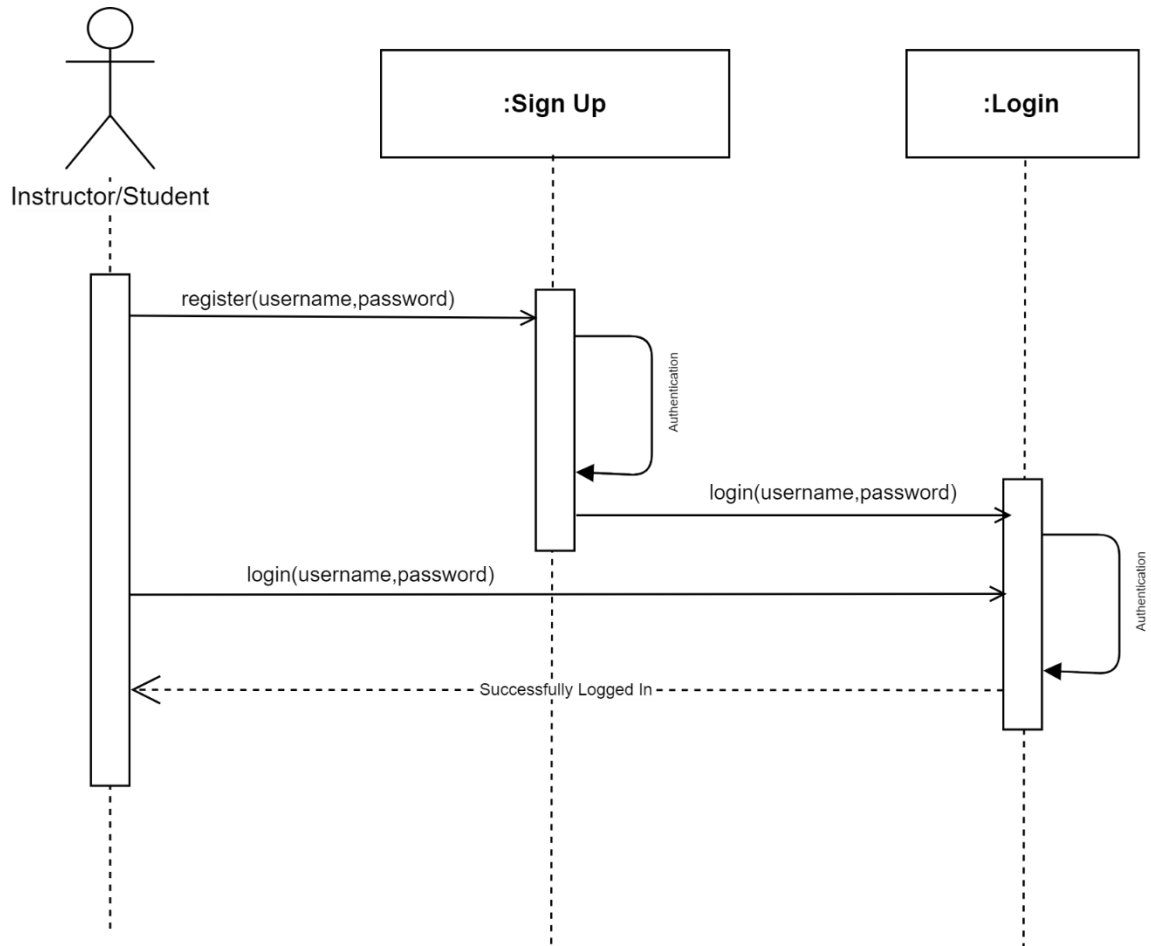


Figure 4.1: Sequence Diagram: Sign Up, Log In

3.4.2 Create New Course, View Course, Add Question for Test

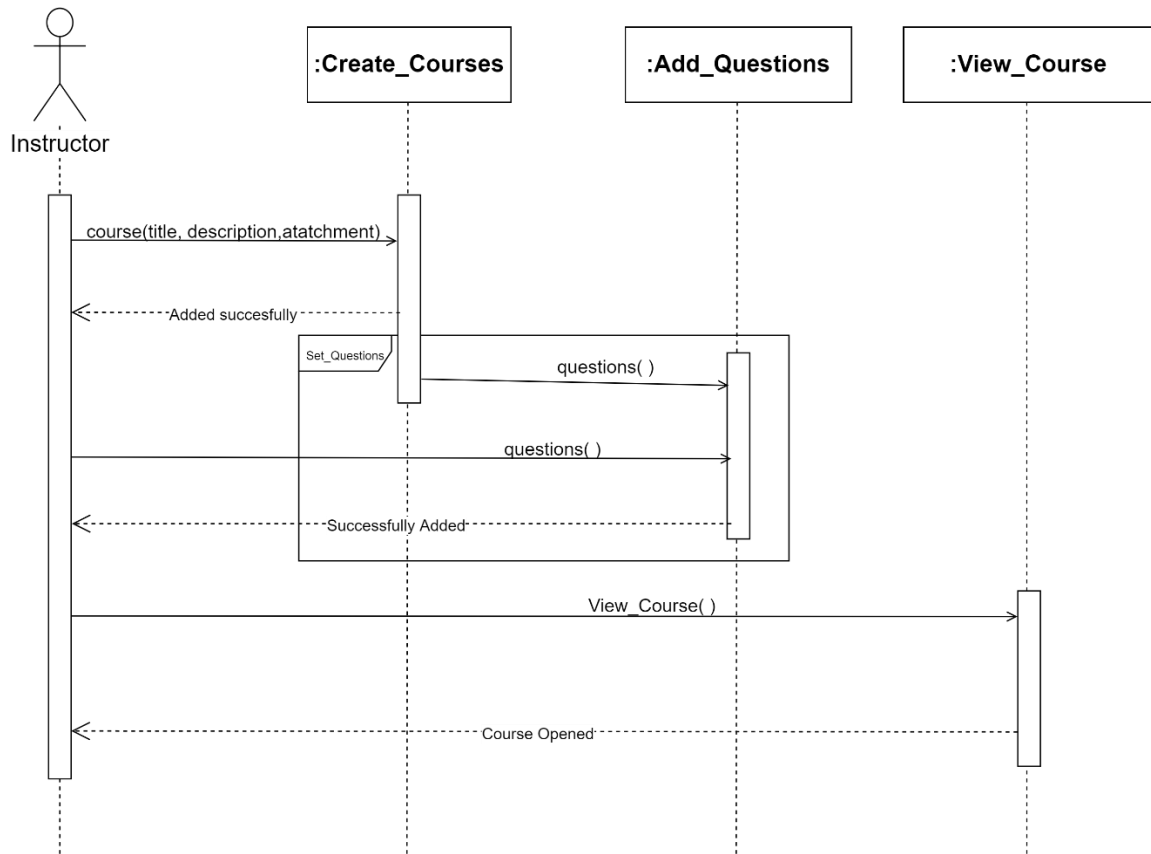


Figure 4.2: Sequence Diagram: Create New Course, View Course, Add Question for Test

3.4.3 Enroll Course, Un-enroll Course

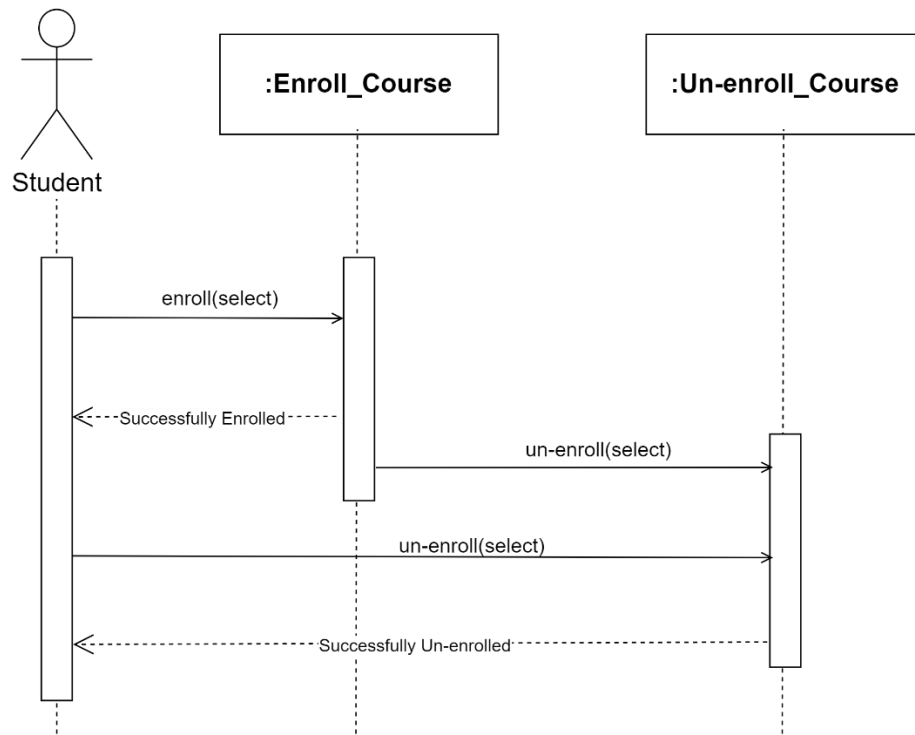


Figure 4.3: Sequence Diagram: Enroll Course, Un-enroll Course

3.5 Entity Relationship Diagram

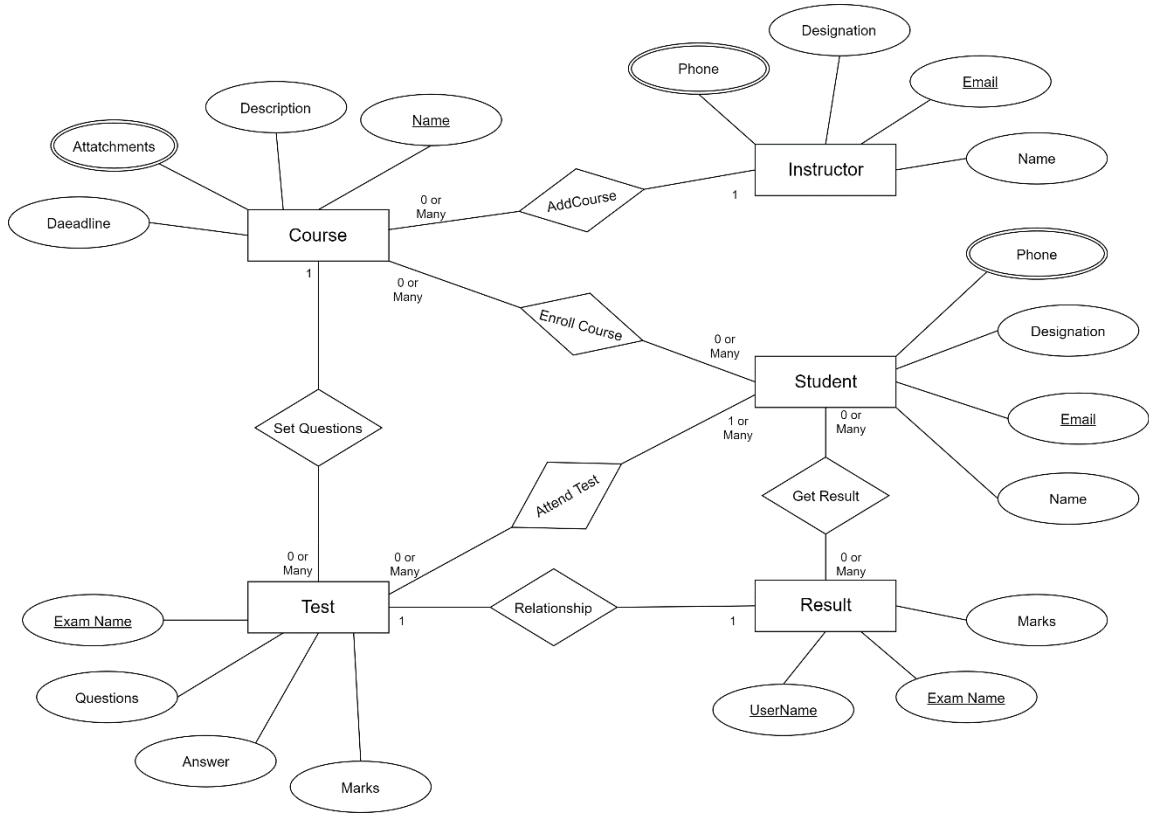


Figure 5.1: Entity Relationship Diagram

CHAPTER 4: SYSTEM TESTING

4.1 Feature Testing

Feature testing is considered to add or modify the new functionality to the existing system. Every feature and functionality has different characteristics. Those are designed to make the web application more useful, reliable, and effective, and secure.

4.1.1 Features to be tested

Features	Priority	Description
Log In	1	The user must be authenticated by the login.
Log Out	2	The session must be destroyed after logout.
Registration	1	User information must be saved properly.
Create New Course	1	The newly added course must be saved properly.
View Course	1	Course details must be showed.
Enroll Course	2	The course will be enrolled in the user profile.
Delete Course	3	Course information must be deleted properly.
<i>Here, 1=High Priority, 2=Medium Priority, 3=Low Priority</i>		

Table 4.1: Features Priority Table

4.2 Testing Strategies

4.2.1 Test Approach

I have used two different types of testing to ensure the quality of my system. I focused on functional testing and structural testing mainly.

*Black Box Testing (also called functional testing) is testing that ignores the internal mechanism of a system or component and focuses solely on the outputs generated in response to selected inputs and execution conditions.

*White-box testing (also called structural testing and glass box testing) is testing that takes into account the internal mechanism of a system or component.

4.2.2 Pass/Fail Criteria

I set some pass or fail criteria for unit testing. I prepare the pass / fail criteria based on which input data are worked and which are not working. Data that are worked well is considered as pass criteria. In addition, the rest of the input data is considered a failure criterion. There are some pass / fail criteria below:

- System crash is considered a fail case.
- If any criteria pass 100% of testing, then it is considered as pass criteria only.
- Which data can't be displayed to the system properly, then it is also to be considered as fail criteria.

4.2.3 Testing Schedule

Test Phase	Time
Testing plan create	1 Week
Unit testing	During development time
Component test	During development time
Integration testing	1 Week
Testing user interfaces	1 Week
Load testing	1 Week
Performance testing	1 Week
Accessibility testing	1 Week

Table 4.2: Testing Schedule

4.2.4 Traceability Matrix

Project Manager			Business Analyst Lead	
QA Lead			Target Implementation Date	
BR#	Functionality/Activity	Requirement Description	Test Case Reference	Comments
BR1	Functional	Log In	Test Case 4.4.1	
BR2	Functional	Log Out	Test Case 4.4.2	
BR3	Functional	Sign Up	Test Case 4.4.3	
BR4	Functional	Create New Course	Test Case 4.4.4	
BR5	Functional	View Course	Test Case 4.4.5	
BR6	Functional	Enroll Course	Test Case 4.4.6	
BR7	Functional	Delete Course	Test Case 4.4.7	

Table 4.3: Traceability Matrix

4.3 Testing Environment

Testing environment means to prepare the environment with hardware and software so that tester can be able to execute test cases as required. Besides hardware and software usage, network configuration is also needed to execute test plans. For the testing environment, I used some key areas. Given below:

- Test data
- Webserver
- Database server
- Front-end running environment
- Back end running environment
- Network
- Browser
- System and application

4.4 Test Cases

Test case means some rules and regulations or conditions by which it can be determined whether a system can be able to perform better under test cases properly. We know, every system has a chance to have some fault or break holes. This is a very common scenario in the software development process. Moreover, those issues are solved usually by software testing approaches. Nevertheless, if we do not pay heed to those issues, then the full system development might be failed. So proper testing is necessary for the development process. For testing my application, I have prepared some test cases. Now, I am going to discuss my test cases:

4.4.1 Log In

Test case #1		Test case name: Log In			
System: Online Academy		Subsystem: N/A			
Designed By: Md.Jakaria Hossain		Designed Date: 10-Nov-2021			
Executed by:		Executed Date:			
Short description: System will check the authentication and authorization.					
Pre-conditions: <ul style="list-style-type: none">Users will be redirected to the login page whether they have not authenticated by my system while entering into the Courses.					
Serial	Username	Password	Expected result	Pass/Fail	Comment
1	jakaria	123456	These credentials do not Match our records.	Pass	
2		12345	The username field is required	Pass	
3			The username and password field is required	Pass	
4	jakariahossain	12345	User successfully login to the application and redirected to the profile	Pass	
Post-conditions: User will successfully login to the application					

4.4.2 Log Out

Test case #2		Test case name: Log Out		
System: Online Academy		Subsystem: N/A		
Designed By: Md.Jakaria Hossain		Designed Date: 10-Nov-2021		
Executed by:		Executed Date:		
Short description: System will terminate the user session				
Pre-conditions: <ul style="list-style-type: none">• Users must be logged in before these steps.				
Serial	Action	Response	Pass/Fail	Comment
1	Hit Log Out Button	Session ended	Pass	
2	Close Browser tab	Session ended	Pass	
Post-conditions: The user can log in again with username & password.				

4.4.3 Sign Up

Test case #3		Test case name: Sign Up				
System: Online Academy		Subsystem: N/A				
Designed By: Md.Jakaria Hossain		Designed Date: 10-Nov-2021				
Executed by:		Executed Date:				
Short description: System will save new user information.						
Pre-conditions:						
<ul style="list-style-type: none"> User must have a Valid Name, Email & Password. 						
Serial	Name	Email	Password	Expected result	Pass /Fail	Comment
1	Jakaria	jakaria	123456	Invalid email	Pass	
2			12345	The Name, the email field is required	Pass	
3	253998			The Name is Invalid.	Pass	
4	Jakaria	jakariahossain@gmail.com	123456	User successfully signed up to the application and redirected to the login page	Pass	
Post-conditions: User can now login to the application						

4.4.4 Create New Course

Test case #4		Test case name: Create New Course				
System: Online Academy		Subsystem: N/A				
Designed By: Md. Jakaria Hossain		Designed Date: 10-Nov-2021				
Executed by:		Executed Date:				
Short description: System will save new course information.						
Pre-conditions:						
<ul style="list-style-type: none"> The instructor must have to enter the Course Name, Description & Attachments. 						
Serial	Course Name	Description	Attachments	Expected result	Pass /Fail	Comment
1	SWE113	Testing	Not Added	Invalid file type	Pass	
2				The Course Name, Description & Attachment field is required	Pass	
3	\$@&*	Design	Added	Course Name is Invalid.	Pass	
4	SWE333	Lorem Ipsum	Added	New course added successfully.	Pass	
Post-conditions: Student can now enroll to the course						

4.4.5 View Course

Test case #5		Test case name: View Course		
System: Online Academy		Subsystem: N/A		
Designed By: Md. Jakaria Hossain		Designed Date: 10-Nov-2021		
Executed by:		Executed Date:		
Short description: System will view the details of the course				
Pre-conditions:				
<ul style="list-style-type: none"> Users must be logged in before these steps. 				
Serial	Action	Response	Pass/Fail	Comment
1	Click on the Course card	Course append	Pass	
Post-conditions: Student can now enroll in the course				

4.4.6 Enroll Course

Test case #6		Test case name: Enroll Course		
System: Online Academy		Subsystem: N/A		
Designed By: Md. Jakaria Hossain		Designed Date: 10-Nov-2021		
Executed by:		Executed Date:		
Short description: System will enroll this student in the course				
Pre-conditions:				
<ul style="list-style-type: none"> Users must be logged in before these steps. Users must open a course before these steps. 				
Serial	Action	Response	Pass/Fail	Comment
1	Click on the Enroll button	Course Enrolled	Pass	
Post-conditions: Student can now access course material & attend the test				

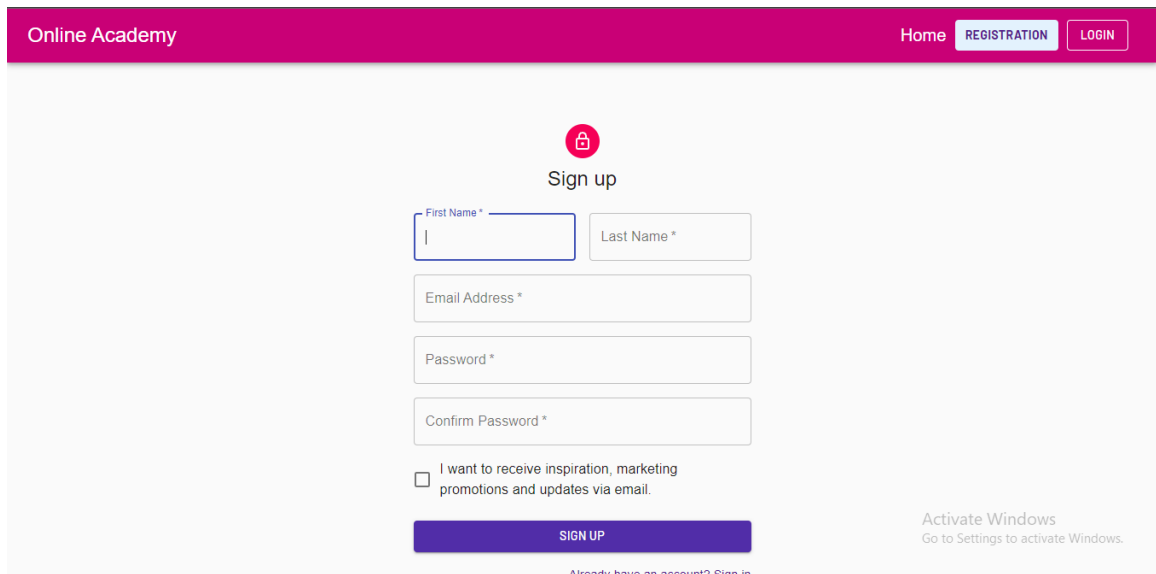
4.4.7 Delete Course

Test case #7		Test case name: Delete Course		
System: Online Academy		Subsystem: N/A		
Designed By: Md. Jakaria Hossain		Designed Date: 10-Nov-2021		
Executed by:		Executed Date:		
Short description: The system will delete the course				
Pre-conditions: <ul style="list-style-type: none">• The instructor must be logged in before these steps.• The instructor must open a course before these steps.				
Serial	Action	Response	Pass/Fail	Comment
1	Click on the Delete button	Course Deleted	Pass	
Post-conditions: N/A				

CHAPTER 5: USER MANUAL

5.1 Sign Up

New user can sign up in this system using their name, email address and password. After a successful sign up, user can log in to the system with his username and password. Then he can access all the features of the Online Academy system.



The screenshot shows the sign-up interface for the Online Academy. At the top, there is a purple navigation bar with the text "Online Academy" on the left and "Home", "REGISTRATION", and "LOGIN" buttons on the right. The main content area is white and features a red lock icon above the heading "Sign up". Below the heading are four input fields: "First Name *" (with a cursor), "Last Name *", "Email Address *", and "Password *". A "Confirm Password *" field is located below the password field. A checkbox is positioned to the left of the text "I want to receive inspiration, marketing promotions and updates via email.". At the bottom of the form is a blue "SIGN UP" button. In the bottom right corner, there is a "Activate Windows" notification that says "Go to Settings to activate Windows.". At the very bottom, there is a link that says "Already have an account? Sign in".

Figure 5.1: UI: Sign Up

5.2 Log In

If the user is already a registered user, he can log in to the system with his username and password. Then he can access all the features of the Learning Tree system.

Online Academy

Home REGISTRATION LOGIN

Sign in

Email Address *

Password *

Remember me

SIGN IN

[Forgot password?](#) [Don't have an account? Sign Up](#)

Activate Windows
Go to Settings to activate Windows.

Figure 5.2: UI: Log In

5.3 Home Page

In Home Page, students can see all the available courses in the system, which are added by Instructors. If student want to enroll himself in a course, he will tap on the ENROLL button shown in the course card.

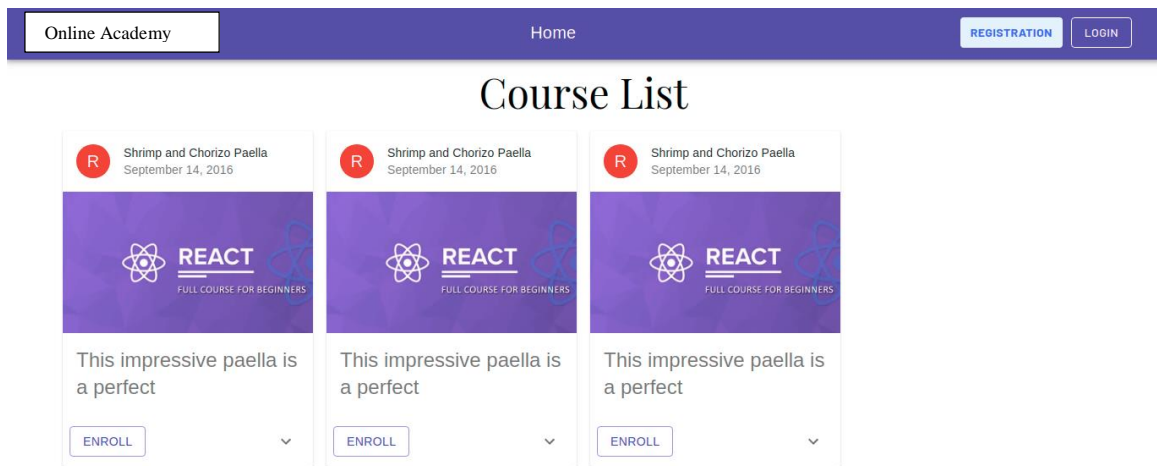


Figure 5.3: UI: Home Page

5.4 View Course

Here students can see all the enrolled courses of his own in the system, which are added by Instructors. If student want to Un-enroll himself from a course, he will tap on the ENROLLED button shown in the course card and choose Un-enroll from drop down list. He can also see the full details of the course by tapping down arrow (v) pointer.

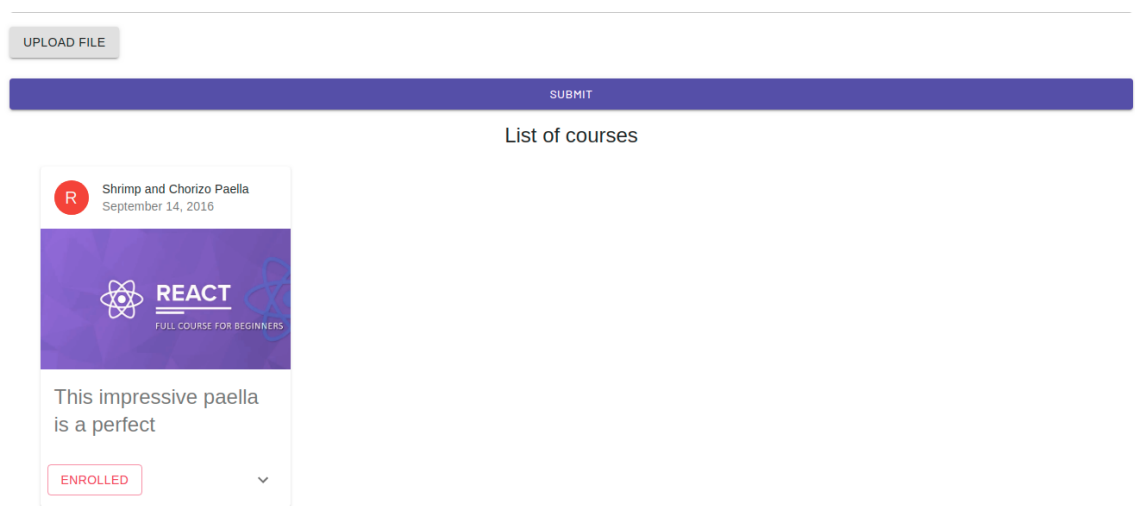


Figure 5.4: UI: View Course

5.5 Create New Course

User can create a new course from here. Course name, course description, and course material is mandatory to create a new course. After completing all field, user will press SUBMIT button to save the course.

Online Academy Home REGISTRATION LOGIN

ENROLLED COURSES CREATE COURSE YOUR COURSES

Create your own course

Course Name *

Course Description *

UPLOAD FILE

SUBMIT

Figure 5.5: UI: Create New Course

5.6 Enroll Course

Students can see all the available courses in the system, which are added by Instructors. If student want to enroll himself in a course, he will tap on the ENROLL button shown in the course card.

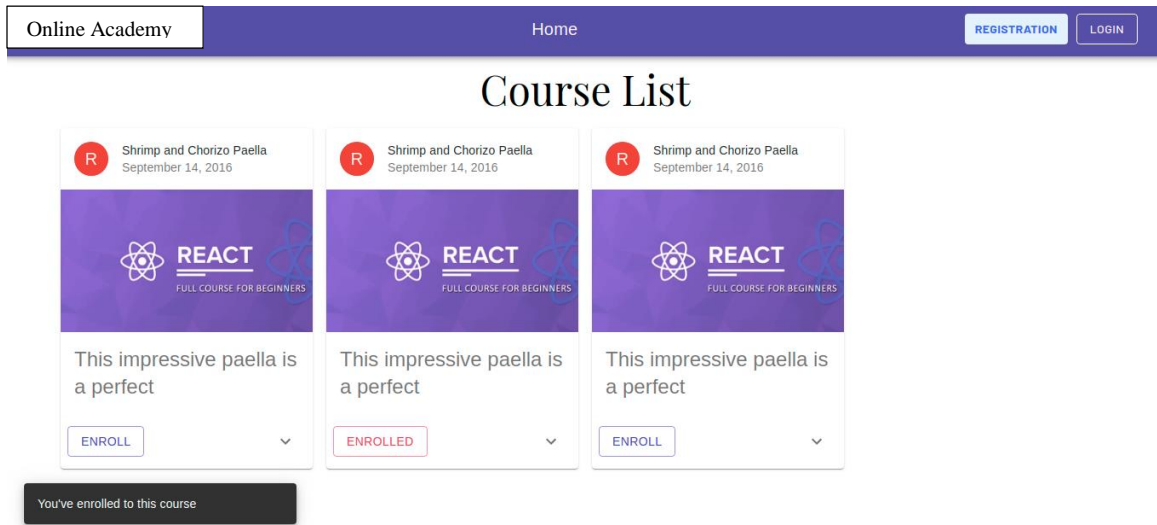


Figure 5.6: UI: Enroll Course

CHAPTER 6: CONCLUSION

6.1 Project Summary

“Online Academy” is a web-based e-learning platform. When a student enters into this system through URL, he will be able to see the list of all available online courses. Then the student can choose a suitable/desired course for him and can enroll. To enroll in a course, the student must be logged in with his username & password. After that, he/she can view the course materials of that course. On the other hand, the instructor, after log in, can add a course with a course name, description & course material as an attachment. Here he can also view his every course, enrolled students & delete any course at any time. After deleting a course, the instructor will be notified that one course is deleted. Students will also get notification about enroll, Un-enroll, test result courses.

I have completed this project from planning to development within a tight period and completed the system ready to use. This system should be updated regularly as the project progress.

6.2 Limitations

As I am at the entrance level of development, I cannot fulfill my system with all useable features. In my project, there are some limitations. That is:

*There are many features still available to add to this system, which will make the system a full package e-learning platform.

*Online course fee payment, bill management, monthly billing is not available yet in my system.

*It is only now a web-based system application, no mobile application or desktop application is not developed yet.

6.3 Obstacles and Achievements

The way I passed through to develop this system was full of challenges, too many obstacles I overcome to come to end. Perhaps, challenges allow us to prove ourselves. Obstacles, challenges, and overcoming challenges & obstacles achievements draw a path to success. When I started this project, I have also faced many challenges & obstacles. In my project, I am using React-JS, Node-JS that is a very new language to me. When I started this, I got some problems coping with the new languages. I got some problems with basic CRUD operations. I got some problems in connecting databases and the local server. After 4 months of hard work, I overcome all of these problems and now my system successfully developed. All of my system's components work perfectly. If the user feels easy to use this system, this will be the biggest achievement for me.

6.4 Future Scope

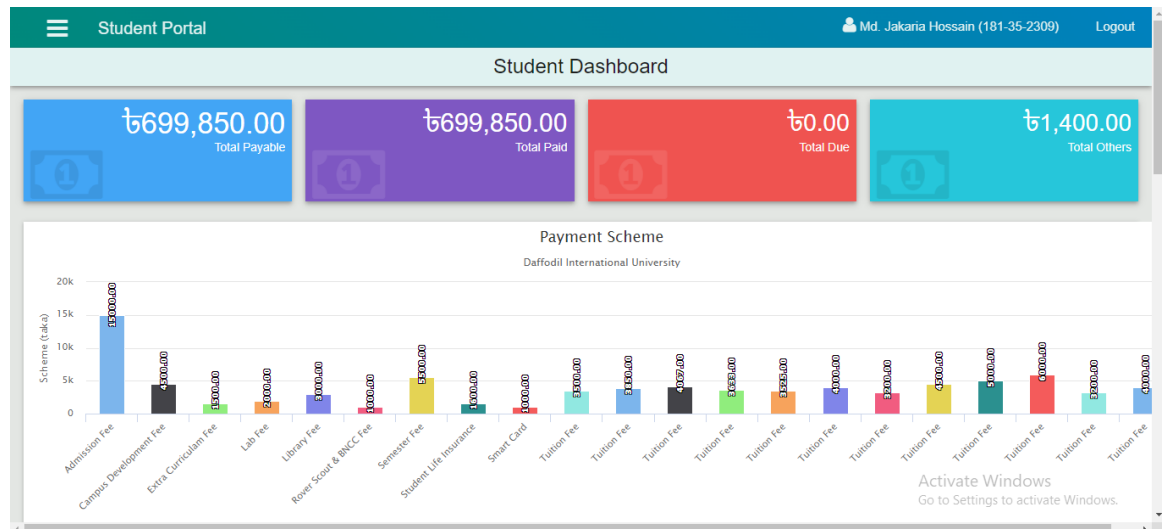
Concisely, it can be summarized that the future scope of the project circles around maintaining information regarding:

- A mobile application can be developed with more advanced features for this system.
- A desktop application can be developed for this system.
- The system can be host on an online server to make it accessible worldwide.
- Create a more powerful database structure to reduce the overload of the database queries.
- Integrate multiple load balancers to distribute the load of the system.
- Integrate the backup mechanism to keep the backup of the database regularly, which will reduce risk.

CHAPTER 6: REFERENCE

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<http://repository.president.ac.id/bitstream/handle/123456789/3693/Thesis%20Final%20Draft%20-%20Aldika%20Bima%20Pratama%20%28docx%29.pdf?isAllowed=y&sequence=1> < 1% match (student papers from 22-Jan-2022) Submitted to University of Gloucestershire on 2022-01-22 < 1% match (student papers from 05-Sep-2017) Submitted to Atlantic City High School on 2017-09-05 < 1% match (Internet from 27-Dec-2021)

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results", Annals of Nuclear Energy, 2020 < 1% match (Internet from 02-Aug-2020)
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Project Report On "Online Academy" Submitted By Md.Jakaria Hossain 181-35-2309
Under the support & guidance of Afsana Begum Assistant Professor Department of
Software Engineering Batch: 25 Department of Software Engineering Daffodil
International University 42/1, Sukrabad, Dhanmondi 32, Dhaka 1207. i © Daffodil
International University APPROVAL OF PROJECT This project titled "Online
Academy", submitted by Md.Jakaria Hossain, ID: 181-35-2309 to the Department of
Software Engineering, Daffodil International University has been accepted as satisfactory
for the partial fulfillment of the requirements for the degree of B.Sc.in Software
Engineering and approved as to its style and contents. DECLARATION I hereby declare
that I have done this project under the supervisor of Afsana Begum, Assistant Professor,
Department of Software Engineering and Daffodil International University. I also declare
that this project or any part of this is unique and has not been submitted elsewhere for the
award of any degree. Md.Jakaria Hossain 181-35-2309 Department of Software
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University Certified by: Afsana Begum Assistant Professor Department of Software
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University ACKNOWLEDGEMENT At first, I am blessed that I successfully moved
towards the last semester. I am pleased with my almighty. First, at beginning of
university life, I have learned a lot about software development as well as computer
science-related knowledge from my university's knowledgeable teachers and helpful
course mates. Teachers teach us ethics, morality, and politeness as well as software

knowledge and related knowledge. I must be thankful to my parents and my family to give me the opportunity and always be to myself. My family always supports me. I am highly indebted to Afsana Begum for his guidance and constant supervision as well as for providing necessary information regarding the project & for his support in completing the project. My supervisor supports me to make this project (“Online Academy”) a successful end. My thanks and appreciations go to my course mates in developing the project and people who have willingly helped me out with their abilities. ABSTRACT “Online Academy” is a web-based online learning platform to help students to ensure a measurable online learning platform through open learning with huge educational resources. This platform boosts learning facilities and brings a change in the remote learning system. This tool allows registered users to create a new educational course & alongside to choose and attend a course added by another user. Every development of the software industry follows some rules and methods; I also followed some methods to develop this project. I finished all way of development by following the Agile Methodology. I think & choose this methodology as the most suitable software development model to develop my “Online Academy”. I choose it because my whole project needs to implement partially then test it and Agile Methodology helped me to reduce the project risk. LIST OF FIGURES Figure Page No. Figure 1.1: Proposed System Model 5 Figure 3.1: Agile Model 15 Figure 3.2: Use Case Diagram 16 Figure 3.3: Activity Diagram: Log In 28 Figure 3.4: Activity Diagram: Sign 1/24/22, 2:22 PM Turnitin https://www.turnitin.com/newreport_printview.asp?eq=1&eb=1&esm=10&oid=1746978384&sid=0&n=0&m=2&svr=48&r=58.57286395126895&lang=e... 4/12 Up 29 Figure

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INTRODUCTION 1.1 Project Overview The "Online Academy" is developed to overcome the problems prevailing in the old manual learning system. This software is to eliminate and in some cases reduce the hardships faced by another existing system. Moreover, this system is designed for the particular need of online learners smoothly and effectively. The system suggests as much as possible avoid errors while entering user credentials. It also provides an error message while the user enters invalid data. No technical knowledge is needed for the user to use this system. This way I can call this system a user-friendly creation. Every online learning platform, big or small, faces challenges to overcome and managing the information of User, Course Materials, and Quick Test. Every E-learning Management System has different needs, therefore; I design a user-friendly & easy to use the system. Besides, for those busy learner who is always on the go, my system comes with remote access features, which will allow him to manage his way of learning anytime, at all times. These systems will ultimately allow you to

better service resources. 1 © Daffodil International University 1.2 Project Purpose The purpose of “Online Academy” is to digitalize the existing old system with the help of information technology and full-fledged computer software, covering their requirements so that users can get a user-friendly and easy-to-use learning platform. The required environment to use this system are available for every user. “Online Academy”, as mentioned above, is error-free, secure, reliable, and user-friendly. It helps the user to concentrate on their online learning with a fresh UI. It helps users in better utilization of educational resources. Functionalities provided by “Online Academy”:

- ? An online open learning platform
- ? Fresh User Interface with better user experience
- ? Everyone in this platform is both instructor & student
- ? Anyone can share resources & anyone can learn from here
- ? After learning, the student can attend the exam on that topic

1.2.1

Background Based on some E-learning systems I want to create a user-friendly environment, which will help the user at their satisfactory level. Here the user can be enrolled in their desired course and access course material provided by the course instructor for easy learning. I tried to create a full system, which will be reliable, secure, and above all

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1.2.2 Benefits & Beneficiaries This system would be helpful for online learners who are searching for an easy-to-use system. I am mentioning some features below:

- ? This system helps online learners to learn remotely
- ? This system keeps records of all user data, course data
- ? Easy access from anywhere for authorized-user
- ? Find out any desired course easily with a search
- ? Users can get a smart User Interface.
- ? Less the manpower

and office management cost. 1.3 Stakeholders A person who is actively involved in this system and is not a developer. According to project management, project stakeholders “a person, group or organization will be influenced or affected by in a decision, activity or outcome of the project.” I have an Instructor and User as the stakeholder of this system. Below discuss of stakeholders: 1.3.1 Instructor The instructor controls the whole system. The instructor can add a new course with course material; the Instructor can view the course details. He also approves the user's post in this system. The instructor also can update all the course information; he can edit or delete any course. He can overview the system's progress. 1.3.2 Student Registered students can enter the system and access the course resources. He can attend the course end short exam after the end of the course. Students can comment in the course discussion area. Students cannot get the same accessibility as instructors. 1.4 Proposed System Model I designed this model to meet the desired structure and behavior of my system. I build this model to visualize and control the system’s architecture. Instructor ? Add / Delete Course ? View user ? Set questions ? Get results Student ? View Course ? Enroll I course ? Access course material ? Give exam Online Academy Figure 1.1: Proposed System Model 1.5 Modules of Online Academy • Course Module: Used for managing the Course-related functions. • Test Module: Used for managing the course end short test. • User Module: Used for managing the information and details of the user. • Login Module: Used for user authentication • Registration Module: Used for managing the users of the system 1.5.1 Focused Modules Registration:- In this, first, the interested user is registered by inserting their name. Email and password. Each person will register only one time. Details of every user's username and password are saved in the database. Login:- After providing the correct username and

password, the user log's into the “Online Academy” homepage. There the user can select the available courses to enroll. If the user enters a wrong username or password then he cannot enter into the system. Course:- After providing the correct username and password, the user log's into the Online Academy’s homepage. Here at the homepage, there are many choices for the user to enroll in different courses. Test: - The user attends the quiz on the finished course and immediately takes the result. On each question user, get the marks. There is no negative marking on the quiz. 1.6 Project Schedule

Considering a short time, I need to ready a scheduling plan to finish the project on time. It also refers to make communication with what task needs to be done within a short time.

1.6.1 Gantt Chart Gantt chart is a production time control tool. It remained me to complete my assigned tasks within a certain period. For developing software, it is mostly used. I have designed a Gantt chart for my project: Activities Planning Requirements QA-1 System Design Implementation-1 QA-2 Implementation-2 Testing W W W W W W W W W W 1 2 3 4 5 6 7 8 9 1 1 1 0 1 2 Ideas Problem Identification Proposal Planning Requirement Specification Requirement Analysis Quality assurance Sketching Design specification Database design Write Review Test cases Impose case & demerits Unit testing W 1 3 W 1 4 W 1 5 W 1 6 Black box testing Delivery Scheduled Time

Buffered Time Software release Table 1.1: Gantt chart 1.6.2 Release Plan or Milestone

The release plan or milestones are given below: Activities Duration in week Total week Brainstorming W 1 1 Problem identification W1, W2 2 Requirement specification W2 1 Requirement analysis W2, W3, W 4 3 Sketching W4, W5 2 Design specification W5 2 Database design W4, W 6 2 Write Review W4, W5, W6, W7, W8 5 Quality assurance W3 1 Test case W3, W6, W7, W 8, W 9 5 Impose case & demerits W9, W 10, W11,

W12, W14 5 Unit testing W3, W6, W7, W8, W 9 5 Black-box testing W13, W 14, W 15

3 Software release W 16 1 Table 1.2: Release Plan 1.7 Objectives The main objective

behind the project is to provide a user-friendly environment to provide an online course

from the system. The main features that the system can be used as a remote learning

platform. Users can find available tutorials related to h/her studies. They can attend

online tests and discuss a topic by posting comments in the comment area. Along with

this, they can also `create an online course for another user in this system. CHAPTER 2:

REQUIREMENT ENGINEERING 2.1 Functional Requirements (FR): Functional

requirements referred to a mandatory function, which is mandatory to the system. It

describes the functions a software must perform. Functional software requirements

capture the intended behavior of the system. This behavior can be written as functions,

services, tasks, or which system is required to perform. Now, I am showing to mention

functional requirements associating with this project: 2.1.1 Registration FR 1 Registration

Description Student should be needed registration for login to access the system.

Stakeholders Student 2.1.2 Login/Logout: FR 2 Login/Logout Description Login and

logout should be another criterion for using this application. Stakeholders Student,

Instructor 2.1.3 Create New Course: FR 3 Create new 1/24/22, 2:22 PM Turnitin

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384&sid=0&n=0&m=2&svr=48&r=58.57286395126895&lang=e... 8/12 course

Description Instructor can create a new course with a course title and description for the

students. Stakeholders Instructor 2.1.4 Add Question for Test: FR 4 Add Question for

Test Description Instructor will add some questions for a course. When a student finishes

the course, he can attend the course end test. Stakeholders Instructor 2.1.5 View Course:

FR 5 View Course Description When a course is created, any user of this system can view that course in the list of the course area. Stakeholders Instructor, Student 2.1.6 Enroll/Unenroll Course: FR 6 Enroll/Un-enroll Course Description A student can enroll or un-enroll any course at any time. Stakeholders Student 2.1.7 Attend Test: FR 7 Attend Test Description Instructor will add some questions for a course. The course, he can attend the course end test. Stakeholders Student 2.1.8 View Test Result: FR 8 View Test Result Description Instructor and student both will be able to view the test result after the completion of the test process. Stakeholders Student, Instructor 2.2 Non-Functional Requirement (NFR): 2.2.1 Performance NFR 1 The system will provide all services without any fault. Description When admin search to perform a particular job and then this outcome appears must be faster. Stakeholders Admin 2.2.2 Capacity NFR 2 System will able to record up to 10000 profiles. Description The information of Online Academy System will be stored in the database. Stakeholders Admin 2.2.3 Reliability NFR 3 The system should accurately perform the various activities of it. Description The application should be reliable to perform the tasks, when Admin performs some important action it should be acknowledged with a confirmation. The System must be updated regularly Stakeholders Admin 2.2.4 Security NFR 4 The database should be secured and utilize certain cryptography technique Description All the data should be secured and be encrypted with minimum needs so that it's protected from the outside environment also from internal attacks. Stakeholders Admin 2.2.5 Maintainability NFR 5 Admin will be able to reset all options and all stored profile to default Settings. Description In these, admin can easily maintain all the profile in a specific area and can update all of the information in a certain activity like edit and delete. Stakeholders Admin 2.2.6

Availability NFR 6 The System must be available 24x7 Description The application should be available to the admin 24 hours a day. Stakeholders Admin CHAPTER 3: SYSTEM ANALYSIS, DESIGN & SPECIFICATION 3.1 Development Methodology As a long-term development, I am also new in development so I choose the Agile Model to complete my project. Agile method anticipates change and allows for more flexibility for development than any other traditional model. I can easily change a small part of my system without huge amendments to my tight schedule. Testing in every step was very important to me for ensuring that my system is working perfectly, Agile Model gives me this opportunity to test every unit while the system is in developing condition. Agile model offers me to create a system, which can be changed easily, minimize the risk by frequent testing, higher quality product, and finish able in a short time. Figure 3.1: Agile Model 3.2 Use Case Diagram Figure 3.2: Use Case Diagram Use Case Description 3.2.1 Log In Users (Instructor & Student) should log in to the system with their username and password to access all features of the Online Academy system. If the user is not registered before, the user has to Sign Up first. Use case ID 01 Use Case Name Log In Goal To allow the user to enter the system. Preconditions User must be Registered with email and password. Primary Actor Secondary Actor Student, Instructor Trigger Button Description / Step Action Scenario Main Success 1 To enter into the system 2 To access all features available for a user Post Condition Users can Log Out anytime. Alternative Flow Sign Up 3.2.2 Sign Up If anyone wants to log in to the system to access all features of Online Academy system. They must log in first, if they are new to this system; they have to create their user profile by signing up. Use case ID 02 Use Case Name Sign Up Goal To create a new user profile in the system. Preconditions The user must have an

email address. Primary Actor Secondary Actor Student, Instructor Trigger Button Step

Action Description / Main Success 1 Log into the system Scenario 2 To access all features available for a user 3 To create a new user profile Post Condition Users can Log In. Alternative Flow Log In 3.2.3 Create New Course Registered users can create new courses by attaching some files or links. He has to write a course name & a short description of the course. He can link up any videos related to his course. Use case ID 03

Use Case Name Create New Course Goal To create a new online course in the system. Preconditions The user must be logged in with an email and password. Primary Actor Secondary Actor Instructor Trigger Form Description / Step Action Scenario Main Success 1 Add course name & description 2 Add attachments files & links Post Condition Add course material, Add a question for test Alternative Flow N/A 3.2.4 Add Course Material While a user creates a new course, he has to add some study materials, which will be helpful for remote studies. Materials can be images, docs, PDF, or video links. Use case ID 04 Use Case Name Add Course Materials Goal To provide remote study helping materials. Preconditions User must create a course to add materials Primary Actor Secondary Actor Instructor Trigger Form Description / Step Action Scenario Main Success 1 Add files as attachments 2 Add video link of discussion Post Condition The course is ready to publish Alternative Flow N/A 3.2.5 Add Question for Test For a successful course completion, 1/24/22, 2:22 PM Turnitin

https://www.turnitin.com/newreport_printview.asp?eq=1&eb=1&esm=10&oid=1746978384&sid=0&n=0&m=2&svr=48&r=58.57286395126895&lang=e... 9/12 a course end test is important for an online learning platform. In Online Academy, there is an option for a course end test. Therefore, the course creator has to set up a few questions to

conduct a course-end short test. Use case ID 05 Use Case Name Add Question for Test Goal To set the questions for a short test Preconditions The instructor must have to create a course first Primary Actor Secondary Actor Instructor Trigger Form Description / Step Action Scenario Main Success 1 Insert Question and answer 2 Assign marks for each question Post Condition Attend Test, Get Test Result Alternative Flow N/A 3.2.6 Attend Test A student while successfully ends a course, he has to test himself and have to get a satisfactory mark. After finishing learning a course, the student can attend a short test to measure his level of learning. Use case ID 06 Use Case Name Attend Test Goal To measure a student's level of learning Preconditions The student must enroll & finish a course Primary Actor Secondary Actor Student Trigger Button Step Action Description / Main Success 1 Enroll a course and finish the course Scenario 2 Attend course end test 3 Answer Questions and submit them in time Post Condition View Test Result Alternative Flow Log Out 3.2.7 View Test Result After finishing the test, the user can see the test result instantly. The result will be stored also in the user profile. Use case ID 07 Use Case Name View Test Result Goal To project the test result instantly. Preconditions The student must attend the test and submit answers successfully Primary Actor Secondary Actor Student, Instructor Trigger Button Description / Step Action Scenario Main Success 1 Finish the exam 2 Submit answers successfully Post Condition Enroll Course, Attend Test Alternative Flow Log Out 3.2.8 View Course When someone enters into the system, the system will show all the courses available in the Online Academy. If anyone wants to enroll in the course, he should log in first. Use case ID 08 Use Case Name View Course Goal To show all the course available in the system Preconditions N/A Primary Actor Secondary Actor Student, Instructor Trigger Home Description / Step Action

Scenario Main Success 1 Enter into the system with web address 2 A list of all courses will appear Post Condition User can Log In to access the course Alternative Flow N/A

3.2.9 Enroll Course The student should log in to the system with their username and password to get themselves enrolled in the Online Academy system. Then students can access all course materials uploaded by the Course Instructor. Students can attend the test after finishing learning. Use case ID 09 Use Case Name Enroll Course Goal To allow the student to access course materials and attend the test Preconditions The student must be Logged in with an email and password. Primary Actor Secondary Actor Student Trigger Button Description / Step Action Scenario Main Success 1 To access the course material 2 To attend test Post Condition Log In Alternative Flow Un Enroll Course 3.2.10 Un-Enroll Course The student should log in to the system with their username and password to get themselves enrolled in the Online Academy system. Then students can access all course materials uploaded by the Course Instructor. Students can attend the test after finishing learning. Use case ID 10 Use Case Name Un-Enroll Course Goal To un-enroll from any course Preconditions The student must enroll in this course. Primary Actor Secondary Actor Student Trigger Button Description / Main Success Scenario Step Action 1 To un-enroll from any course 2 Successfully Un-enrolled Post Condition Log In, Enroll Course Alternative Flow N/A 3.2.11 Log Out User (Instructor & Student) should log out from the system to terminate his sessions of the Online Academy system. Closing the browser window also log out the user instantly. Use case ID 11 Use Case Name Log Out Goal To terminate the session from the system. Preconditions User must be Logged In with username and password Primary Actor Secondary Actor Student, Instructor Trigger Button Description / Step Action Scenario Main Success 1 To escape

from the system 2 To finish user session Post Condition Users can Log In anytime.

Alternative Flow Closing window 3.3 Activity Diagram I have prepared some activity diagrams according to my Online Academy's use case. These activity diagrams are properly referring to the flow of the individual conditions of my learning system:

3.3.1 Log In Figure 3.3: Activity Diagram: Log In 3.3.2 Sign Up Figure 3.4: Activity Diagram: Sign Up 3.3.3 Create New Course Figure 3.5: Activity Diagram: Create New Course 3.3.4 Add Course Material Figure 3.6: Activity Diagram: Add Course Material 3.3.5 Add Question for Test Figure 3.7: Activity Diagram: Add Questions for Test 3.3.6 Attend Test Figure 3.8: Activity Diagram: Attend Test 3.3.7 View Test Result Figure 3.9: Activity Diagram: View Test Result 3.3.8 View Course Figure 3.10: Activity Diagram: View Course 3.3.9 Enroll Course Figure 3.11: Activity Diagram: Enroll Course 3.3.10 Un-Enroll Course Figure 3.12: Activity Diagram: Un-enroll Course 3.3.11 Log Out Figure 3.13: Activity Diagram: Log Out 3.4 Sequence Diagram 3.4.1 Sign Up, Log In Figure 4.1: Sequence Diagram: Sign Up, Log In 3.4.2 Create New Course, View Course, Add Question for Test Figure 4.2: Sequence Diagram: Create New Course, View Course, Add Question for Test 3.4.3 Enroll Course, Unenroll Course Figure 4.3: Sequence Diagram: Enroll Course, Un-enroll Course 3.5 Entity Relationship Diagram Figure 5.1: Entity Relationship Diagram

CHAPTER 4: SYSTEM TESTING 4.1 Feature Testing

Feature testing is considered to add or modify the new functionality to the existing system. Every feature and functionality has different characteristics. Those are designed to make the web application more useful, reliable, and effective, and secure. 4. 1/24/22,

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384&sid=0&n=0&m=2&svr=48&r=58.57286395126895&lang=... 10/12 1.1 Features to be tested

Features	Priority	Description
Log In	1	The user must be authenticated by the login.
Log Out	2	The session must be destroyed after logout.
Registration	1	User information must be saved properly.
Create New Course	1	The newly added course must be saved properly.
View Course	1	Course details must be showed.
Enroll Course	2	The course will be enrolled in the user profile.
Delete Course	3	Course information must be deleted properly.

Here, 1=High Priority, 2=Medium Priority, 3=Low Priority

Table 4 .1: Features Priority

Table 4.2 Testing Strategies

4.2.1 Test Approach I have used two different types of testing to ensure the quality of my system. I focused on functional testing and structural testing mainly.

- *Black Box Testing (also called functional testing) is testing that ignores the internal mechanism of a system or component and focuses solely on the outputs generated in response to selected inputs and execution conditions.
- *White-box testing (also called structural testing and glass box testing) is testing that takes into account the internal mechanism of a system or component.

4.2.2 Pass/Fail Criteria I set some pass or fail criteria for unit testing. I prepare the pass / fail criteria based on which input data are worked and which are not working. Data that are worked well is considered as pass criteria. In addition, the rest of the input data is considered a failure criterion. There are some pass / fail criteria below:

- ? System crash is considered a fail case.
- ? If any criteria pass 100% of testing, then it is considered as pass criteria only.
- ? Which data can't be displayed to the system properly, then it is also to be considered as fail criteria.

4.2.3 Testing Schedule

Test Phase	Time
Unit testing	1 Week
Component test	During development time
Integration testing	1 Week
Testing user interfaces	1 Week
Load testing	1 Week
Performance testing	1 Week

1 Week Accessibility testing 1 Week Table 4.2: Testing Schedule 4.2.4 Traceability Matrix Project Manager Business Analyst Lead QA Lead Target Implementation Date

BR#	Functionality/ Activity	Requirement Description	Test Case Reference	Comments
BR1	Functional Log In	Test Case 4.4.1	BR2 Functional Log Out	Test Case 4.4.2
BR3	Functional Sign Up	Test Case 4.4.3	BR4 Functional Create New Course	Test Case 4.4.4
BR5	Functional View Course	Test Case 4.4.5	BR6 Functional Enroll Course	Test Case 4.4.6
BR7	Functional Delete Course	Test Case 4.4.7		

Table 4.3: Traceability Matrix 4.3

Testing Environment Testing environment means to prepare the environment with hardware and software so that tester can be able to execute test cases as required. Besides hardware and software usage, network configuration is also needed to execute test plans. For the testing environment, I used some key areas. Given below: ? Test data ? Webservice ? Database server ? Front-end running environment ? Back end running environment ? Network ? Browser ? System and application

4.4 Test Cases

Test case means some rules and regulations or conditions by which it can be determined whether a system can be able to perform better under test cases properly. We know, every system has a chance to have some fault or break holes. This is a very common scenario in the software development process. Moreover, those issues are solved usually by software testing approaches. Nevertheless, if we do not pay heed to those issues, then the full system development might be failed. So proper testing is necessary for the development process. For testing my application, I have prepared some test cases. Now, I am going to discuss my test cases:

4.4.1 Log In Test case #1 Test case name: Log In System: Online Academy Subsystem: N/A Designed By: Md.Jakaria Hossain Designed Date: 10-Nov-2021 Executed by: Executed Date: Short description: System will check the

authentication and authorization. Pre-conditions: ? Users will be redirected to the login page whether they have not authenticated by my system while entering into the Courses.

Serial	Username	Password	Expected result	Pass/Fail	Comment
1	jakaria	123456	These credentials do not Match our records.	Pass	
2	12345		The username field is required	Pass	
3			The username and password field is required	Pass	
4	jakariahossain	12345	User successfully login to the application and redirected to the profile	Pass	

Post-conditions: User will successfully login to the application

4.4.2 Log Out Test case #2

Test case name: Log Out System: Online Academy Subsystem: N/A Designed By: Md.Jakaria Hossain Designed Date : 10-Nov-2021 Executed by: Executed Date: Short description: System will terminate the user session Pre-conditions: ? Users must be logged in before these steps.

Serial	Action	Response	Pass/Fail	Comment
1	Hit Log Out Button	Session ended	Pass	
2	Close Browser tab	Session ended	Pass	

Post-conditions: The user can log in again with username & password.

4.4.3 Sign Up Test case #3

Test case name: Sign Up System: Online Academy Subsystem: N/A Designed By: Md.Jakaria Designed Date: 10-Nov-2021 Hossain Executed by: Executed Date: Short description: System will save new user information. Pre-conditions: ? User must have a Valid Name, Email & Password.

Serial	Name	Email	Password	Expected result	Pass /Fail	Comment
1	Jakaria	jakaria	123456	Invalid email	Pass	
2	12345			The Name, the email field is required	Pass	
3	253998			The Name is Invalid.	Pass	
4	Jakaria	jakariahossain@ gmail.com	123456	User successfully signed up to the application and redirected to the login page	Pass	

Post-conditions: User can now login to the application

4.4.4 Create New Course Test case #4

Test case name: Create New Course System: Online Academy Subsystem: N/A Designed By: Md. Jakaria Designed Date: 10-Nov-2021 Hossain Executed by: Executed 1/24/22,

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384&sid=0&n=0&m=2&svr=48&r=58.57286395126895&lang=... 11/12 Date: Short

description: System will save new course information. Pre-conditions: ? The instructor

must have to enter the Course Name, Description & Attachments. Serial Course Name

Description Attachments Expected result Pass /Fail Comment 1 SWE113 Testing Not

Added Invalid file type Pass 2 The Course Name, Description & Attachment field is

required Pass 3 \$@&* Design Added Course Name is Invalid. Pass 4 SWE333 Lorem

Ipsum Added New course added successfully. Pass Post-conditions: Student can now

enroll to the course 4.4.5 View Course Test case #5 Test case name: View Course

System: Online Academy Subsystem: N/A Designed By: Md. Jakaria Hossain Designed

Date: 10-Nov-2021 Executed by: Executed Date: Short description: System will view the

details of the course Preconditions: ? Users must be logged in before these steps. Serial

Action Response Pass/Fail Comment 1 Click on the Course card Course append Pass

Post-conditions: Student can now enroll in the course 4.4.6 Enroll Course Test case #6

Test case name: Enroll Course System: Online Academy Subsystem: N/A Designed By:

Md. Jakaria Hossain Designed Date: 10- Nov-2021 Executed by: Executed Date: Short

description: System will enroll this student in the course Pre-conditions: ? Users must be

logged in before these steps. ? Users must open a course before these steps. Serial Action

Response Pass/Fail Comment 1 Click on the Enroll Course Enrolled button Pass Post-

conditions: Student can now access course material & attend the test 4.4.7 Delete Course

Test case #7 Test case name: Delete Course System: Online Academy Subsystem: N/A

Designed By: Md. Jakaria Hossain Designed Date:10-Nov2021 Executed by: Executed

Date: Short description: The system will delete the course Preconditions: ? The instructor must be logged in before these steps. ? The instructor must open a course before these steps. Serial Action Response Pass/Fail Comment 1 Click on the Delete Course Deleted button Pass Post-conditions: N/A

CHAPTER 5: USER MANUAL

5.1 Sign Up New user can sign up in this system using their name, email address and password. After a successful sign up, user can log in to the system with his username and password. Then he can access all the features of the Online Academy system. Figure 5.1: UI: Sign Up

5.2 Log In If the user is already a registered user, he can log in to the system with his username and password. Then he can access all the features of the Learning Tree system. Figure 5.2: UI: Log In

5.3 Home Page In Home Page, students can see all the available courses in the system, which are added by Instructors. If student want to enroll himself in a course, he will tap on the ENROLL button shown in the course card. Online Academy Figure 5.3: UI: Home Page

5.4 View Course Here students can see all the enrolled courses of his own in the system, which are added by Instructors. If student want to Un-enroll himself from a course, he will tap on the ENROLLED button shown in the course card and choose Un-enroll from drop down list. He can also see the full details of the course by tapping down arrow (v) pointer. Figure 5.4: UI: View Course

5.5 Create New Course User can create a new course from here. Course name, course description, and course material is mandatory to create a new course. After completing all field, user will press SUBMIT button to save the course. Online Academy Figure 5.5: UI: Create New Course

5.6 Enroll Course Students can see all the available courses in the system, which are added by Instructors. If student want to enroll himself in a course, he will tap on the ENROLL button shown in the course card. Online Academy Figure 5.6: UI: Enroll

Course CHAPTER 6: CONCLUSION 6.1 Project Summary “Online Academy” is a web-based e-learning platform. When a student enters into this system through URL, he will be able to see the list of all available online courses. Then the student can choose a suitable/desired course for him and can enroll. To enroll in a course, the student must be logged in with his username & password. After that, he/she can view the course materials of that course. On the other hand, the instructor, after log in, can add a course with a course name, description & course material as an attachment. Here he can also view his every course, enrolled students & delete any course at any time. After deleting a course, the instructor will be notified that one course is deleted. Students will also get notification about enroll, Un-enroll, test result courses. I have completed this project from planning to development within a tight period and completed the system ready to use. This system should be updated regularly as the project progress.

6.2 Limitations As I am at the entrance level of development, I cannot fulfill my system with all useable features. In my project, there are some limitations. That is: *There are many features still available to add to this system, which will make the system a full package e-learning platform. *Online course fee payment, bill management, monthly billing is not available yet in my system. *It is only now a web-based system application, no mobile application or desktop application is not developed yet.

6.3 Obstacles and Achievements The way I passed through to develop this system was full of challenges, too many obstacles I overcome to come to end. Perhaps, challenges allow us to prove ourselves. Obstacles, challenges, and overcoming challenges & obstacles achievements draw a path to success. When I started this project, I have also faced many challenges & obstacles. In my project, I am using React-JS, Node-JS that is a very new language to me. When I started this, I got some

problems coping with the new languages. I got some problems with basic CRUD operations. I got some problems in connecting databases and the local server. After 4 months of hard work, I overcome all of 1/24/22, 2:22 PM Turnitin https://www.turnitin.com/newreport_printview.asp?eq=1&eb=1&esm=10&oid=1746978384&sid=0&n=0&m=2&svr=48&r=58.57286395126895&lang=... 12/12 these problems and now my system successfully developed. All of my system's components work perfectly. If the user feels easy to use this system, this will be the biggest achievement for me.

6.4 Future Scope

Concisely, it can be summarized that the future scope of the project circles around maintaining information regarding:

- ? A mobile application can be developed with more advanced features for this system.
- ? A desktop application can be developed for this system.
- ? The system can be host on an online server to make it accessible worldwide.
- ? Create a more powerful database structure to reduce the overload of the database queries.
- ? Integrate multiple load balancers to distribute the load of the system.
- ? Integrate the backup mechanism to keep the backup of the database regularly, which will reduce risk.

CHAPTER 6: REFERENCE

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