

EveCode: A Code Learning and File Management Web Application with in-build Compiler

by

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A project report submitted in partial fulfillment of the requirements for the degree of
Bachelor of Science in Computer Science and Engineering

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Date: 20 October 2022

DECLARATION

This project report is submitted to the Computer Science and Engineering, University of Liberal Arts Bangladesh in partial fulfillment of the requirements for the degree of Bachelor of Science. So, I hereby declare that this internship/project report is based on my surveys. Materials of work found by other researchers are mentioned by reference. This internship/project report, neither in whole nor in part, has been previously submitted for any degree.

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CERTIFICATE OF APPROVAL

The project/internship report entitled “EveCode: A Coding Skill Development and Learning Web Application with In build Compiler” is submitted to the **Computer Science and Engineering**, University of Liberal Arts Bangladesh, Dhaka, in partial fulfillment of the requirements for the degree of Bachelor of Science.

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ACKNOWLEDGEMENT

My deepest gratitude to Almighty Allah for giving me the strength, direction, and patience to complete my CSE 499 courses. It was a very eventful four years that I spent at ULAB. I learned many things at ULAB, and I look forward to applying the teachings of ULAB in my future career.

I want to thank my departmental supervisor Dr. Farhana Sarker, Assistant Professor Department of CSE, University of Liberal Arts Bangladesh. Her guideline, inspiration, and support helped me throughout my internship period, and I could finish my project successfully.

A special thanks to Dr. Nafees Monsoor and Dr. Golam Kibriya, sir, for encouraging me through the CSE 499 Project and teaching me valuable life lessons.

Finally, my heartiest thanks to my friends and family for their unconditional support, inspiration, and love that motivated me to complete my task. This report is dedicated to them.

ABSTRACT

In today's rapidly developing world, coding skills are becoming increasingly important. Learning to code can help a student become more marketable in the job market and better equipped to take on the challenges of the 21st century. However, learning to code can be daunting, especially starting from scratch. Students have to visit one website to learn about one, then go to another to implement the code then to another to publish. Evecode eliminates such inconveniences and provides a one in all platform for coding.

Evecode is an online coding skill development and learning system. It helps people to improve their coding skills by providing a structured learning environment and a community of coders to interact with. Evecode offers a variety of courses to suit different levels of coding ability, from beginners to experts. The courses are designed to help people learn coding skills that are fun and interactive. With Evecode, students can learn to code in various languages, including Python, PHP, C, C++, and Javascript. The platform also offers various resources to help students further their coding skills, such as a library of coding challenges and a blog with tips and tutorials.

Evecode also has a community of tutors who can help people with their coding journey. The community is great for asking questions, getting help with coding problems, and meeting other coders. Evecode is a great way to improve your coding skills and meet other coders.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Evecode is an online coding skill development and learning system. It helps people to improve their coding skills by providing a structured learning environment and a community of coders to interact with. Evecode offers a variety of courses to suit different levels of coding ability, from beginners to experts. The courses are designed to help people learn coding skills that are fun and interactive. Evecode also has a community of tutors who can help people with their coding journey. The community is great for asking questions, getting help with coding problems, and meeting other coders. Evecode is a great way to improve your coding skills and meet other coders. With Evecode, students can learn to code in various languages, including Python, PHP, C, C++, and Javascript. The platform also offers various resources to help students further their coding skills, such as a library of coding challenges and a blog with tips and tutorials

1.2 Motivation

I have been teaching people how to code for over five years. During this time, I have seen many changes in how software is developed and people learn to code. I have also seen many people struggle to keep up with the pace of change. People must learn the basics from one website and then use other software to execute the code. There is no step by step system that will teach people how to code. Besides that, using multiple websites often lead to the mismanagement of coding files. This motivated me to develop a system where people learn to code in a flexible and customizable way. I wanted to create a system where people can design their lessons, and students can join the lessons that are most relevant to them. With this motivation, I planned to develop Evecode. Evecode is an online coding skill development and learning system I have worked on for the past semester. It is designed to be flexible and customizable so that people can learn to code in a way that suits their individual needs. I believe that Eve code has the potential to help people learn to code more effectively and efficiently. I am passionate about helping people to learn to code, and I believe that Evecode is a tool that can help people to achieve their coding goals.

1.3 Objectives

The main objective of evecode is to provide a comprehensive coding skill development system that helps beginners to learn to code more efficiently and quickly while providing advanced coders with a way to improve their coding skills. Experienced coders can log onto the system and design and set up a course as they see fit on the platform. This will allow the instructor to set up a course to avoid unnecessary practices. They will also have the option to update or delete their designed courses. Learners can sign up for their courses and learn from them. This

platform can be leased to universities as well. They can set up their course, and university students can join via a joining code. Universities can assign assignments and view who submitted the assignments and who did not. The system also has an auto grader system where the assignments will be checked automatically. Overall, The system offers a variety of features that make learning to code fun and easy, including a code editor, a live coding environment, and a community of coders to help beginners along the way. Whether someone is just getting started with coding or a seasoned coder looking to sharpen their skills, evecode is the perfect solution for everyone.

1.4 Expected Outcomes

- Evecode will provide an easy and effective way for people to learn coding skills.
- Evecode will help people to improve their coding proficiency.
- Evecode will make it easier for people to find and join coding classes.
- Evecode will allow people to create custom coding lessons.
- Evecode will provide a convenient way for people to learn coding skills.
- Evecode will allow people to learn at their own pace.
- Evecode will make it easier for people to find coding mentors.
- Evecode will allow students to join their academic classes.
- Evecode will allow students to attempt and submit academic assignments virtually.
- Evecode will allow teachers to grade student assessments online.
- Evecode will provide a community for people to share coding resources.
- Evecode will allow people to connect with other coders.
- Evecode will help people to build their confidence in coding.

1.5 Project Management and Finance

The timeline for Developing Evecode is discussed below,

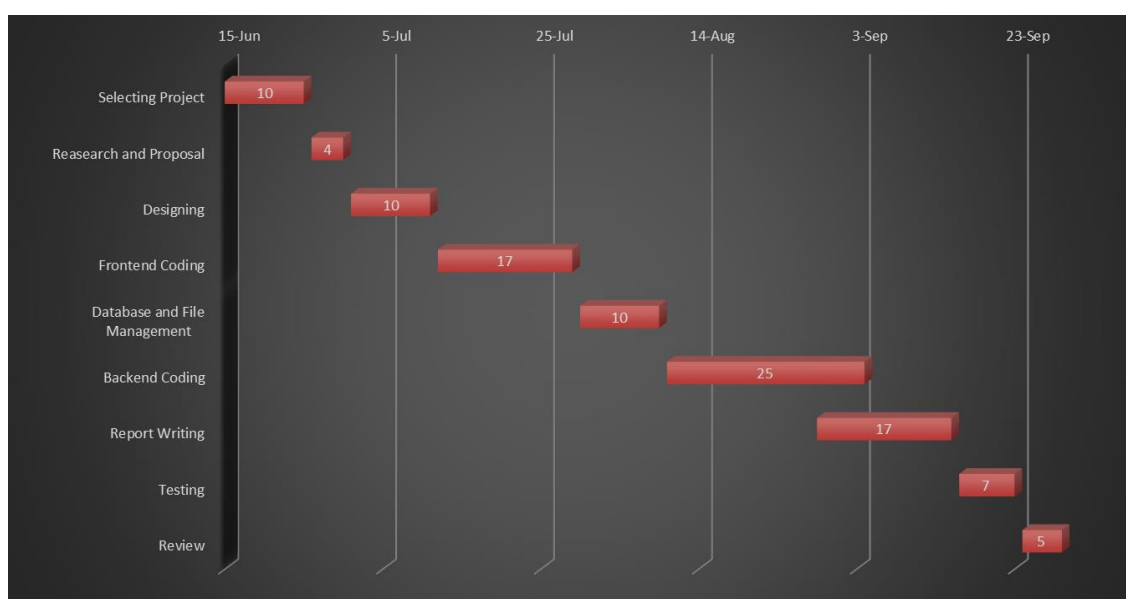


Figure 1.1: Grant Chart

Financial estimate for developing Evecode,

Table 1.1 Cost Estimation

Task	Cost /hr	Spend Hour	Total
System Specification & UI Design	Tk. 300	60	Tk. 18000
Compiler System Development	Tk. 200	40	Tk. 8000
Database Design & Development	Tk. 200	15	Tk. 3000
LMS System Development	Tk. 350	35	Tk. 12250
Administrative System Development	Tk. 350	40	Tk. 14000
Domain Cost (for 2 year)	Tk. 1800	-	Tk. 900
Server Cost (for 2 years)	Tk. 10000	-	Tk. 10000
System Tester	Tk. 100	20	Tk. 2000
Maintenance Cost (for 2 year)	Tk. 2000	-	Tk. 1000
Total:			Tk. 71,050

1.6 Report Layout

Chapter 1: In this chapter, we will discuss the project, the motivation behind the project, and the project timeline and estimations.

Chapter 2: In this chapter, we will discuss related works, preliminary technologies, competitive studies, and challenges while developing the project.

Chapter 3: In this chapter, we will discuss the functional requirements while also analyzing the use case diagram, data flow diagram, and activity diagram.

Chapter 4: In this chapter, we will discuss the Design specification part of all the design requirements, and database related data will be described here.

Chapter 5: In this chapter, we will see the implementation images and discuss the task.

Chapter 6: In this chapter, we will discuss our project's social, environmental, and ethical impact on society.

Chapter 7: In this chapter, we will conclude the report and discuss future development plans for evecode.

CHAPTER 2

LITERATURE REVIEW

2.1 Preliminaries/Terminologies

Web Application: A web application is a software program that is stored on a remote server and accessed through a web browser over the Internet. Web applications are usually written in a scripting language such as PHP, Perl or ASP.

Compiler: A compiler is a computer program that converts computer code written in one programming language into another programming language.

Programming Language: A programming language is a formal language that specifies a set of instructions that can be used to produce various kinds of output. Programming languages are used in computer programming to implement algorithms.

Server: A server is a computer that provides data to other computers. Servers typically provide data to computers on a network, but they can also provide data to computers on the Internet.

Developer: A developer is a term used in software development to refer to a programmer who writes code.

Database: A database is a collection of data that computers can access.

Instructor: An instructor is a person who teaches a class or a group of students.

2.2 Related Works

Repl.it

Replit is a programming language web IDE built to make learning and programming more accessible. It provides a real time code editor, a virtual machine, and a community of learners and developers all in one place. Replit was created out of frustration with the existing online code editors at the time. They were slow, buggy, and did not provide a great learning experience. Replit was designed to be fast, lightweight, and easy to use. Since its launch in 2016, Replit has become a popular choice for education and development. It is used by millions of students, teachers, and professional developers. Replit is an excellent tool for learning to code. The real time code editor is perfect for experimentation and trying out new ideas. The virtual machine allows students to run their code in a safe environment, without the risk of breaking things. Moreover, the community of learners and developers is an excellent resource for help and inspiration. [1]

Codecademy

Codecademy.com is a website that offers free coding lessons in various programming languages. The site's interactive lessons are meant to be completed in a student's web browser. Codecademy's mission is to "teach the world to code." The company believes that coding is a fundamental skill everyone should learn, and its goal is to make coding education accessible to as many people as possible. The website offers lessons on various programming languages, including HTML, CSS, JavaScript, PHP, Python, and SQL. Codecademy also offers courses on topics like web development and game development. In addition to the lessons, Codecademy has a blog discussing various programming topics. The blog of Codecademy is an excellent resource for people who want to learn more about coding or stay up to date on the latest coding news. [2]

Freecodecamp.org

Freecodecamp.org is a website that offers free coding and computer science education to people of all ages and backgrounds. The website offers a variety of courses and tutorials that can be taken at one's own pace. There is also a community of like minded individuals who can offer support and advice. The website's mission is to provide accessible, affordable, and practical education for everyone, which is admirable. The courses are well designed and comprehensive, and the community is incredibly supportive. Freecodecamp.org is highly recommended to anyone interested in learning coding or computer science. The website is an invaluable resource that has the potential to change lives. [3]

W3school.com

w3school is a website that provides web based tutorials for web developers. The site covers HTML, CSS, JavaScript, PHP, and SQL topics. The tutorials are designed for beginners and intermediate developers. w3school has been around for over a decade and has become one of the most popular resources for web developers. The site is free to use and is supported by advertising. The tutorials on w3school are well written and easy to follow. They provide an excellent way for beginners to learn the basics of web development. For more experienced developers, the site is a good resource for brushin9g up on skills. Overall, w3school is an excellent resource for anyone learning more about web development. The site is free to use and offers a wealth of information. Whether a beginner or a seasoned pro, w3school is a great place to learn. [4]

Programiz.com

Programiz.com is a website that offers free tutorials and code examples on programming languages like C, C++, Java, Python, PHP, SQL, HTML, CSS, and JavaScript. With more than 10 million monthly pageviews, programiz.com is one of the most popular programming websites worldwide. The website was founded in 2013 by two friends, Sachin Garg and Rishabh Garg, who were studying computer science at the time. The pair saw a need for quality, step by step programming tutorials that were easy to understand and follow. With Sachin Garg

as the primary author, programiz.com quickly became a go to resource for students and professionals. The website now has a team of full time writers and editors who create high quality content on various programming topics. In addition to tutorials, programiz.com also offers code examples, quizzes, and a blog where Sachin Garg shares his insights on the programming industry. If someone is looking to learn more about programming or brush up on their skills, programiz.com is a great resource to bookmark. [5]

Tutorialspoint.com

Tutorialspoint.com is a website that provides free tutorials and resources for programming languages, web development, and more. The website is divided into sections that cover different topics. There is a section for each programming language and sections for web development, databases, and more. Each section contains several tutorials, each of which covers a specific topic. The tutorials are written clearly and concisely, including code examples to illustrate each point. The website also has a search function to find the necessary tutorials easily. In addition to the tutorials, Tutorialspoint.com also provides a forum where users can ask questions and help each other out. The forum is divided into sections for each programming language so you can get help with your specific language. Tutorialspoint.com is an excellent resource for anyone who wants to learn more about programming or web development. The tutorials are easy to follow, and the website also has a lot of other resources that can be helpful. [6]

2.3 Comparative Analysis

Evecode is online coding skill development and learning system where people can design custom lessons, and students can join the lessons. Evecode is an online coding skill development system that offers a variety of benefits for both educators and students. For educators, Evecode offers the ability to create custom coding lessons for their students. These custom lessons can be designed to meet the specific needs of the students and can be used to teach various coding concepts. In addition, Eve code offers the ability for educators to track the progress of their students through the use of reports and analytics. This data can improve the lessons' effectiveness and identify areas where students need additional support. Evecode allows students to learn at their own pace and receive feedback from their educators on their progress. In addition, students can use Evecode to practice their coding skills and receive help from other students using the system.

Evecode offers a more personalized learning experience as users can design custom lessons according to their needs and interests. In addition, Evecode also provides a community forum where students can interact with each other and share their coding experiences. Codeacademy, on the other hand, offers a more structured learning experience as it provides a set of pre designed courses for students to follow. Codeacademy also has a community forum where students can interact with each other, but it is not as active as Evecode's. Repl.it, Freecodecamp, W3school, Programiz, and Tutorialspoint are all websites that provide free

coding tutorials and resources. However, they do not offer a platform for students to interact with each other or design custom lessons.[1-6]

Table 2.1 Comparative Analysis

	Free Compiler	File management	Supports Multiple coding language	Auto Grading System	Rating System	Guided Lessons	Custom Course Creation	Custom Lesson Creation	Academic Course Creation	Join course via code	Assign Assignments	Deadline Alert
EveCode	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Repl.it	✓	✓	✓		✓							
Codeacademy	✓		✓	✓	✓	✓					✓	
Freecodecamp	✓		✓			✓						
W3school	✓		✓			✓						
Programiz	✓		✓			✓						
Tutorialspoint	✓		✓			✓						

2.4 Scope of the Problem

In today's rapidly developing world, coding skills are becoming increasingly important. Learning to code can help a student become more marketable in the job market and better equipped to take on the challenges of the 21st century. However, learning to code can be daunting, especially starting from scratch. Students have to visit one website to learn about one, then go to another to implement the code than to another to publish. Evecode eliminates inconveniences and provides a one in all coding platform where people can design custom lessons, and students can join the lessons. That is why Evecode has tremendous scope to be a successful application. [7]

Both educators and students can be benefited from Evecode. For educators, Evecode offers the ability to create custom coding lessons for their students. These custom lessons can be designed to meet the specific needs of the students and can be used to teach various coding concepts. In addition, Evecode offers the ability for educators to track the progress of their students through the use of reports and analytics. This data can improve the lessons' effectiveness and identify areas where students need additional support. Evecode allows students to learn at their own pace and receive feedback from their educators on their progress. In addition, students can use Evecode to practice their coding skills and receive help from other students using the system.

2.5 Challenges

These are the challenges I faced while developing Evecode.

- Developing a user friendly interface for both students and instructors
- Ensuring that the system is accessible from anywhere in the world
- Providing a wide range of coding languages to choose from
- Creating an interactive and engaging learning experience for students
- Allowing instructors to create and customize lessons easily
- Managing an extensive database of students and lessons
- Developing the compiler system
- Monitoring student progress and providing feedback
- Generating reports on student performance and activity
- Integrating with third party tools and platforms
- Ensuring the security and privacy of student data

CHAPTER 3

REQUIREMENT SPECIFICATION

3.1 Development Methodology

A development methodology is a framework that is used to structure, plan, and control the process of developing an information system. The methodology provides a way to divide the work required to create an information system into manageable tasks and to define when these tasks will be completed. There are many benefits to using a development methodology. Perhaps the most important is that it can help to ensure that all of the work required to develop an information system is completed. This is because the methodology provides a clear plan that outlines all of the work that needs to be done. Another benefit is that a development methodology can help to improve communication between the people working on the development project. This is because the methodology provides a common language that can be used to discuss the project. Finally, a development methodology can help to improve the quality of the end product. This is because the methodology provides a way to test the system during development and to make sure that it meets the requirements. [8]

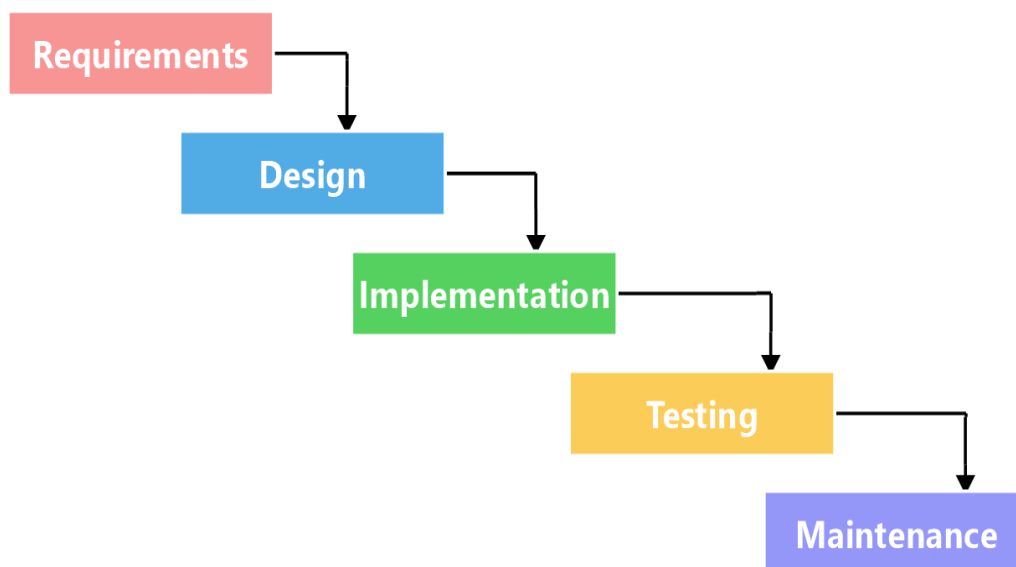


Figure 3.1: Waterfall Model

The waterfall model is one of the most popular software development models and is also widely used in developing learning management systems. There are several reasons I choose to use the waterfall model in the development of Evecode. First, the waterfall model is straightforward to understand and use. It is also easy to implement and manage. The simplicity of the waterfall model makes it very popular among developers and project managers. Second, the waterfall model effectively manages and controls the development process. It helps to ensure that all the tasks are appropriately assigned and completed on time. Third, the waterfall model is very

flexible and can be easily customized according to the project's specific needs. Fourth, the waterfall model is very reliable and has been proven successful in many projects. Finally, the waterfall model is very scalable and can be easily extended to accommodate the future needs of the project. This makes it a perfect choice for developing online coding skills and learning systems.

3.2 Requirement Analysis

A requirements analysis is the first step in software development. It gathers and analyzes the user's needs to create a detailed requirements document. This document is then used to guide the development of the software. The requirements analysis is essential because it ensures that the software development process starts with a clear understanding of the user's needs. Creating a software product that meets the user's expectations would be challenging without this understanding. Various techniques can be used to perform a requirements analysis, such as interviews, questionnaires, and focus groups. The most important part of the process is to ensure that all stakeholders are involved in the requirements gathering and analysis. This will help to ensure that the final requirements document is comprehensive and meets the needs of all stakeholders. [9]

3.2.1 Functional Requirements

Function requirements are specific, measurable, and attainable goals that must be met to complete a project successfully. They act as a road map for the project team, ensuring everyone knows what needs to be done. Function requirements are important because they help ensure that a project is completed on time, within budget, and with a maximum level of quality. Without these requirements, it would be very easy for a project to get off track, resulting in costly delays and rework. In order to develop practical function requirements, it is important to involve all stakeholders in the project. This includes the client, end users, and other parties affected by the project. By getting input from all stakeholders, we can ensure that the requirements are realistic and achievable. Once the requirements have been developed, tracking and monitoring them throughout the project is important. This will help identify areas where the requirements are not met so that corrective action can be taken. Function requirements are an essential part of successful project management. [10]

Table 3.1 User Functional Requirements

Identifier	Requirements
REQ 1	User will be able to sign up for the system.
REQ 2	User will be able to login into the system.
REQ 3	User will be able to setup their profile.

REQ 4	User will be able to use the free compiler without logging in.
REQ 5	User will be able to create a repo in 5 different language.
REQ 6	User will be able to write some code and compile the repo.
REQ 7	User will be able to delete repo.
REQ 8	User will be able to view courses
REQ 9	User will be able to enroll in the course of their choice.
REQ 10	User will be able to view the lessons of the course
REQ 11	User will be able to attempt and solve the lesson instructions.
REQ 12	User will be able to enroll in their academic class via a joining code.
REQ 13	User will be able to practice and solve academic problems.
REQ 14	User will be able to submit assignments.
REQ 15	User will be able to view assignment grades.
REQ 16	User will be able to log out of the system.

Table 3.2 Teacher Functional Requirements:

Identifier	Requirements
REQ 1	Teacher will be able to sign up for the system.
REQ 2	Teacher will be able to login into the system.
REQ 3	Teacher will be able to set up their profile.
REQ 4	Teacher will be able to use the free compiler without logging in.
REQ 5	Teacher will be able to create a repo in 5 different language.
REQ 6	Teacher will be able to write some code and compile the repo.
REQ 7	Teacher will be able to delete repo.
REQ 8	Teacher will be able to create their custom course

REQ 9	Teacher will be able to create lessons for their course
REQ 10	Teacher will be able to share joining code for the course
REQ 11	Teacher will be able to view student attempts
REQ 12	Teacher will be able to assign assignments
REQ 13	Teacher will be able to grade assignments
REQ 14	Teacher will be able to view student lesson submissions
REQ 15	Teacher will be able to view student assignment submissions
REQ 16	Teacher will be able to log out of the system.

Table 3.3 University Functional Requirements:

Identifier	Requirements
REQ 1	University will be able to login into the system.
REQ 2	University will be able to set up their profile.
REQ 3	University will be able to add teacher
REQ 4	University will be able to update teacher
REQ 5	University will be able to delete teacher
REQ 6	University will be able to add courses.
REQ 7	University will be able to update course
REQ 8	University will be able to delete course
REQ 9	University will be able to view student improvement report
REQ 10	University will be able to log out of the system.

Table 3.4 Admin Functional Requirements:

Identifier	Requirements
REQ 1	Admin will be able to login into the system.
REQ 2	Admin will be able to setup their profile.
REQ 3	Admin will be able to manage teachers
REQ 4	Admin will be able to manage users
REQ 5	Admin will be able to manage universities
REQ 6	Admin will be able to manage courses
REQ 7	Admin will be able to view system reports
REQ 8	Admin will be able to log out of the system.

3.2.2 Non Functional Requirements

Nonfunctional requirements are those that do not relate to the functionality of the system, but instead impose constraints on the design or implementation. They are sometimes known as quality of service requirements. There are a number of reasons why nonfunctional requirements are important. First, they can be used to ensure that the system meets the needs of the users in terms of performance, security, and other factors. Second, they can be used to ensure that the system is robust and can handle unexpected events. Finally, they can be used to ensure that the system is compatible with other systems that it must interface with. [11]

Table 3.4 Non Functional Requirement

Identifier	Requirements
REQ 1	The system should be secure.
REQ 2	The system should be scalable.
REQ 3	The system should be able to provide customized learning plans for each user.
REQ 4	The system should be able to track the progress of each user and provide feedback.
REQ 5	The system should be able to provide resources for each user to practice their coding skills.

REQ 6	The system should be able to provide challenges for each user to improve their coding skills.
REQ 7	The system should be able to provide a community in which users interact and share resources.
REQ 8	The system should be able to provide support for users who are struggling with coding.
REQ 9	The system should be accessible on multiple devices.
REQ 10	The system should be able to provide data on the platform's usage.

3.2.3 Hardware Requirements

1. A computer or laptop with at least 2GB of RAM
2. A broadband internet connection
3. A keyboard to write code
4. A display to view

3.2.4 Software Requirements

1. Vs Code
2. Xampp
3. Ace, js
4. Web Browser (Chrome, Firefox, etc)

3.3 System Diagrams

A system diagram is a visual representation of a system that shows how the system's components interact with each other. System diagrams can be used to help understand a system's functionality, to troubleshoot problems, and to design new systems. System diagrams can be created for any system, including physical, biological, chemical, and social systems. They can be created at different levels of detail, from high level overviews that show the system's major components and their interactions to low level diagrams that show the detailed inner workings of the system. [12]

3.3.1 Use Case Diagram

A use case diagram is a type of behavioral diagram defined by and created from a Use case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases. The use case diagram can be used to identify the primary functions of a system and the stakeholders that interact with those functions. It can also be used to determine what system functionality is of most interest to those stakeholders. In addition, the use case diagram can be used to identify any potential risks or areas of potential system failure. [13]

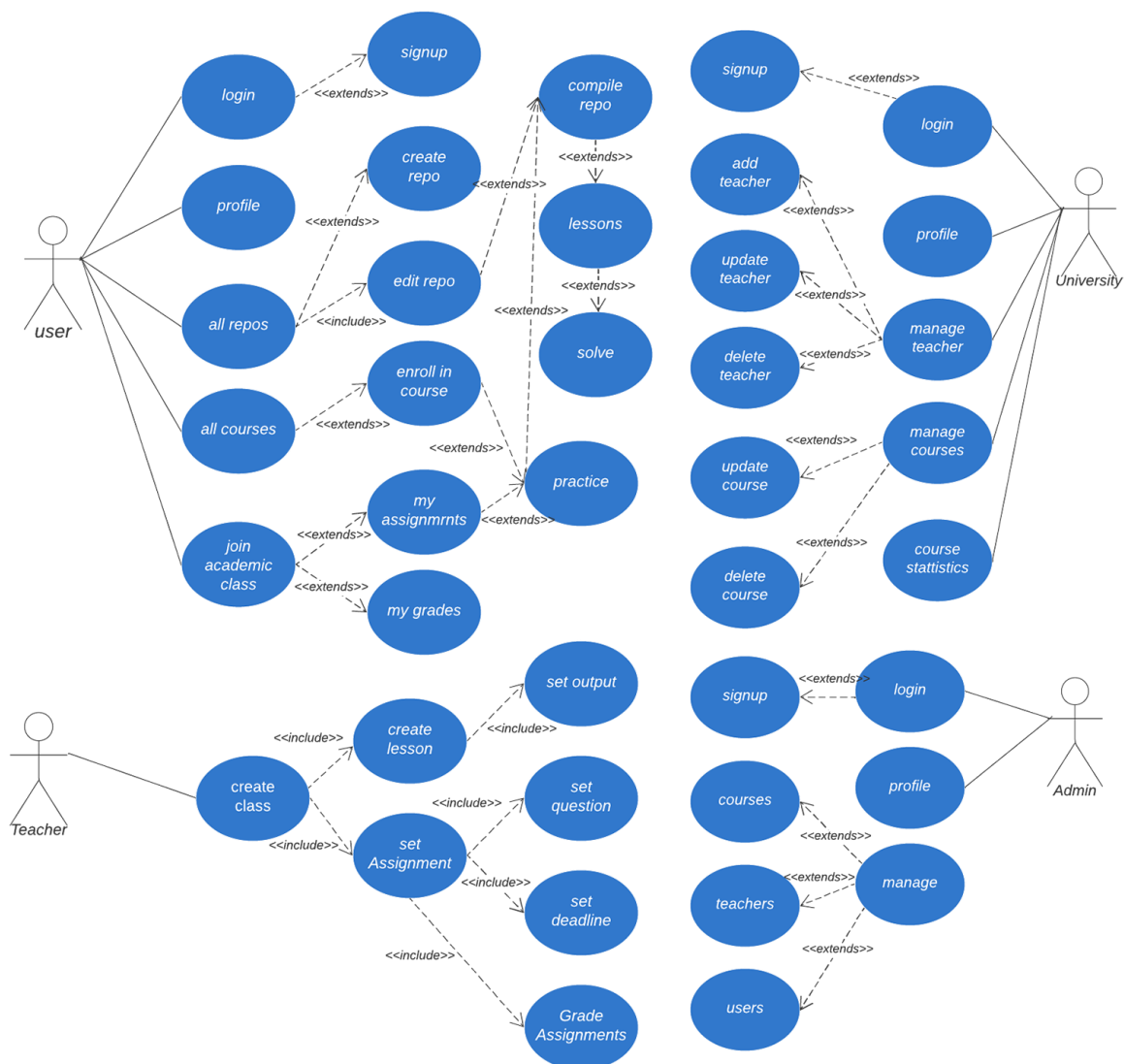


Figure 3.2: Use Case Diagram

3.3.2 Data Flow Diagram

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modeling its process aspects. A DFD is often used as a preliminary step to create an overview of the system, which can later be elaborated. DFDs can also be used for the visualization of data processing (structured design).

DFDs were originally developed in the 1970s by Larry Constantine and Ed Yourdon as a way of structuring flowcharts to more accurately reflect the structure of the system being modeled. DFDs show how data is processed within a system in terms of inputs and outputs. They are an important tool for visualization and analysis of information systems. [14]

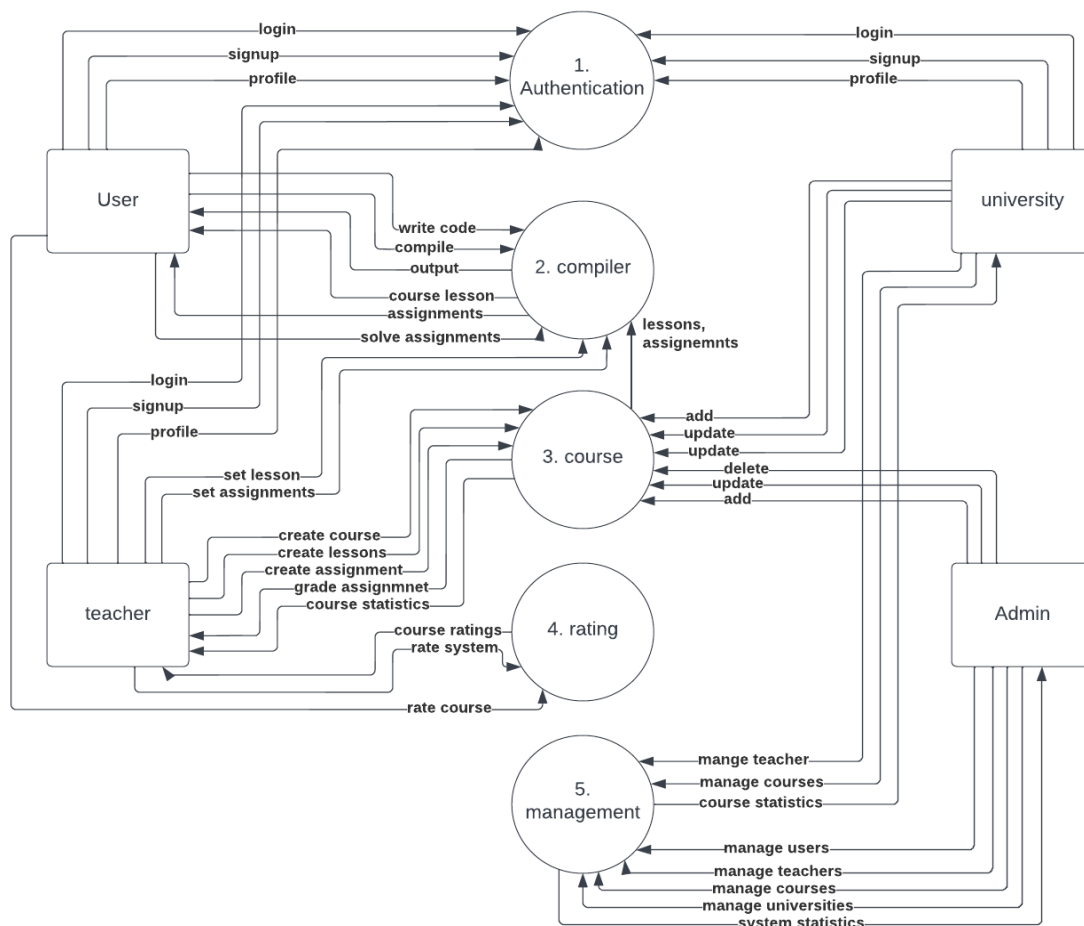


Figure 3.3: Data Flow Diagram

3.3.3 Activity Diagram

Activity diagrams are a type of diagram used in Unified Modeling Language (UML) that show the steps in a process. They are used to model both the static and dynamic aspects of a system. Static aspects would include things like the order of the steps, while dynamic aspects would include activities such as loops and conditions.

Activity diagrams are useful for modeling the workflows in a system. By understanding the workflows, you can optimize the system to make it more efficient. For example, if you know that a certain task is performed more often than others, you can make that task easier to access or automate it. Activity diagrams can also be used to troubleshoot problems in a system. By understanding the steps involved in a process, you can identify where the problem is and take steps to fix it. [15]

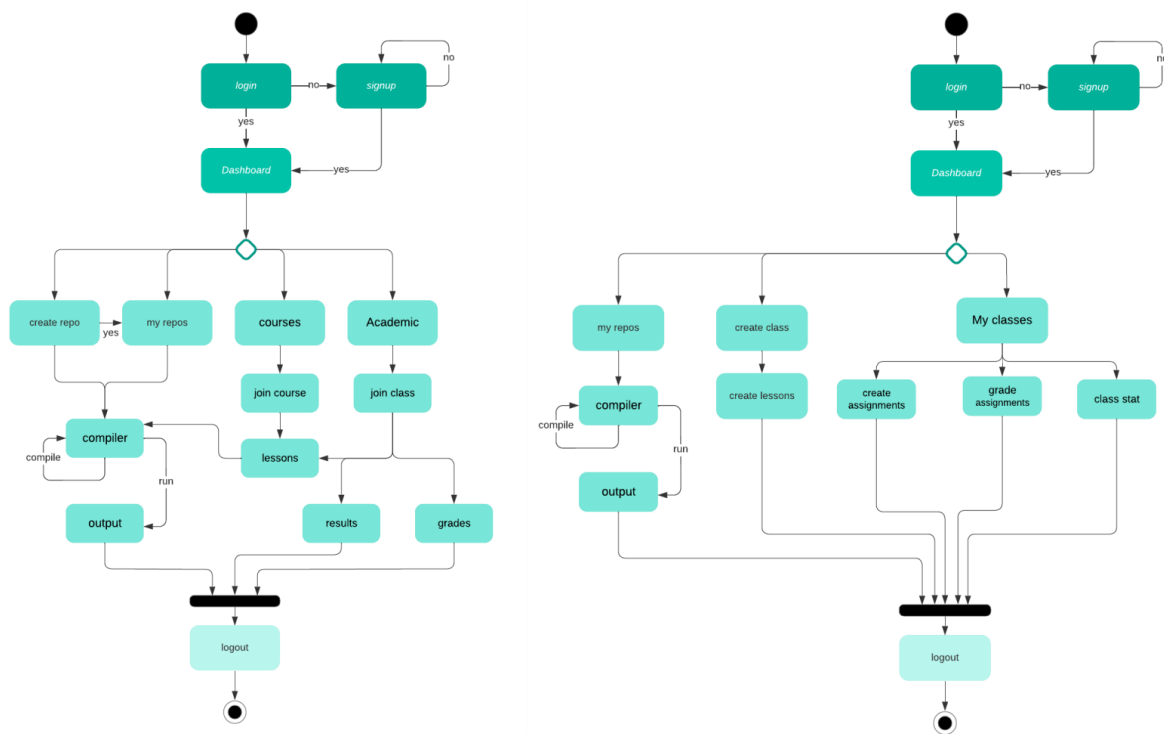


Figure 3.4 Activity Diagram

CHAPTER 4:

DESIGN SPECIFICATION

4.1 Front end Design

Evencode has been developed using HTML, CSS, JavaScript, and Bootstrap. HTML, CSS, JavaScript, and Bootstrap are essential for website creation. HTML provides the structure for web pages, CSS gives style to those pages, JavaScript makes them interactive, and Bootstrap makes them responsive and mobile friendly. These technologies work together to create a system that is easy to navigate and looks great on any device. Creating an interactive and user friendly system for coding skill development and learning without these technologies would be very difficult.

4.2 Back end Design

The backend part of evencode has been handled with PHP. PHP is a widely used open source scripting language that is especially suited for developing dynamic web based applications. It is a server side scripting language that can be embedded in HTML and used to develop web based applications. PHP has many advantages over other scripting languages. It is easy to learn, fast to execute, and highly portable. Many web servers and operating systems also support PHP. PHP is also very versatile. It can be used to develop a wide range of applications, from simple websites to complex web based applications. PHP can be used to develop both small and large scale systems. Another advantage of PHP is that it is open source. This means that it is free to use and distribute. A large community of developers contributes to the development of PHP. This ensures that the language is constantly improving and evolving. PHP also has several built in features that make it an ideal choice for developing an online system for evencode. These include support for many databases, session handling, and cookies.

4.3 Interaction Design and User Experience (UX)

The field of Interaction Design and User Experience (UX) is all about creating products that provide a great experience for the user. This involves a lot of research into how people interact with products, and how to design products that are easy to use and enjoyable to interact with.

A lot of interaction design is about making sure that the user can accomplish their goals in using the product, and that the product is easy to use. This includes things like making sure buttons are easy to find and click, and that menus are easy to navigate. It also includes making sure that the product is visually appealing, so that users will enjoy using it.

User experience also includes making sure that users have a positive attitude towards the product. This means that the product should be able to meet their needs and exceed their expectations. It also means that the product should be easy to use, so that users don't get frustrated when trying to use it. [16]

Evecode		
Instructions	<pre>#include <stdio.h> int main() { printf("Hello, World!"); return 0; }</pre>	Hello, World!

Figure 4.1: Course Compiler Design

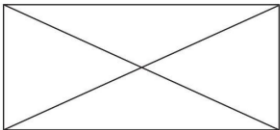
Evecode	
My Classes	Join Class
 by Saif Sunny Introduction to Programming Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed diam nonummy nibh euismod Enroll	

Figure 4.2: Courses Design

Evecode	
<pre>#include <stdio.h> int main() { printf("Hello, World!"); return 0; }</pre>	Hello, World!

Figure 4.3: Repo Compiler Design

Evecode		
My Repo		
 Hello.c	CREATED : 10 JUNE	EDITED : 10 JUNE
 world.c	CREATED : 10 JUNE	EDITED : 10 JUNE

Figure 4.4: All Repo Design

4.4 Implementation Requirements

The implementation of any system requires careful planning and execution in order to be successful. In order to ensure success, there are a few key requirements that must be met. In the case of Evencode4 following requirements must be met. [17]

- The system shall allow users to create an account and log in.
- The system shall allow users to select a coding language to learn.
- The system shall provide a set of coding exercises for the selected language.
- The system shall provide a code editor for the user to write code.
- The system shall provide syntax highlighting for the selected language.
- The system shall provide error checking for the code written by the user. The system shall provide a way to compile and run the code written by the user.
- The system shall provide a way to save the code written by the user.
- The system shall provide a way to share the code written by the user.
- The system shall provide a way to track the progress of the user.
- The system shall provide a way to give feedback to the user.
- The system shall provide a way to contact customer support.
- The system shall be accessible from all major browsers.

CHAPTER 5

SYSTEM DEVELOPMENT AND TESTING

5.1 Development of Database

MySQL is a relational database management system (RDBMS), as well as a popular choice for web applications used by millions of websites. It is produced by for a number of different software environments. MySQL is free and open source software under the terms of the GNU General Public License, and is also available under a variety of proprietary licenses. MySQL is a popular choice for web applications used by millions of websites. It is produced by for a number of different software environments. MySQL is used by many database driven web applications, including Drupal, Joomla, phpBB, and WordPress. [18]

Advantages of using MySQL in a PHP website:

MySQL is fast, reliable, and easy to use.

MySQL is compatible with virtually all operating systems and web servers.

MySQL is free and open source software under the terms of the GNU General Public License.

MySQL is backed by a large and active community of developers and users.

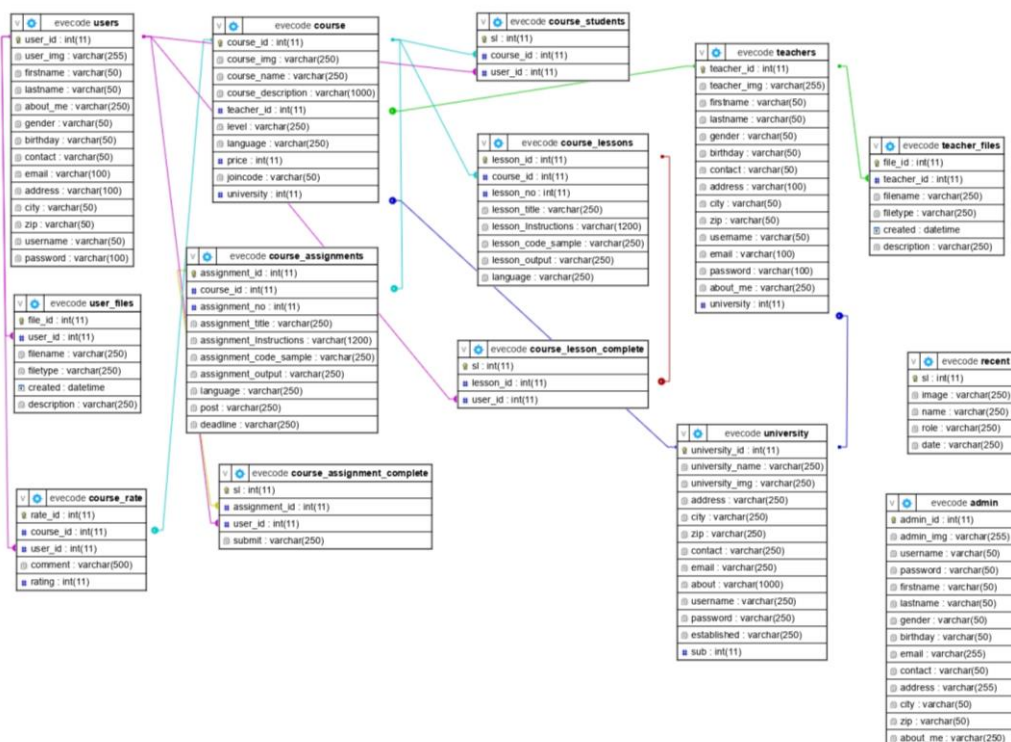


Figure 5.1: Entity Relationship Diagram

5.2 Development of Front End Design

Whenever a visitor visits Evecode, they will see the following modern design home page describing what Evecode is.

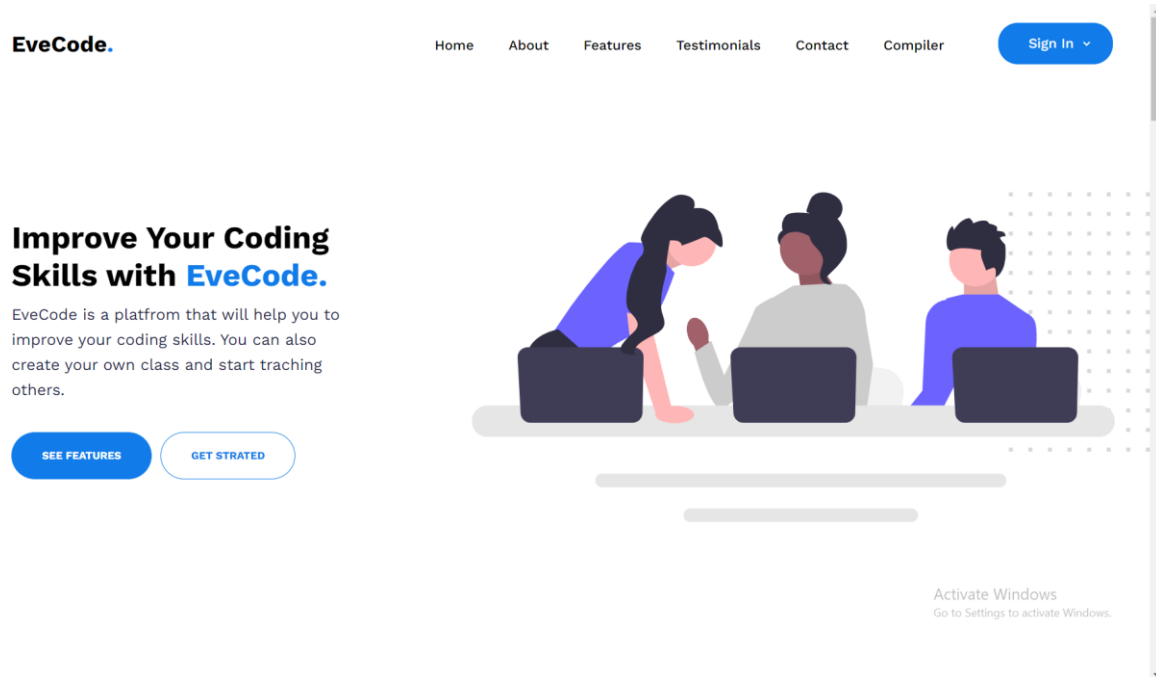


Figure 5.2: App Home Page

The about section describes what Evecode is while showing information about our services and customers.

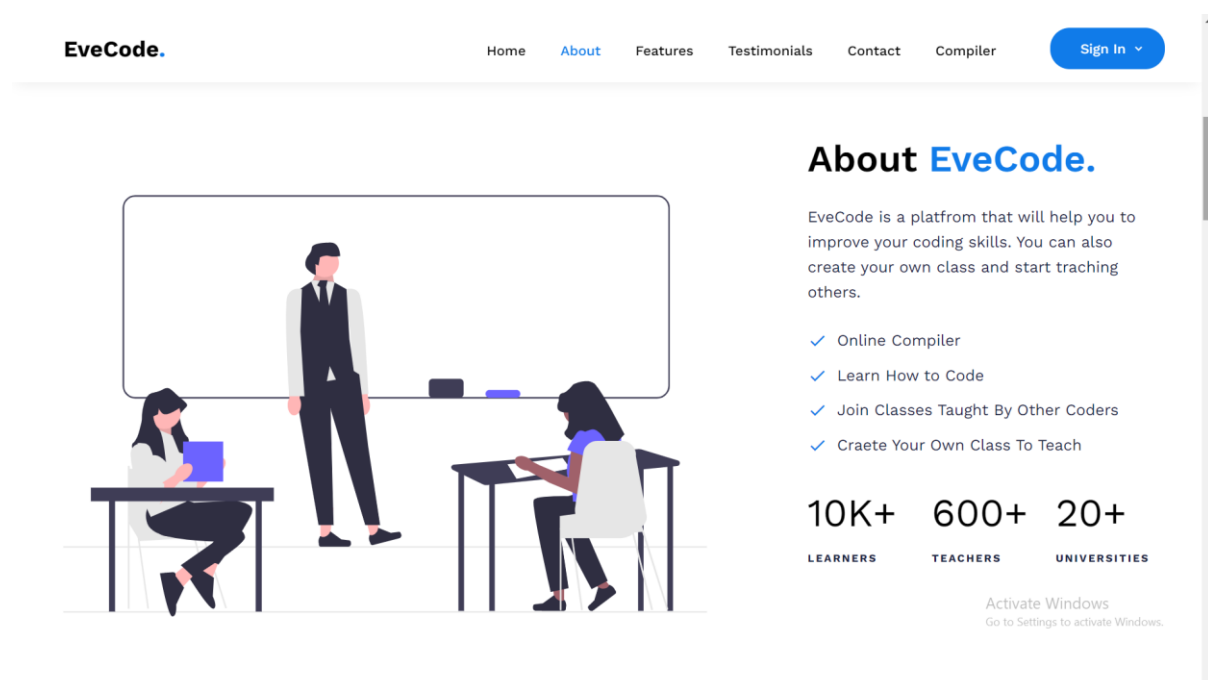


Figure 5.3: About Page

The Feature Section Highlights all the main feature of Evecode.

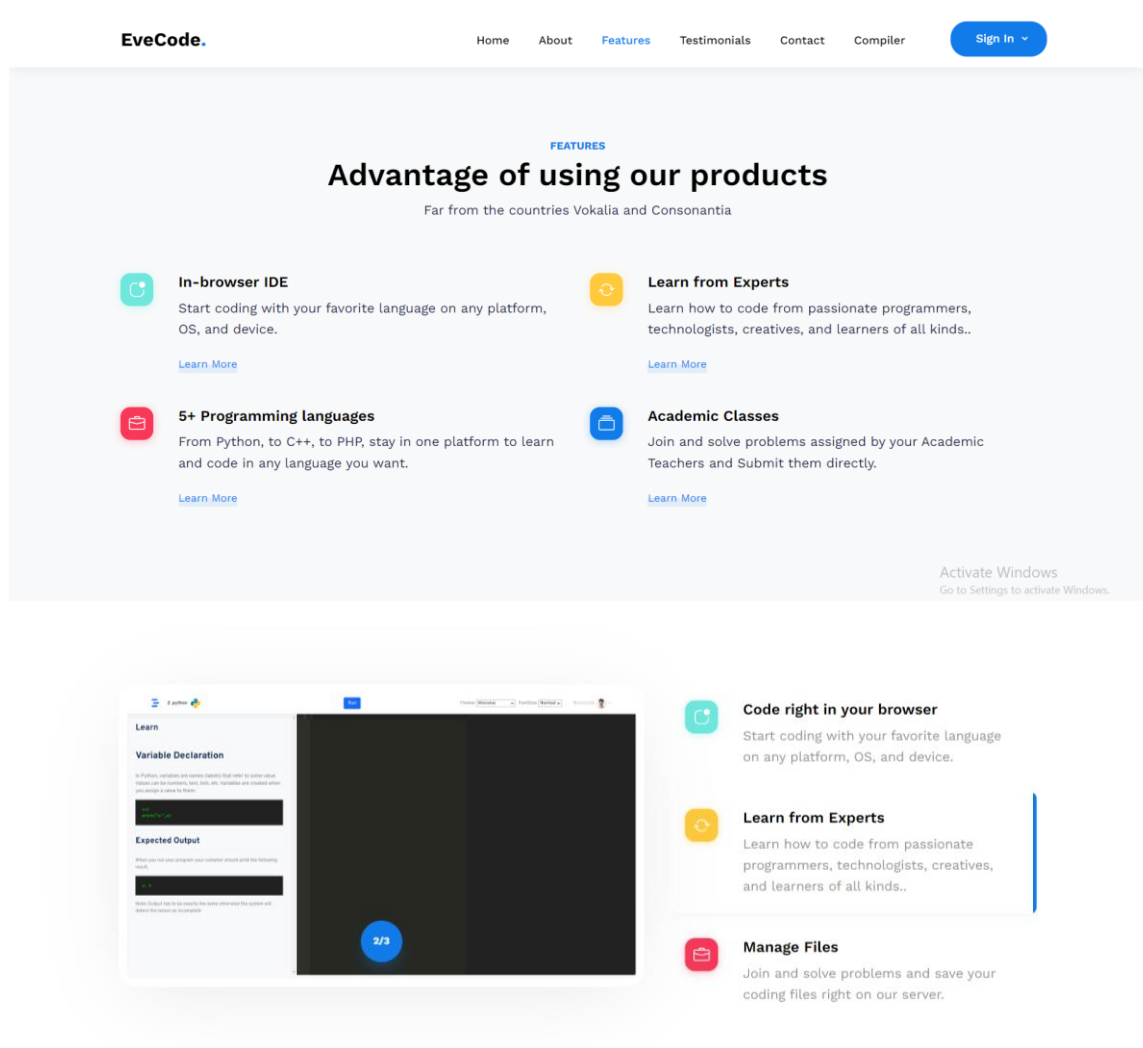


Figure 5.4: Feature Page

The testimonial section shows a few comments submitted by our recent users.

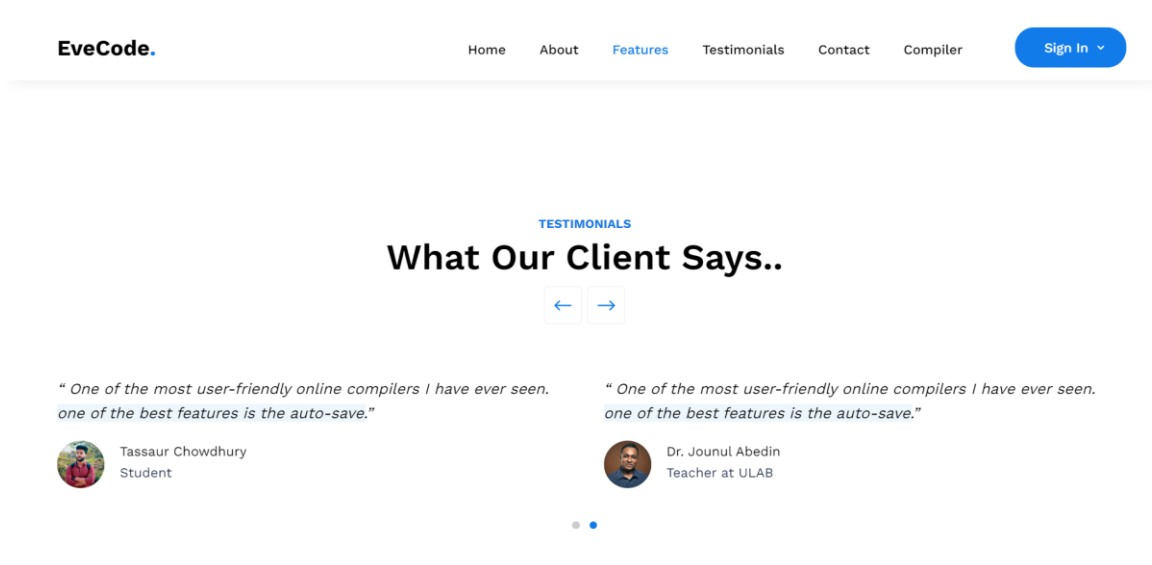


Figure 5.5: Testimonial Page

The users will be able to ask question or report errors to the admin via the contact page.

EveCode. Home About Features Testimonials **Contact** Compiler Sign In

CONTACT
Get In Touch
Far from the countries Vokalia and Consonantia

First name Last name

Email address

Message

SEND MESSAGE

Activate Windows
Go to Settings to activate Windows.

About EVECODE.
EveCode is a platfrom that will help you to improve your coding skills. You can also create your own class and start traching others.
Copyright ©2022. All Rights Reserved.

Shortcuts
Home
About
Features
Testimonials
Contact

Services
Student
Instructors
Universities

Quick Contact
+880-1624034918
+880-1783478154
evecode@gmail.com
@

Activate Windows
Go to Settings to activate Windows.

Figure 5.6: Contact Page

User will be able to use the free compiler to run their codes in C. C++, Python, PHP and JavaScript Languages

Theme: Monokai FontSize: 15 Language: C Run

```
1 #include <stdio.h>
2 int main() {
3     // printf() displays the string inside quotation
4     printf("Hello, World!");
5     return 0;
6 }
```

Hello, World!

Activate Windows
Go to Settings to activate Windows.

Figure 5.7: Free Compiler

Users, Teachers, University Admin and the Super Admin will be able to login using the following page.

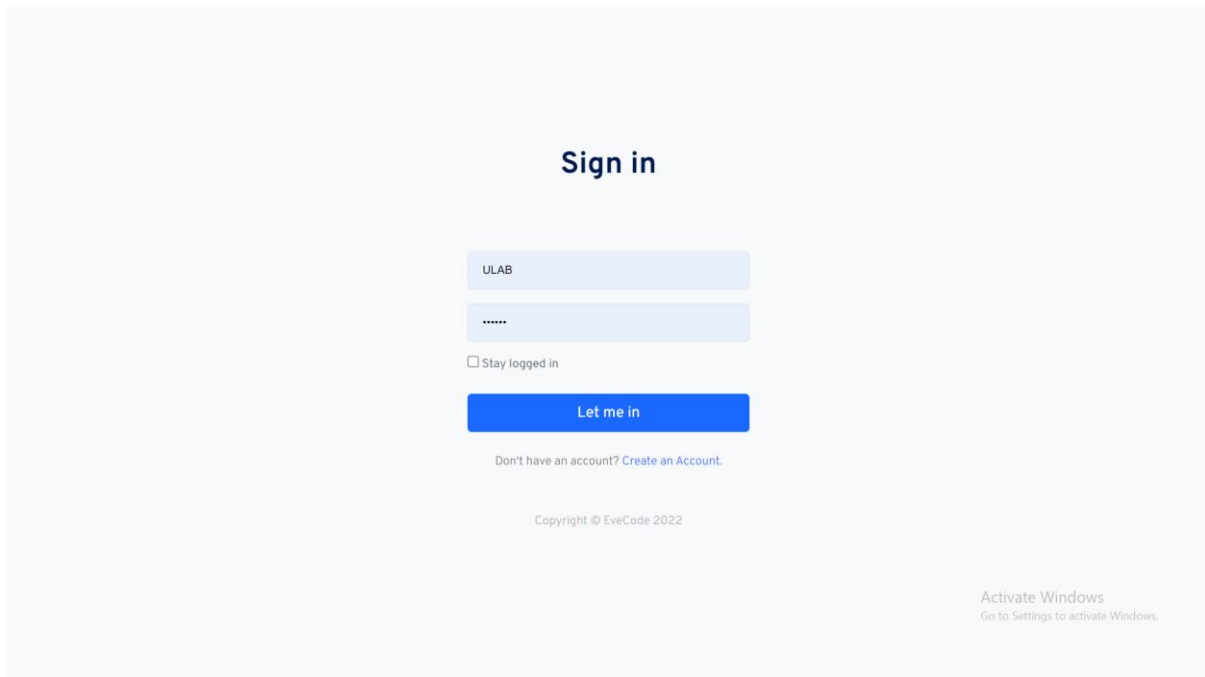
The image shows a 'Sign in' page with a light blue background. At the top center, the text 'Sign in' is displayed in a bold, dark blue font. Below this, there are two input fields: the first is labeled 'ULAB' and the second is masked with dots. Under the second field is a checkbox labeled 'Stay logged in'. A prominent blue button with the text 'Let me in' is positioned below the checkbox. Further down, a link reads 'Don't have an account? [Create an Account.](#)'. At the bottom center, the copyright notice 'Copyright © EveCode 2022' is visible. In the bottom right corner, there is a small 'Activate Windows' watermark with the instruction 'Go to Settings to activate Windows.'

Figure 5.8: Login Page

Users, Teachers and Universities will be able to sign up for the system using the following page.

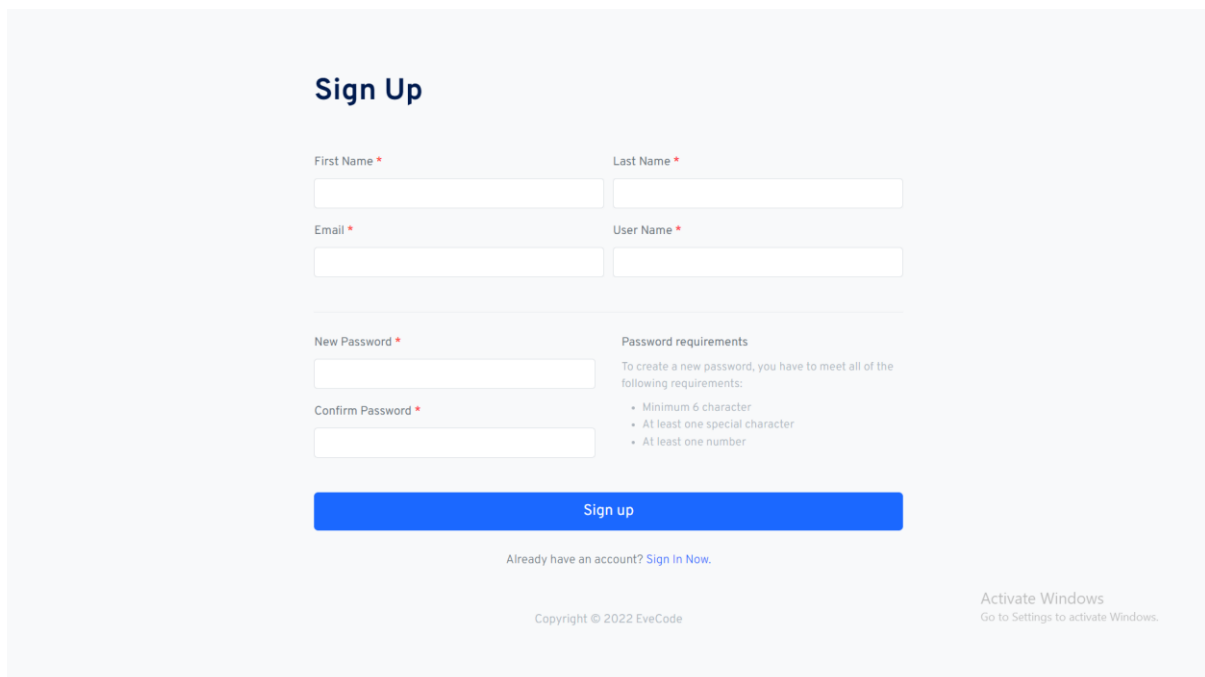
The image shows a 'Sign Up' page with a light blue background. The title 'Sign Up' is at the top center in a bold, dark blue font. The form consists of several input fields: 'First Name *', 'Last Name *', 'Email *', and 'User Name *'. Below these are fields for 'New Password *' and 'Confirm Password *'. To the right of the password fields, a section titled 'Password requirements' lists the criteria: 'Minimum 6 character', 'At least one special character', and 'At least one number'. A blue 'Sign up' button is located at the bottom of the form. Below the button, a link says 'Already have an account? [Sign In Now.](#)'. The bottom center features the copyright notice 'Copyright © 2022 EveCode', and the bottom right corner has the 'Activate Windows' watermark with the instruction 'Go to Settings to activate Windows.'

Figure 5.9: Sign Up Page

After login the user will be directed to the User Dashboard page. Here the user will be able to see their Recent Repos and latest Enrolled Courses.

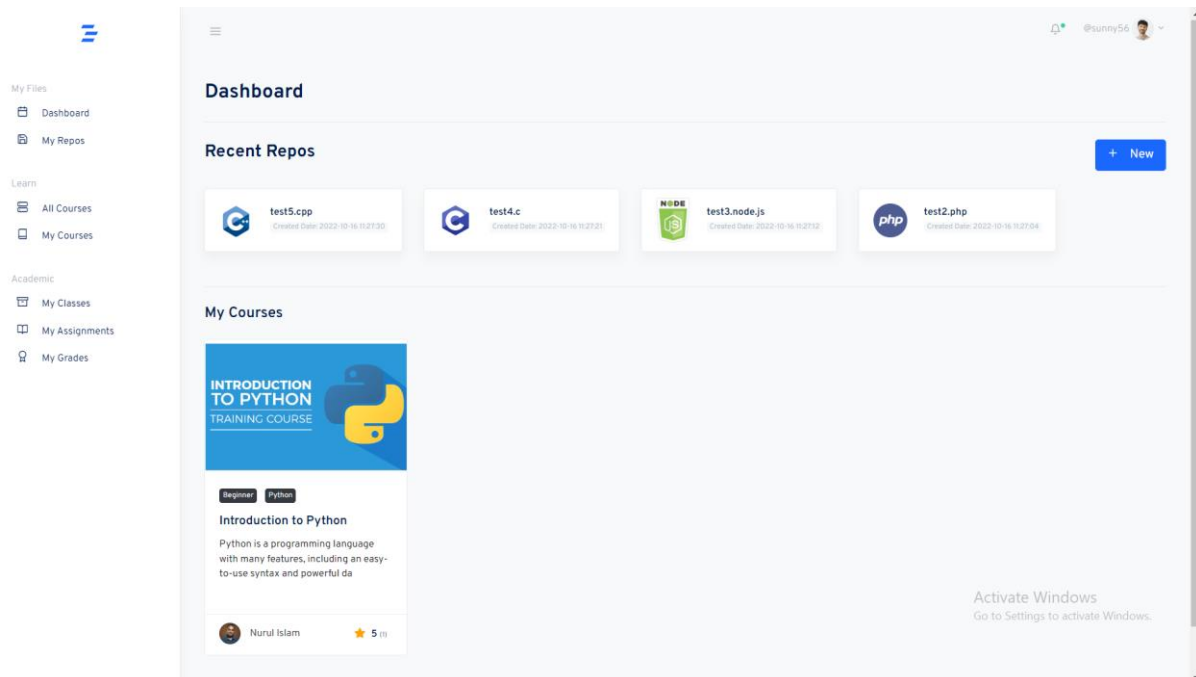


Figure 5.10: User Dashboard

Users will be able to see all the repos they have created in My Repos section. They will also be able to edit, delete and download their created repo.

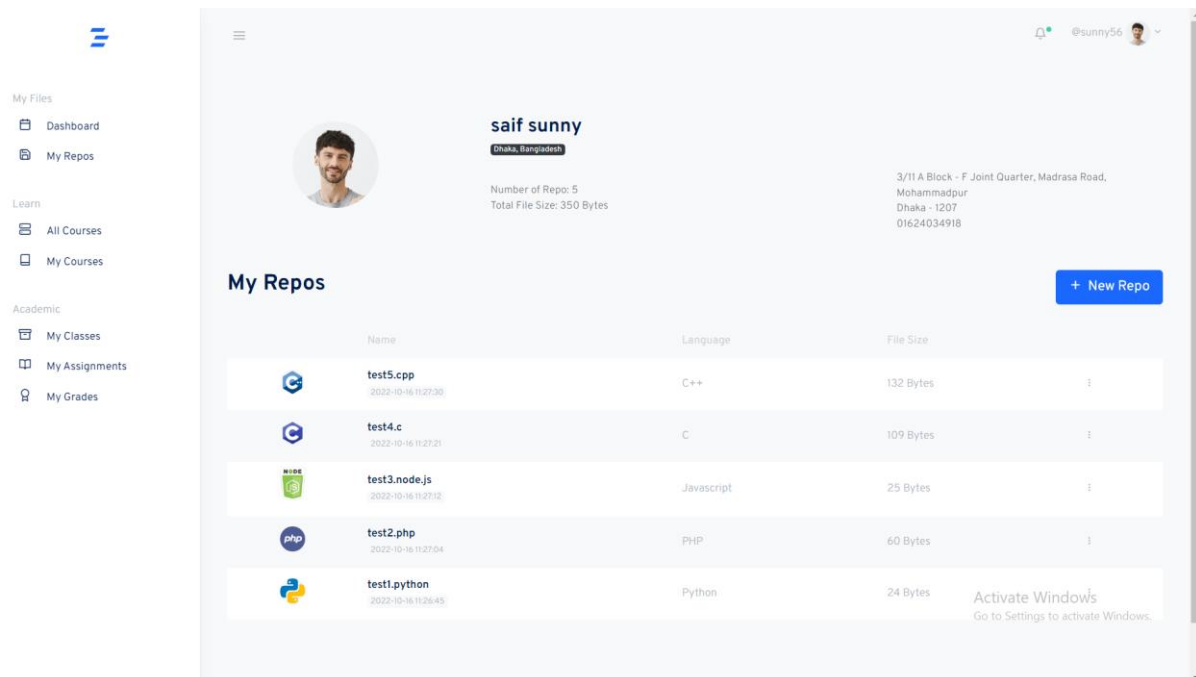


Figure 5.11: User Repos

Users will be able to create repositories in C, C++, Python, PHP and JavaScript Languages

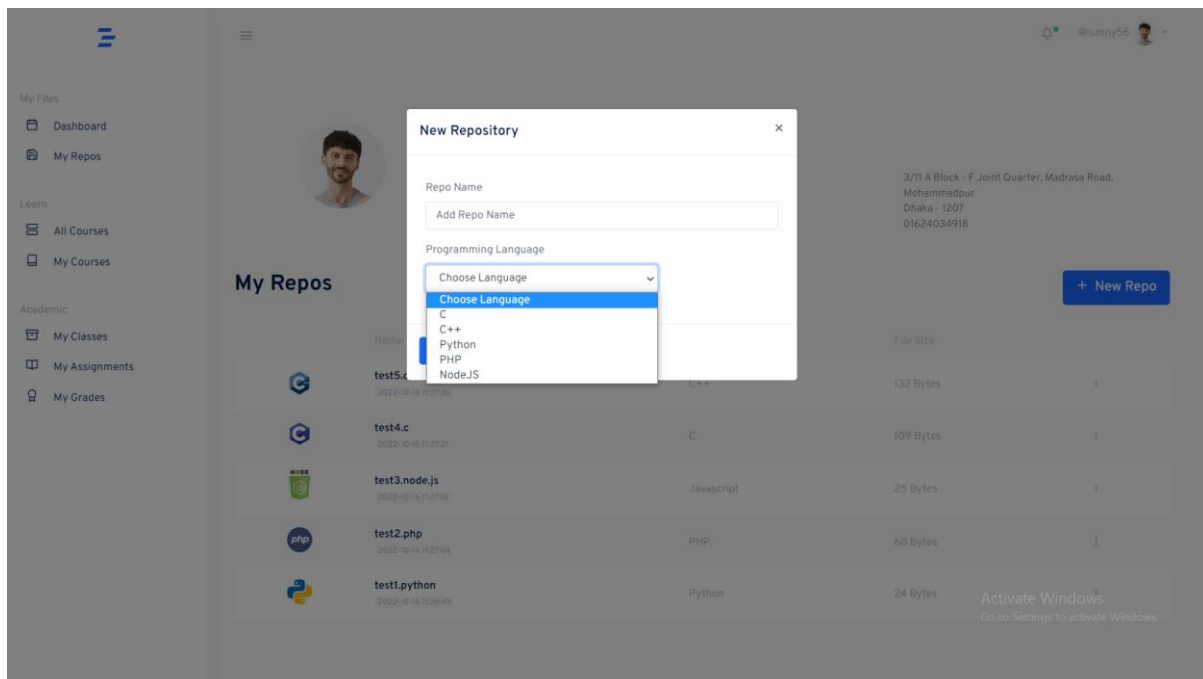


Figure 5.12: User Add Repos

Users will be able to Compile and Run Repositories in C, C++, Python, PHP and JavaScript Languages

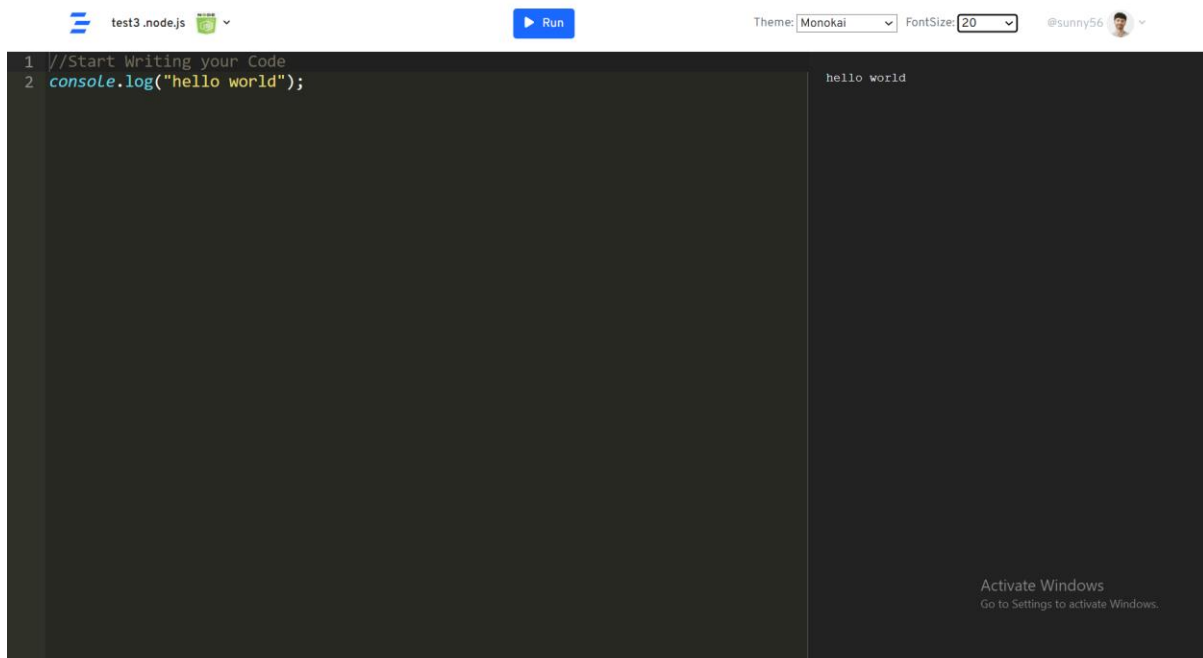


Figure 5.13: User Compile and Run Repo

Users will be able to view all the Paid and Free Courses created by all the Teachers via the All Courses Option.

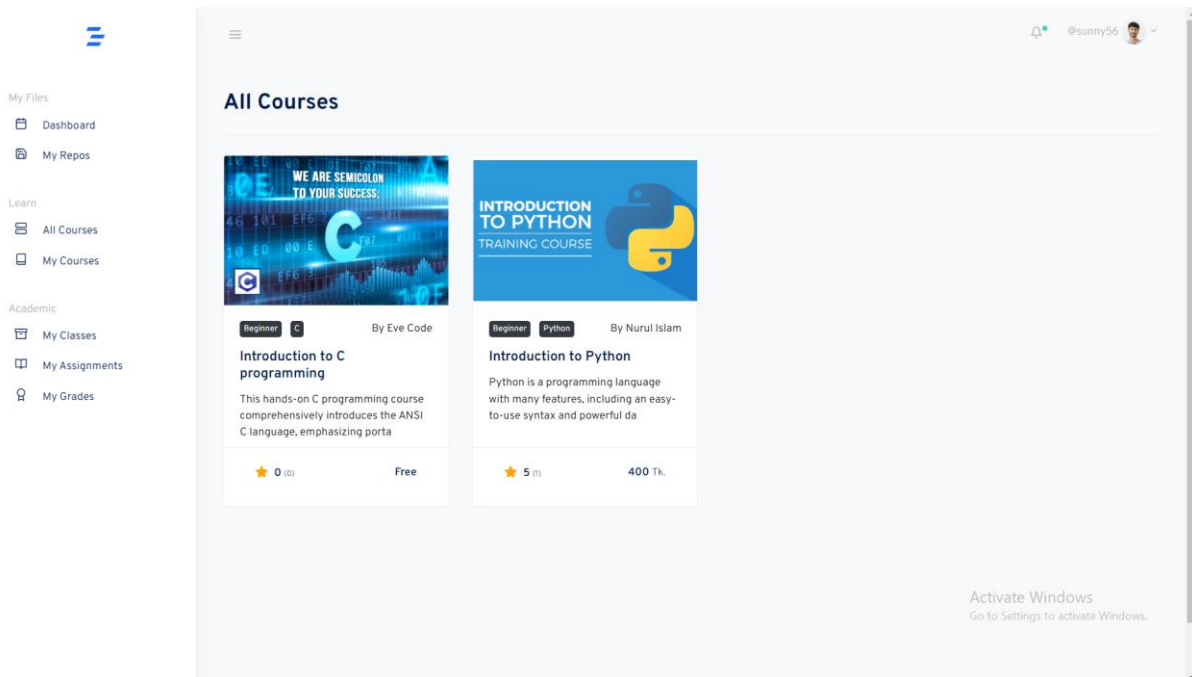


Figure 5.14: All Courses

Users will be able to view all the courses they are enrolled in via the My Courses Option.

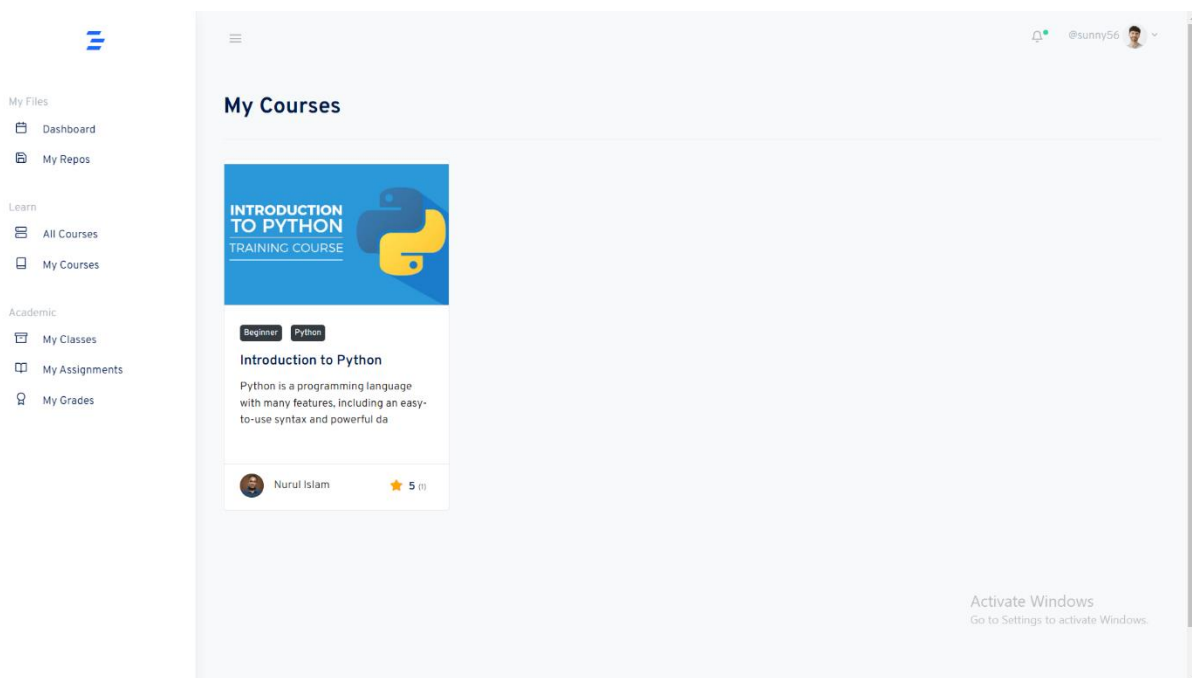


Figure 5.15: User Courses

Users will be able to view the course profiles by selecting the desired course card. The users will be able to enroll in the course by clicking the “Enroll Now” button. Already enrolled users

will view the button as “Enrolled” and they will also be able to use the Rate Option. Users ratings will be shown in the Course Reviews Section. Also, Whenever the user completes a lesson the system will mark the lesson as green.



Figure 5.16: Courses Profile

Users will be able to view their Academic Courses via the My Classes Option.

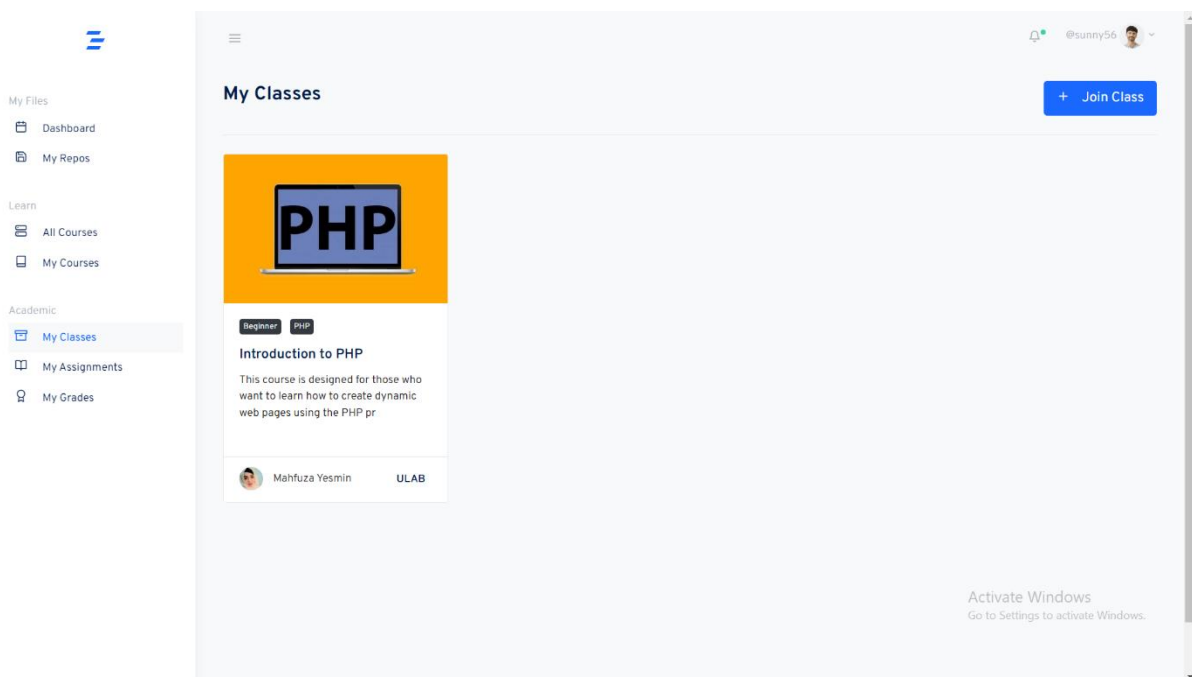


Figure 5.17: User Academic Courses

The user will be able to join their Academic Classes via pasting the class joining code in the join class modal.

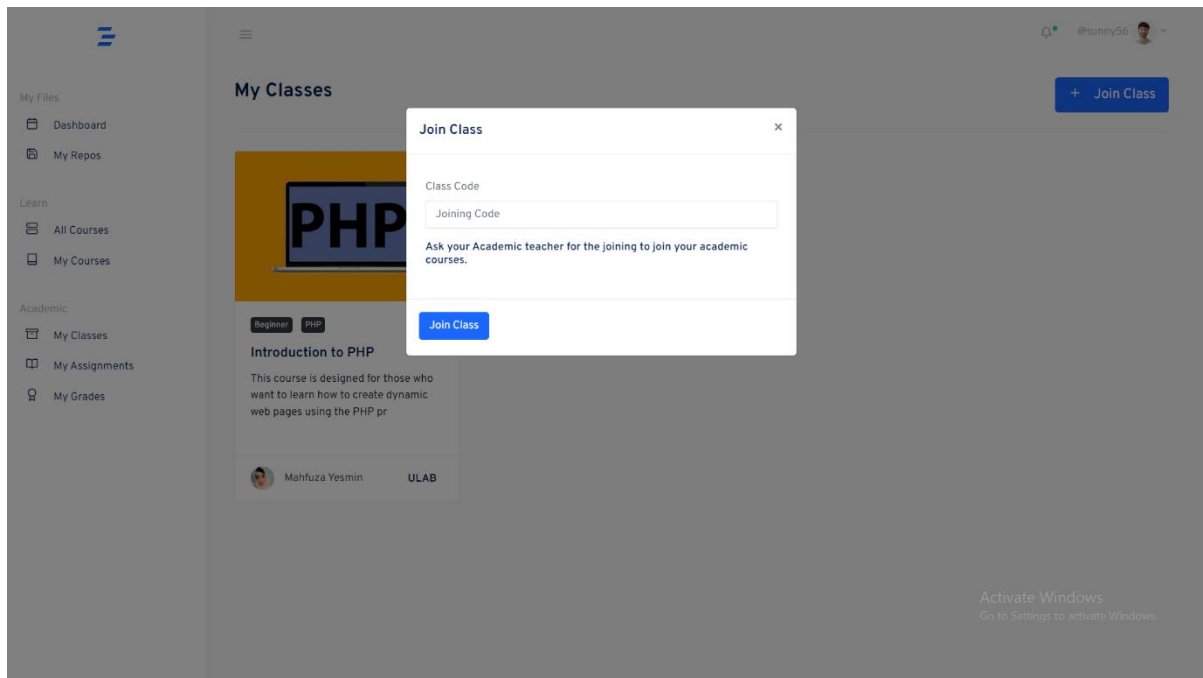


Figure 5.18: User Enroll in Academic Course

Users will be able to view the course profile via selecting the course card. Users will then be able to attempt and solve course lessons and assignments. Solved materials will be marked in a green tinge.

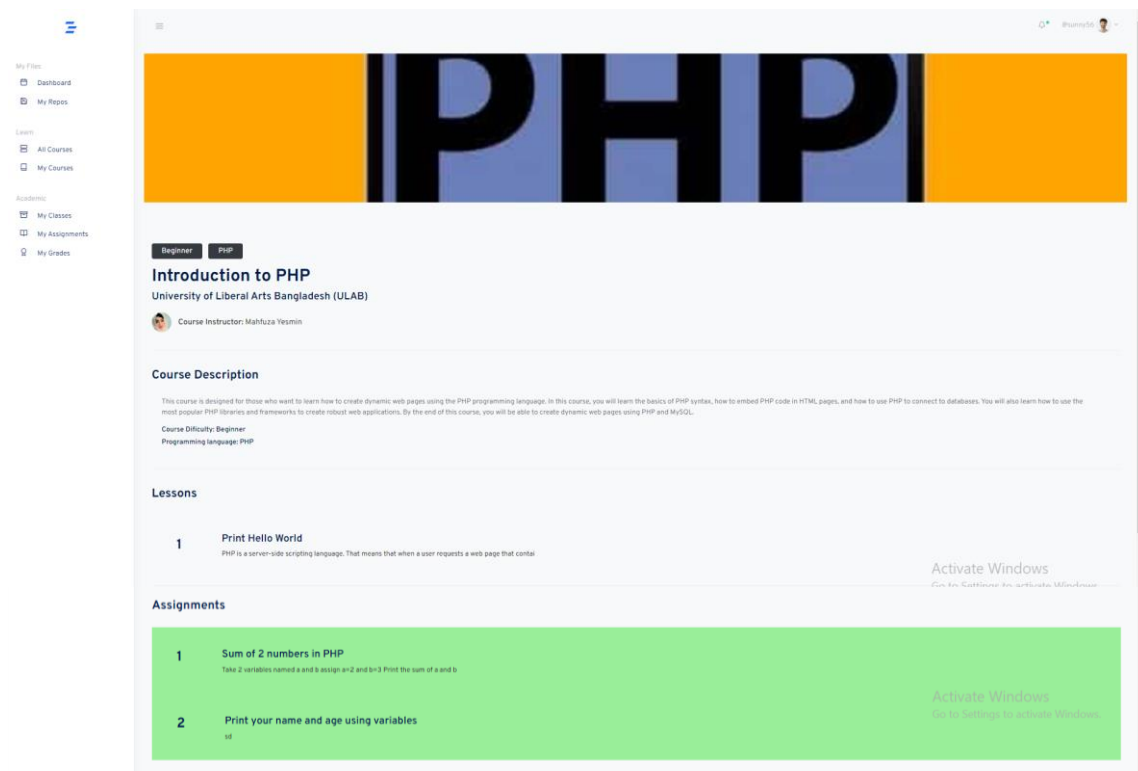


Figure 5.19: User Academic Course Profile

After clicking on a lesson or an assignment, the user will view the following page. On the left side the system will show all the instructions set by the Teacher. The user can write their code on the middle section and press the run button to run their code.

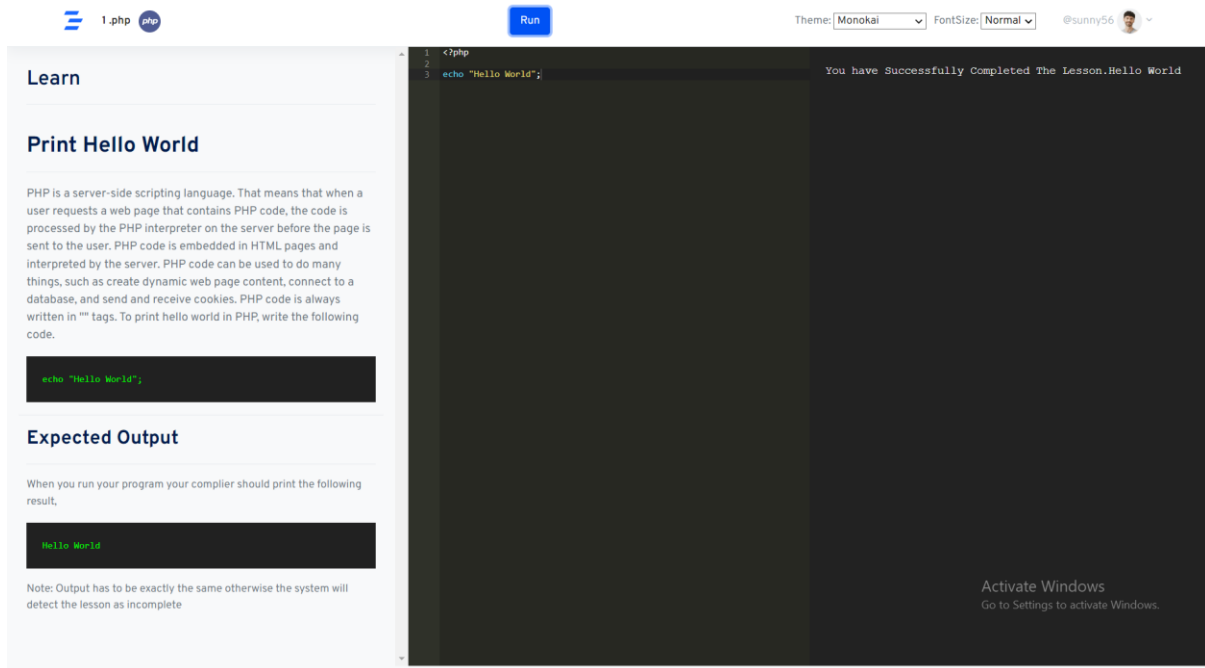


Figure 5.20: Course Compiler

My Assignment option will show the user all the upcoming appointments and their deadline via individual countdowns.

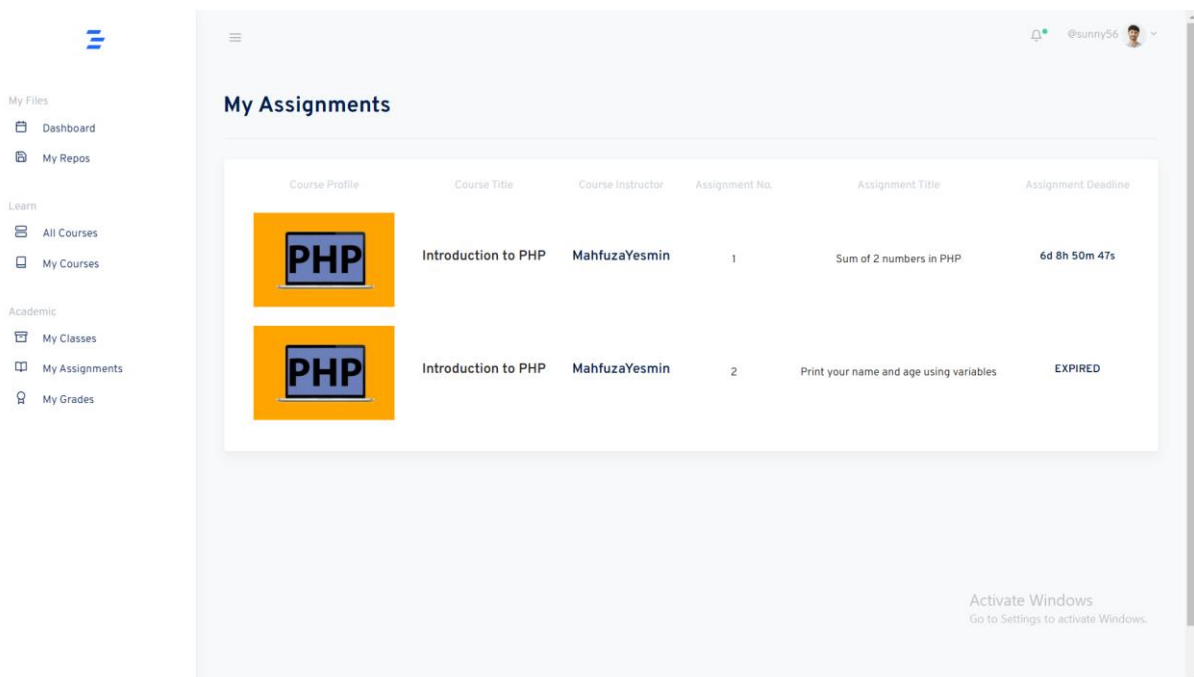
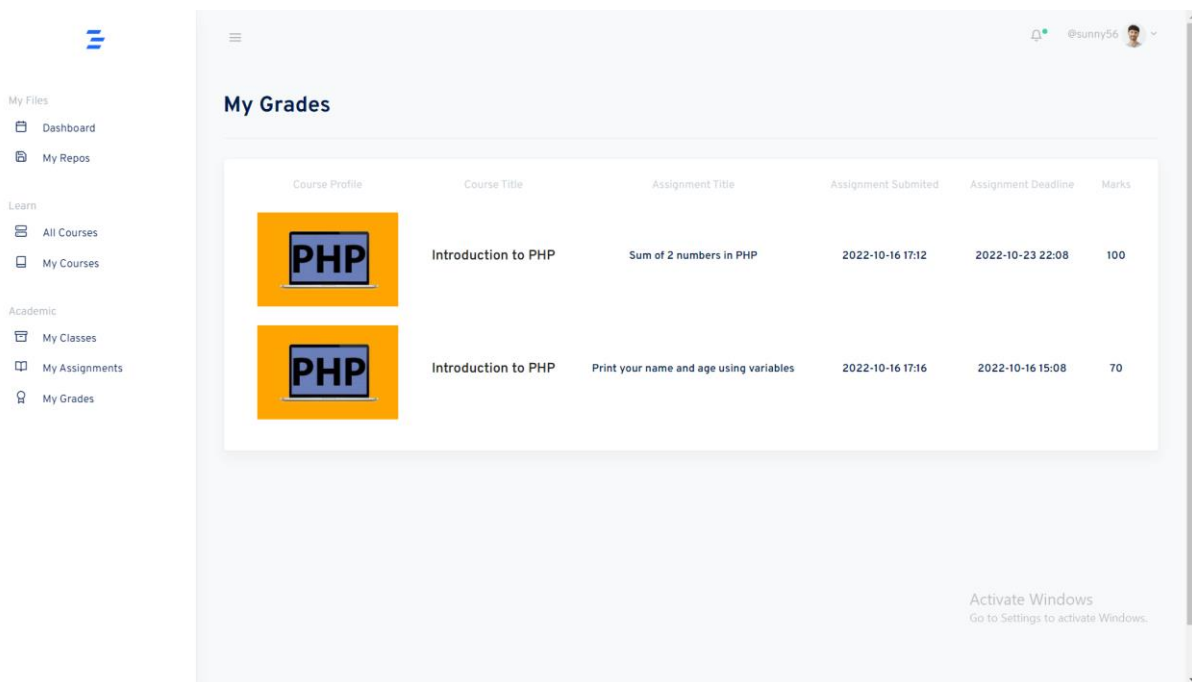


Figure 5.21: User Assignments

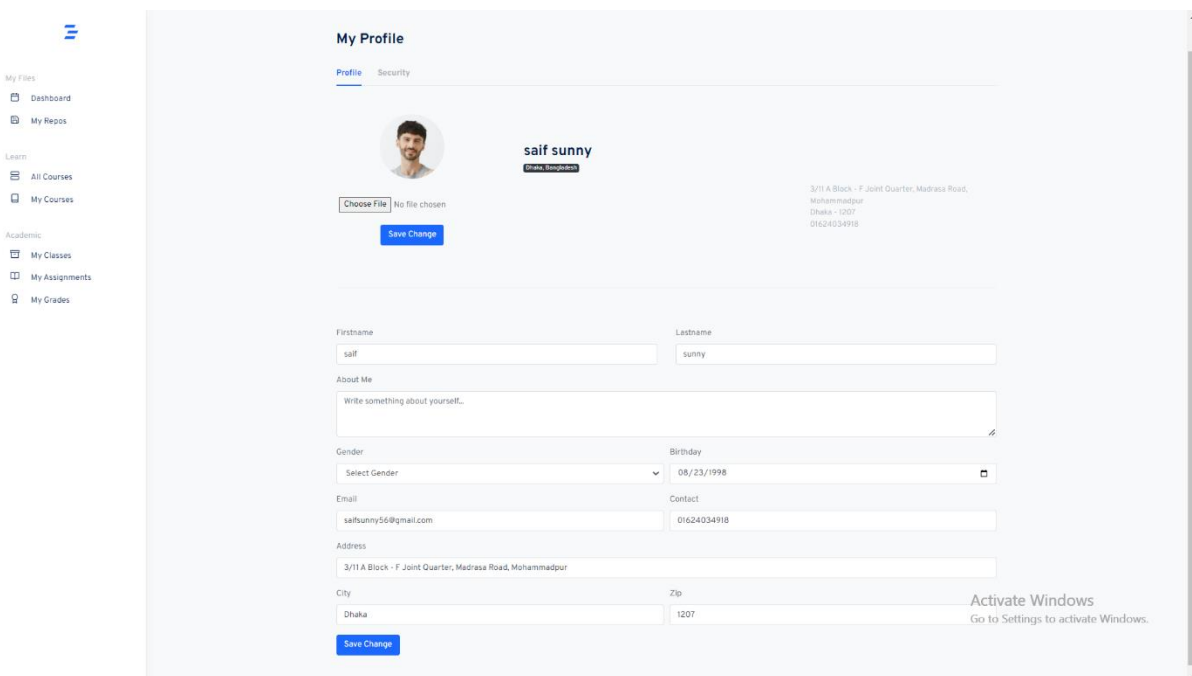
My Grades option will show the user all the grades they received in the assigned assignments.



Course Profile	Course Title	Assignment Title	Assignment Submitted	Assignment Deadline	Marks
	Introduction to PHP	Sum of 2 numbers in PHP	2022-10-16 17:12	2022-10-23 22:08	100
	Introduction to PHP	Print your name and age using variables	2022-10-16 17:16	2022-10-16 15:08	70

Figure 5.22: User Assignments Grades

My Profile option will show the user their system data which they can update at any time. Users will also can change their profile picture.



My Profile

[Profile](#) [Security](#)

 **saif sunny**
Dhaka, Bangladesh

[Choose File](#) | No file chosen
[Save Change](#)

3/11 A Block - F Joint Quarter, Madrasa Road, Mohammadpur
Dhaka - 1207
01624034918

Firstname: saif Lastname: sunny

About Me
Write something about yourself...

Gender: Select Gender Birthday: 08/23/1998

Email: saifsunny56@gmail.com Contact: 01624034918

Address: 3/11 A Block - F Joint Quarter, Madrasa Road, Mohammadpur

City: Dhaka Zip: 1207

[Save Change](#)

Figure 5.23: User Profile

Users will be able to change their password, enable or disable system notifications in the security option.

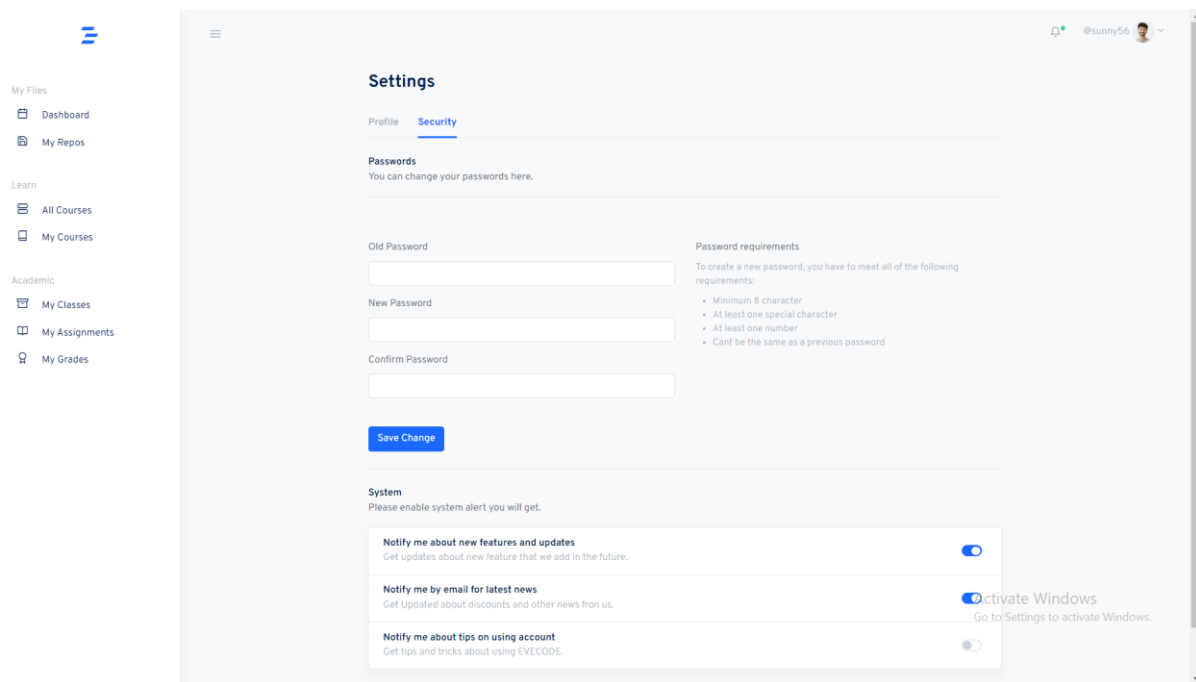


Figure 5.24: User Security

After login the teachers will be directed to the Teacher Dashboard page. Here the Teacher will be able to see their Recent Repos and latest Created Courses.

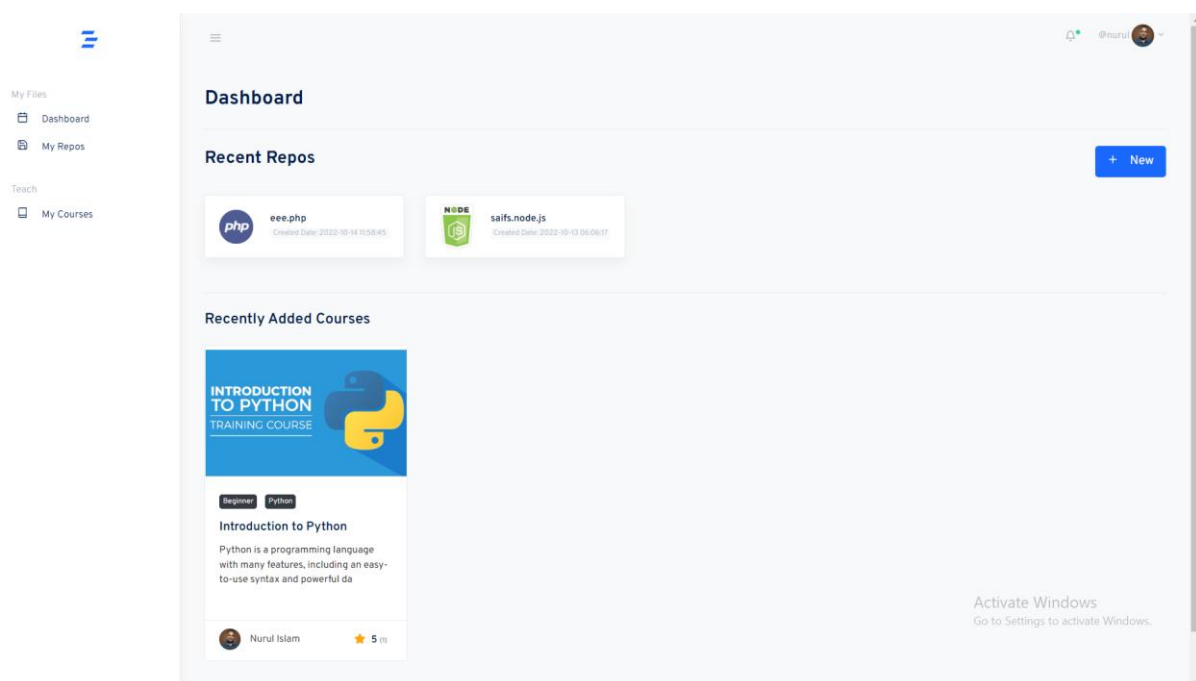


Figure 5.25: Teacher Dashboard

Teachers will be able to see all the repos they have created in My Repos section. They will also be able to edit, delete and download their created repo.

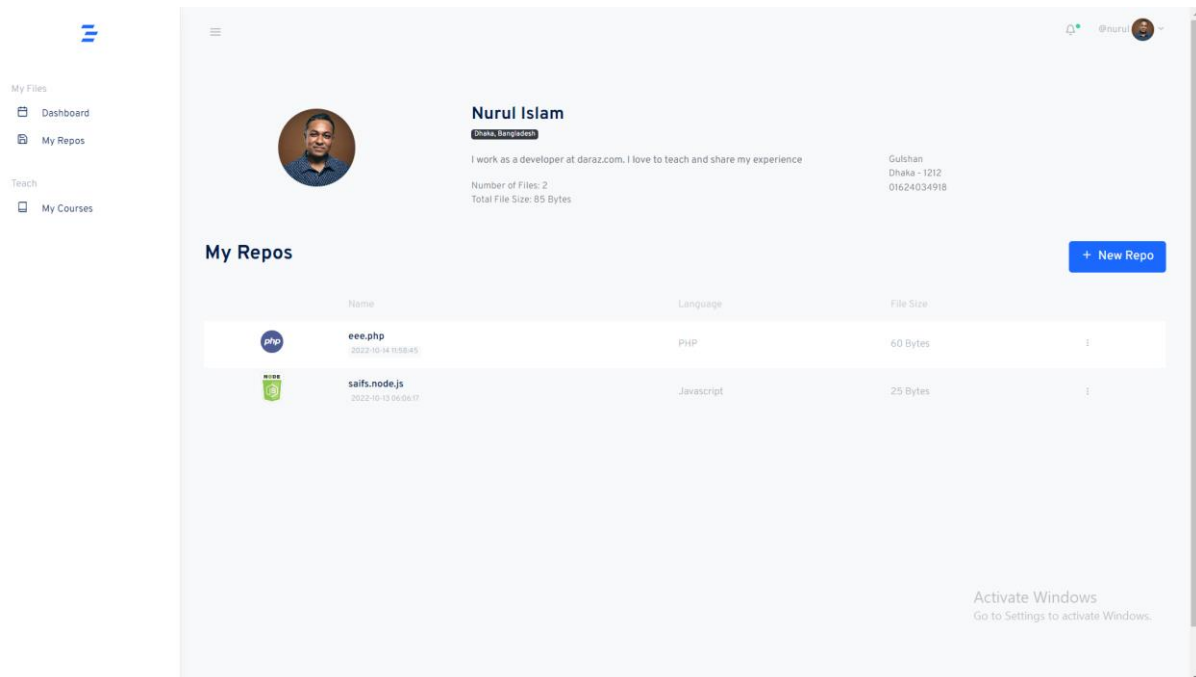


Figure 5.26: Teacher Repo Management

Teachers will be able to see all the courses they have created in My Courses Option.

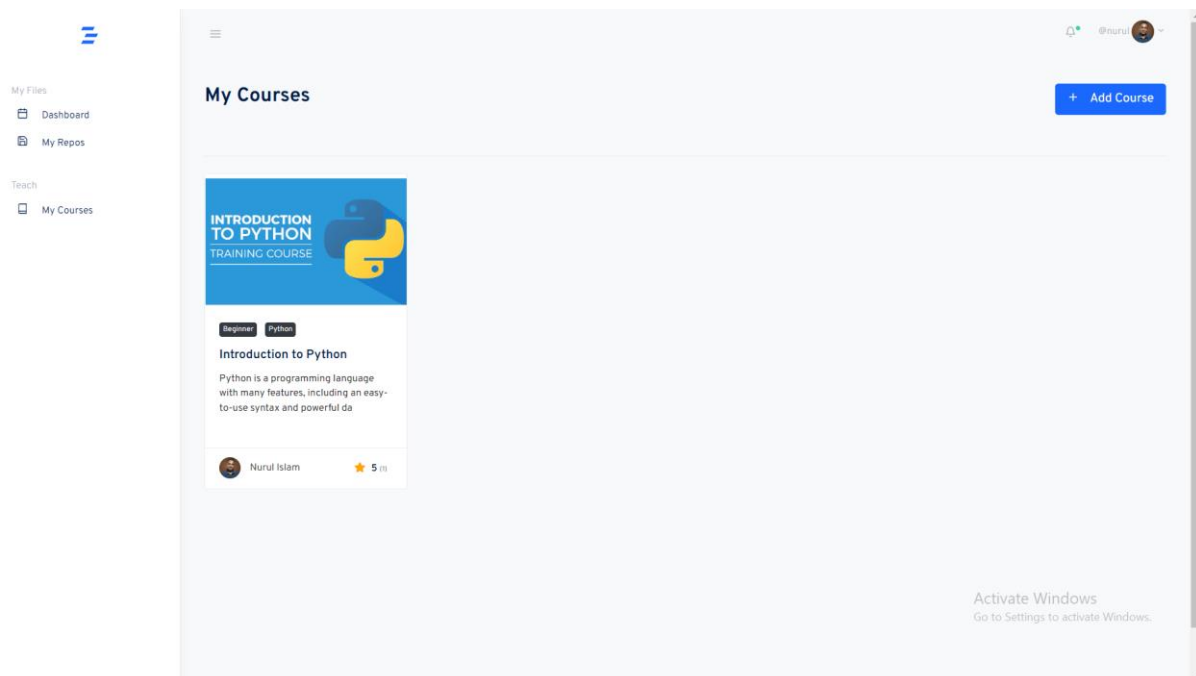


Figure 5.27: Teacher Courses

Teachers will be able to add a course by clicking on the Add Course button and filling the form.

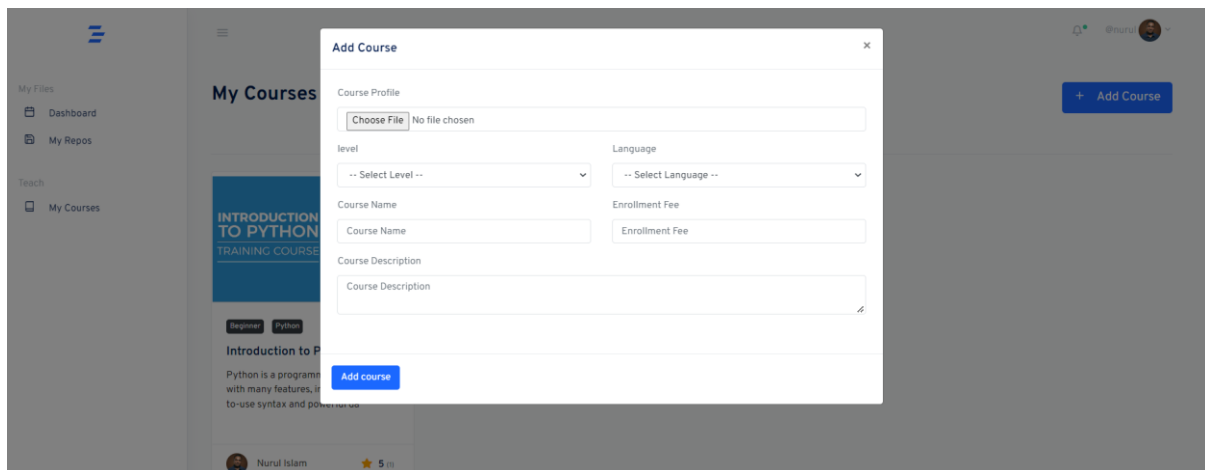
The image shows a web application interface with a sidebar on the left containing 'My Files' (Dashboard, My Repos) and 'Teach' (My Courses). The main content area is titled 'My Courses' and displays a course card for 'INTRODUCTION TO PYTHON TRAINING COURSE' by Nurul Islam. An 'Add Course' modal is open in the center, featuring a 'Course Profile' section with a 'Choose File' button, 'Level' and 'Language' dropdowns, 'Course Name' and 'Enrollment Fee' input fields, and a 'Course Description' text area. An 'Add course' button is at the bottom of the modal. A '+ Add Course' button is also visible in the top right of the main content area.

Figure 5.28: Teacher Add Course

Teachers will be able to view the course profile by clicking on the course card. Teachers will also be able to view the course students, update course information, and add course lessons. Teacher will also be able to the course lessons and the full course.

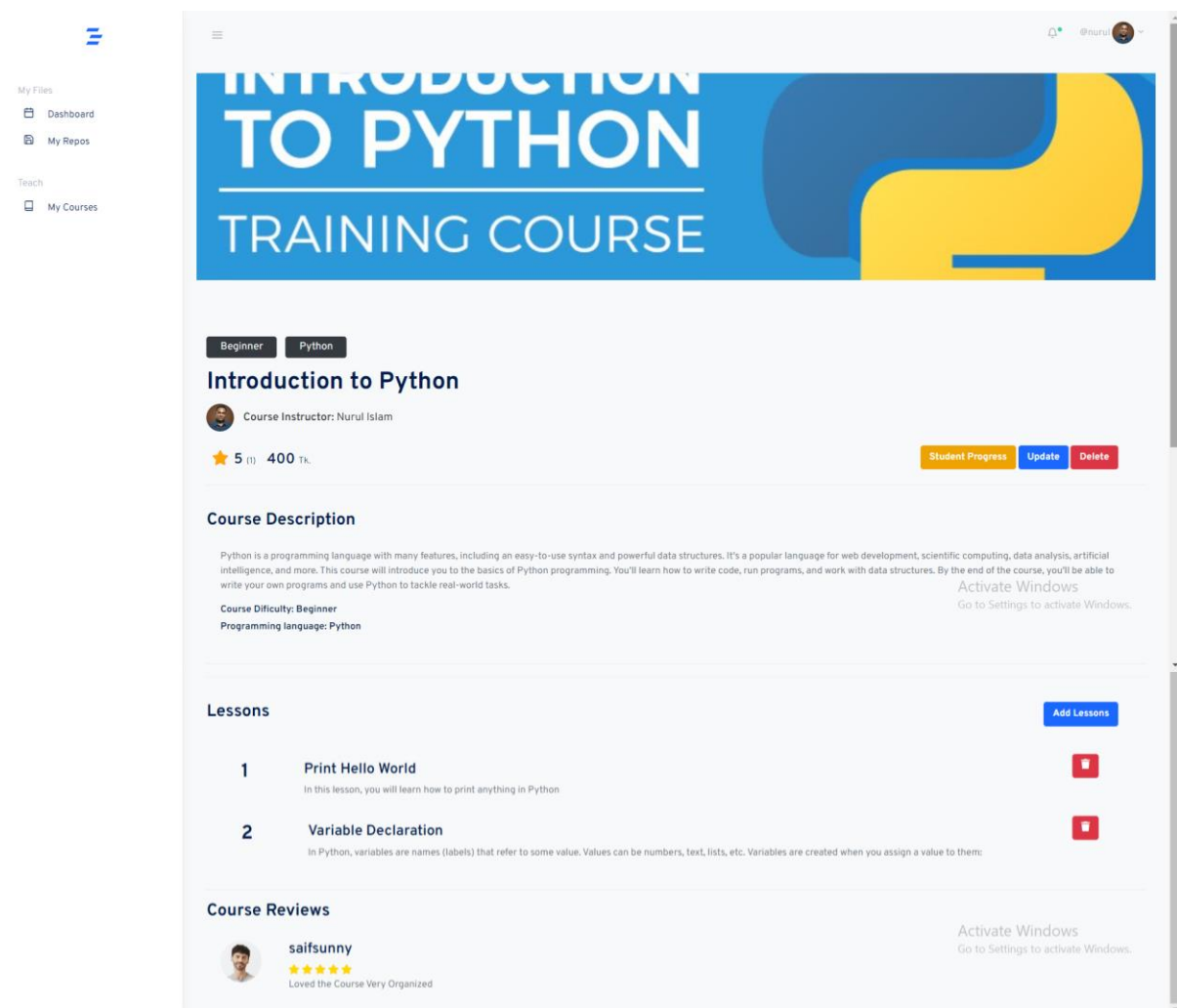
The image shows the 'Teacher Course Profile' for 'Introduction to Python'. The page has a sidebar with 'My Files' and 'Teach' sections. The main content area features a large blue and yellow banner with the course title. Below the banner, there are tabs for 'Beginner' and 'Python', the course title 'Introduction to Python', the instructor's name 'Nurul Islam', and a star rating of 5 (1) with 400 reviews. Action buttons for 'Student Progress', 'Update', and 'Delete' are present. The 'Course Description' section includes a paragraph about Python and a 'Course Difficulty: Beginner' label. The 'Lessons' section lists two lessons: '1 Print Hello World' and '2 Variable Declaration', each with a description and an 'Add Lessons' button. The 'Course Reviews' section shows a review from 'saifsunny' with a 5-star rating and the text 'Loved the Course Very Organized'. A watermark 'Activate Windows' is visible on the right side of the page.

Figure 5.29: Teacher Course Profile

Teachers will be able to add new lessons by clicking on the add lesson button.

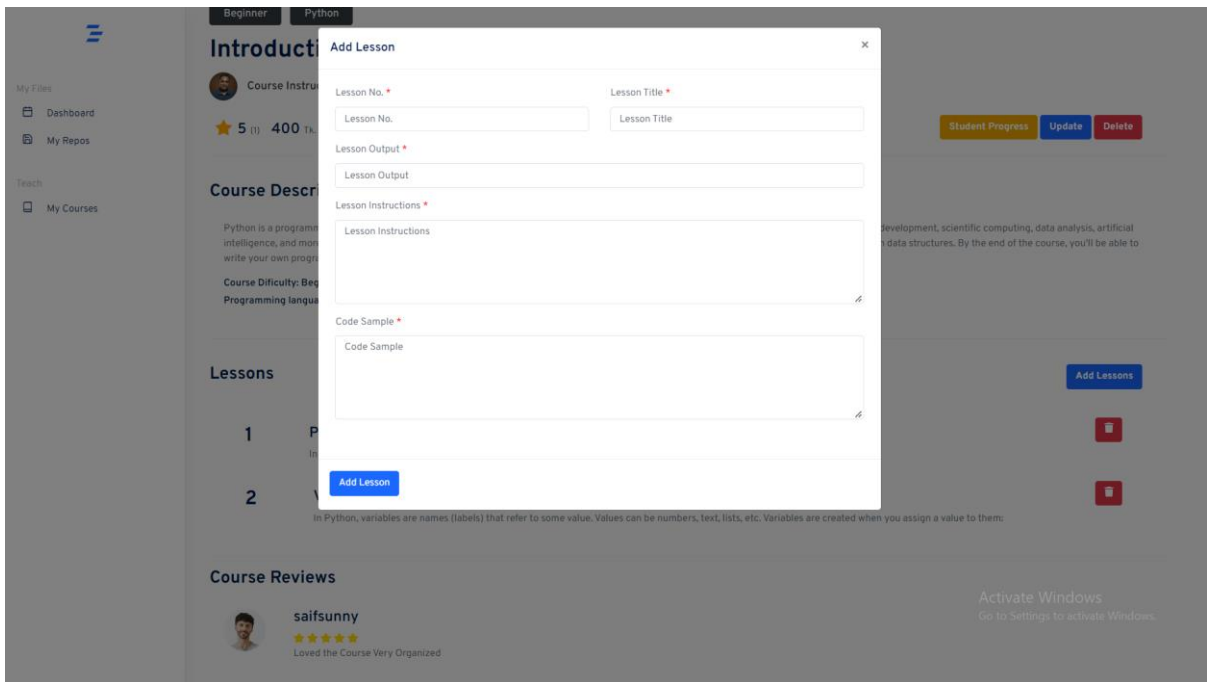


Figure 5.30: Teacher Add Lesson

Teachers will be able to view student progress report by clicking on the course student button.

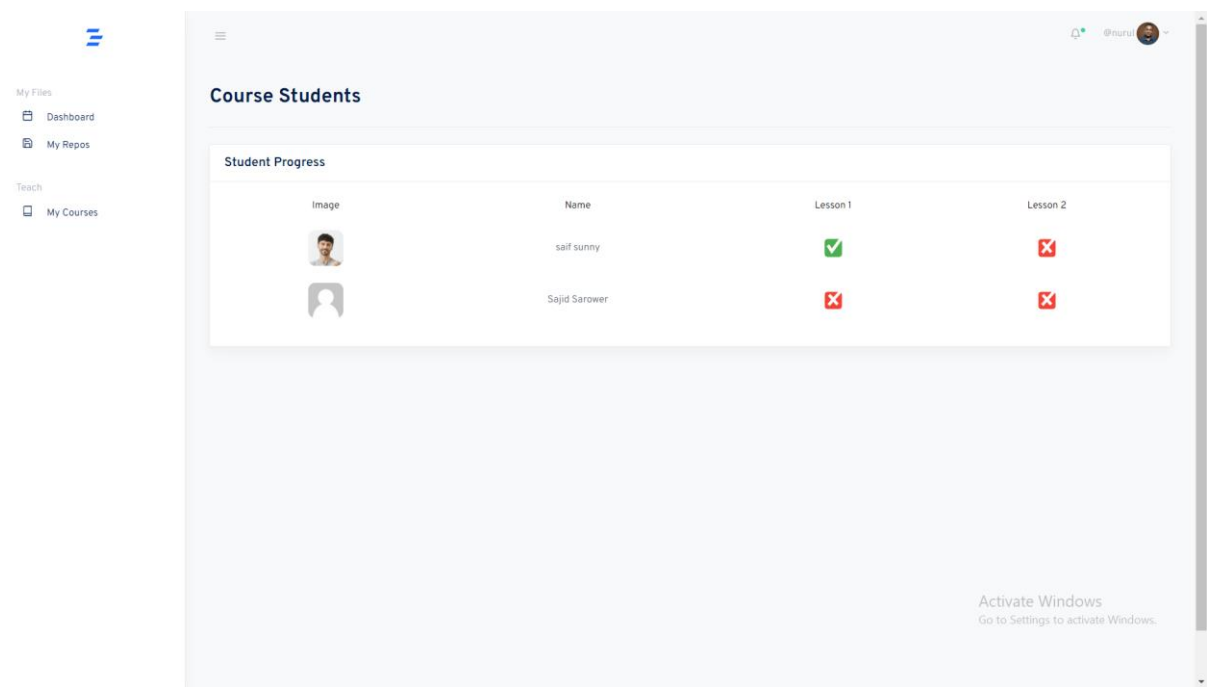


Figure 5.31: Teacher Student Report

Teachers will be able to create their academic course by clicking the add course button. They will be able to view the course profile Teachers will then be able to create lessons and assignments for the course. Teachers will also be able to delete the assigned lessons and assignments.

The screenshot shows a web interface for a course titled "Introduction to PHP" by the University of Liberal Arts Bangladesh (ULAB). The course is categorized as "Beginner" and "PHP". The instructor is Mahfuza Yesmin. The interface includes a sidebar with navigation links: "My Files", "Dashboard", "My Repos", "Academic", and "My Courses". The main content area displays the course description, which states that the course is designed for those who want to learn how to create dynamic web pages using the PHP programming language. It also includes a "Course Description" section with a difficulty level of "Beginner" and a programming language of "PHP". Below this, there are sections for "Lessons" and "Assignments". The "Lessons" section shows a single lesson titled "Print Hello World". The "Assignments" section shows two assignments: "Sum of 2 numbers in PHP" and "Print your name and age using variables". Each assignment has a "Student Progress" button and an "Add Lesson" or "Add Assignment" button. There are also "Student List", "Update", and "Delete" buttons for the course.

Figure 5.32: Teacher Academic Course Profile

Teachers will be able to create assignments by filling the form below.

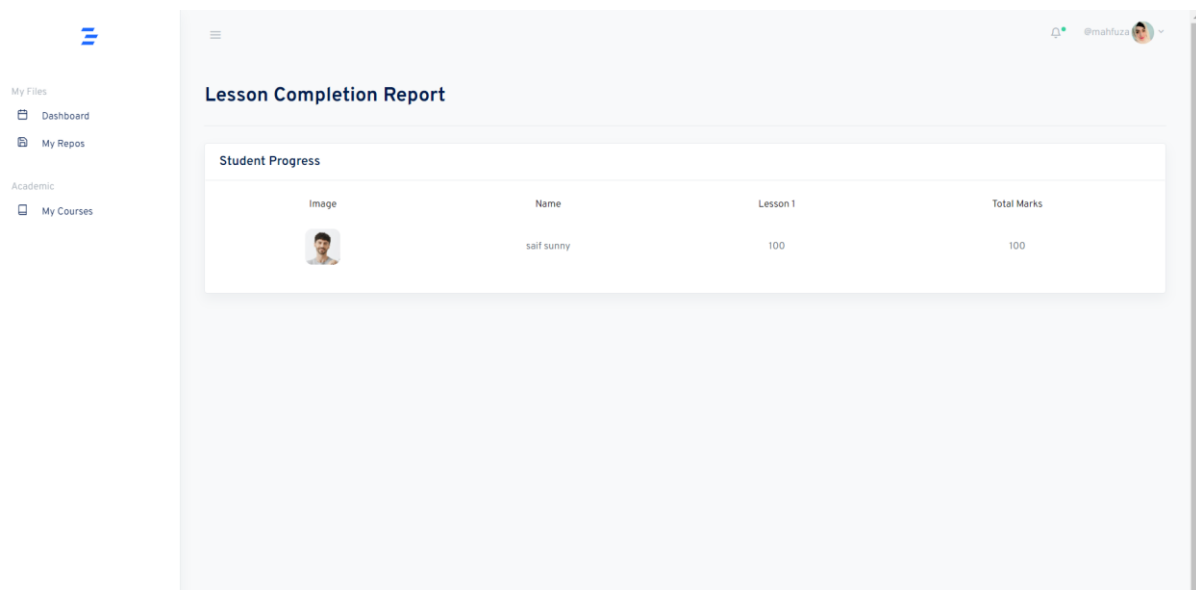
The screenshot shows the "Add Assignment" form overlay. The form has the following fields:

- Assignment No. ***: A text input field.
- Assignment title ***: A text input field.
- Assignment Output ***: A text input field.
- Assignment Deadline ***: A date and time picker.
- Assignment Instructions ***: A text area.
- Code Sample ***: A text area.

At the bottom of the form is an "Add Assignment" button. The background shows the same course profile as Figure 5.32, but with the form overlaying it.

Figure 5.33: Teacher Add Assignment

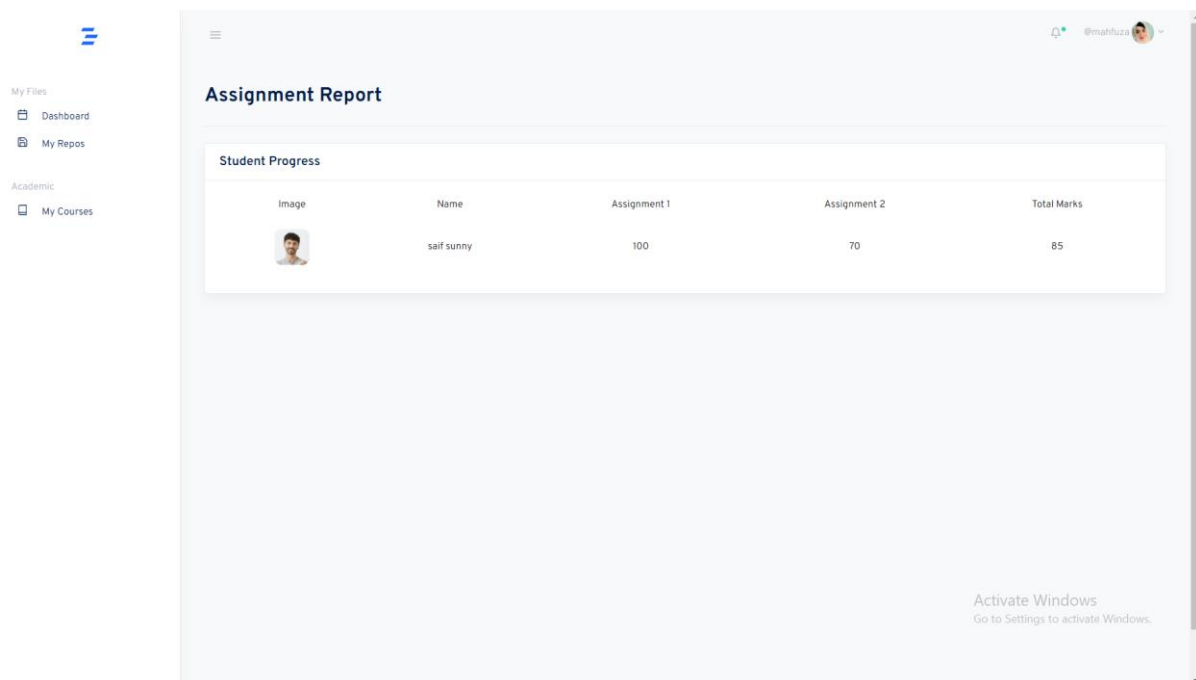
Teacher will be able to view and track which students have completed the lessons.



Student Progress			
Image	Name	Lesson 1	Total Marks
	saif sunny	100	100

Figure 5.34: Teacher Lesson Grade Report

Teacher will be able to view and track which students have completed the assignments.



Student Progress				
Image	Name	Assignment 1	Assignment 2	Total Marks
	saif sunny	100	70	85

Activate Windows
Go to Settings to activate Windows.

Figure 5.35: Teacher Assignment Grade Report

After login the university admin will be directed to the University Dashboard page. Here the admin will be able to view information about students, teacher and courses added by the university. The system will also calculate the number of temporary files in the server and the amount of space it is occupying. The University Admin has the option to clear those files.

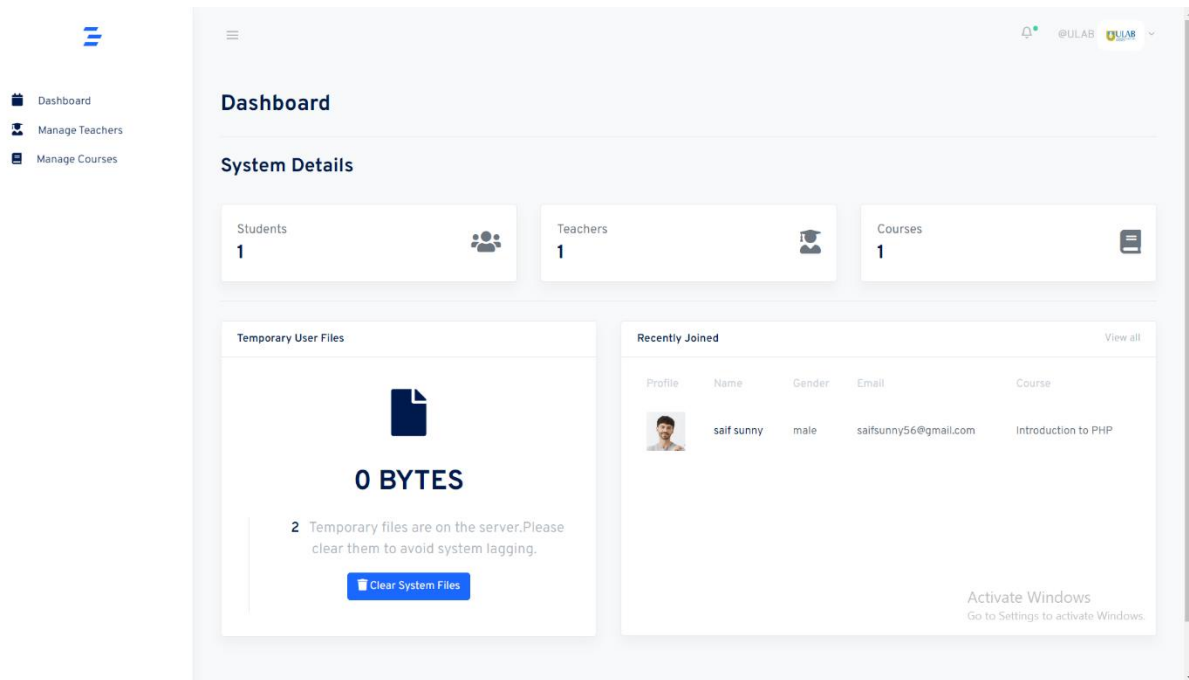


Figure 5.36: University Dashboard

University Admin will be able to view, add and also delete teachers.

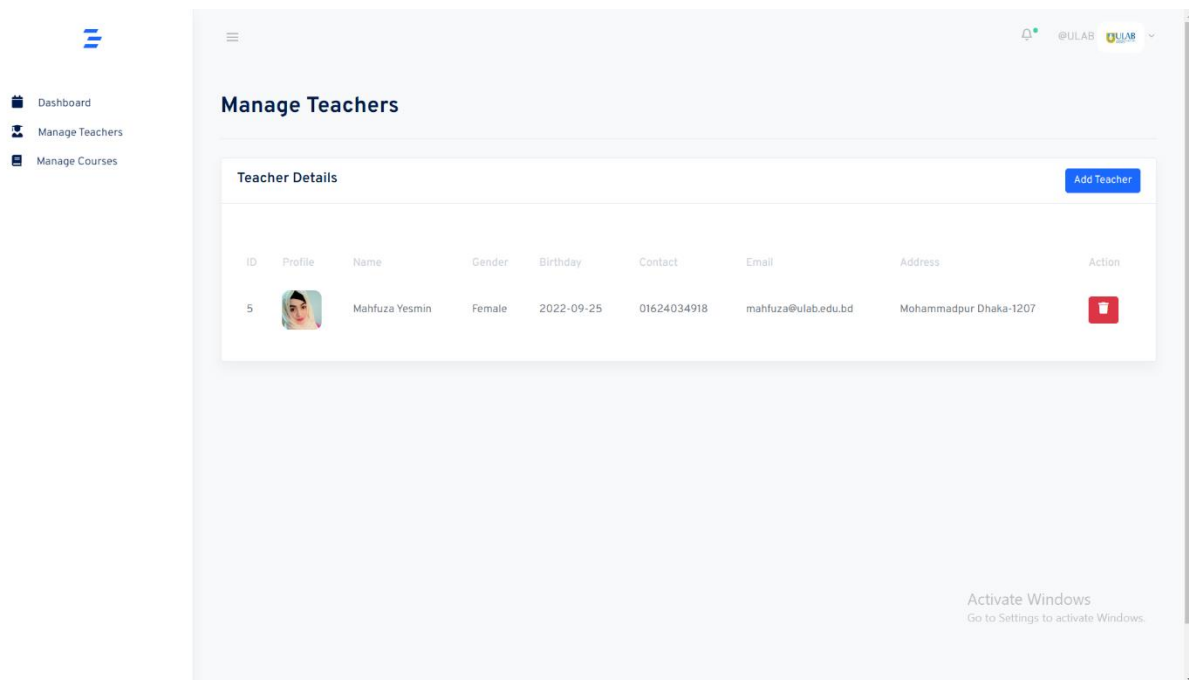


Figure 5.37: University Manage Teachers

University Admin will be able to view, add and also delete Courses.

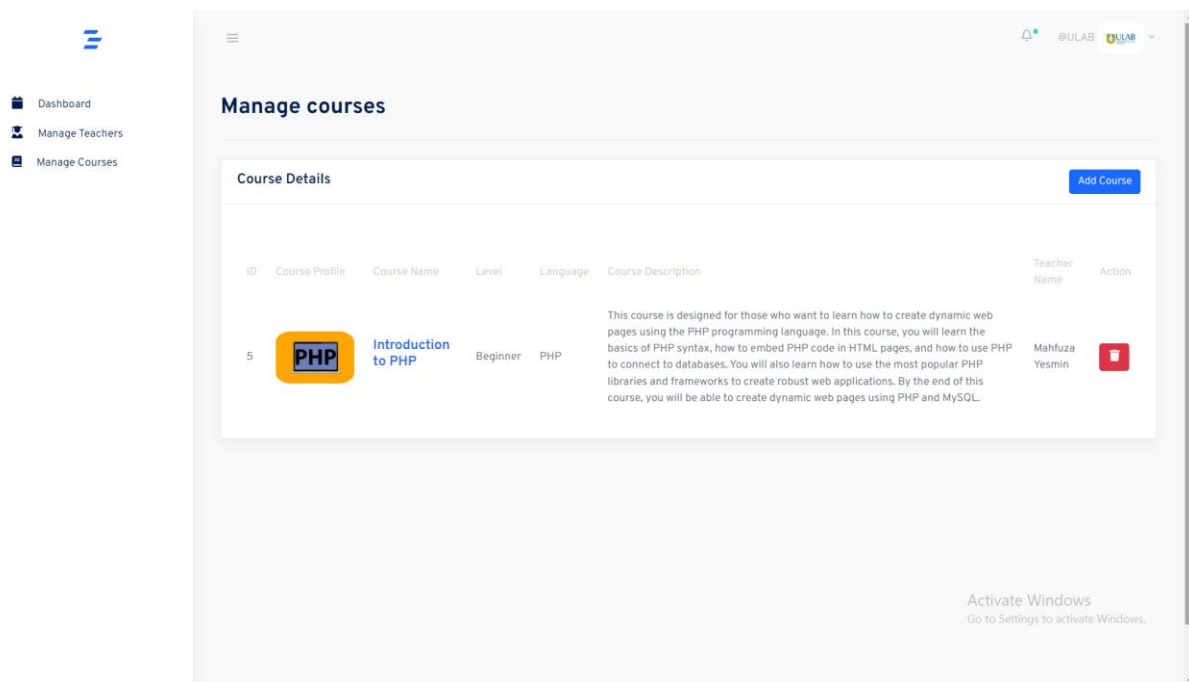


Figure 5.38: University Manage Courses

After login the admin will be directed to the Admin Dashboard page. Here the admin will be able to view information about students, teacher, universities and courses in the system. The system will also calculate the number of temporary files in the server and the amount of space it is occupying. The Admin has the option to clear those files. The admin will also be able to view recent logged in users.

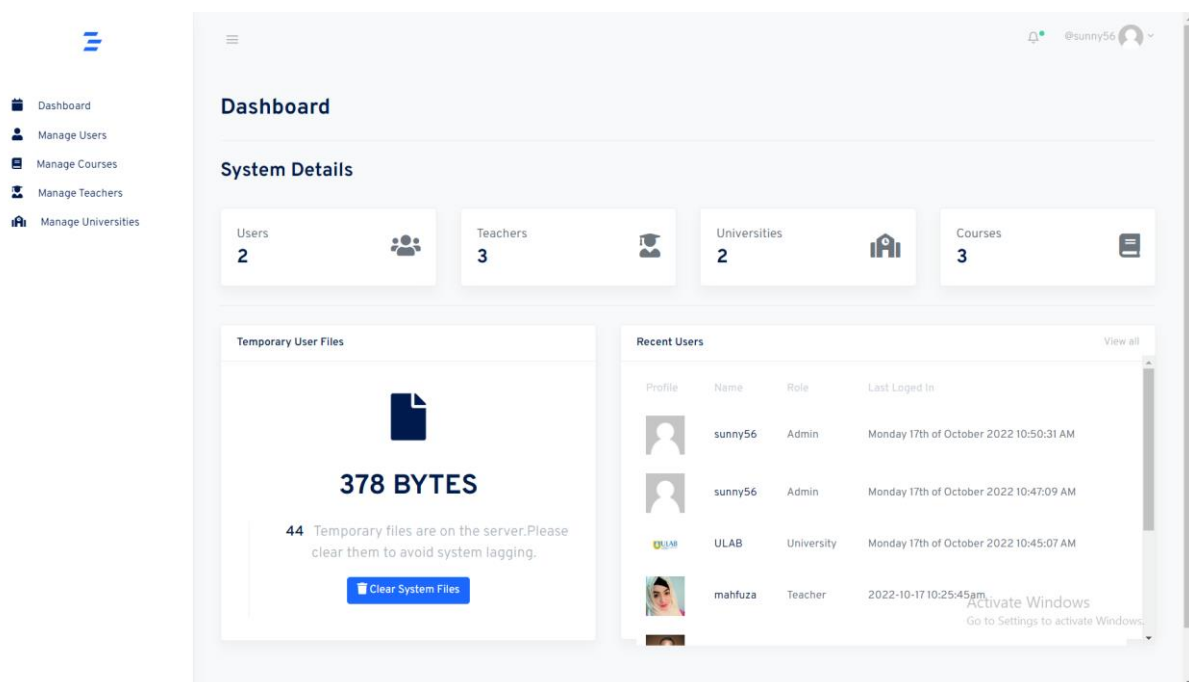


Figure 5.39: Admin Dashboard

University Admin will be able to view, add and also delete system users.

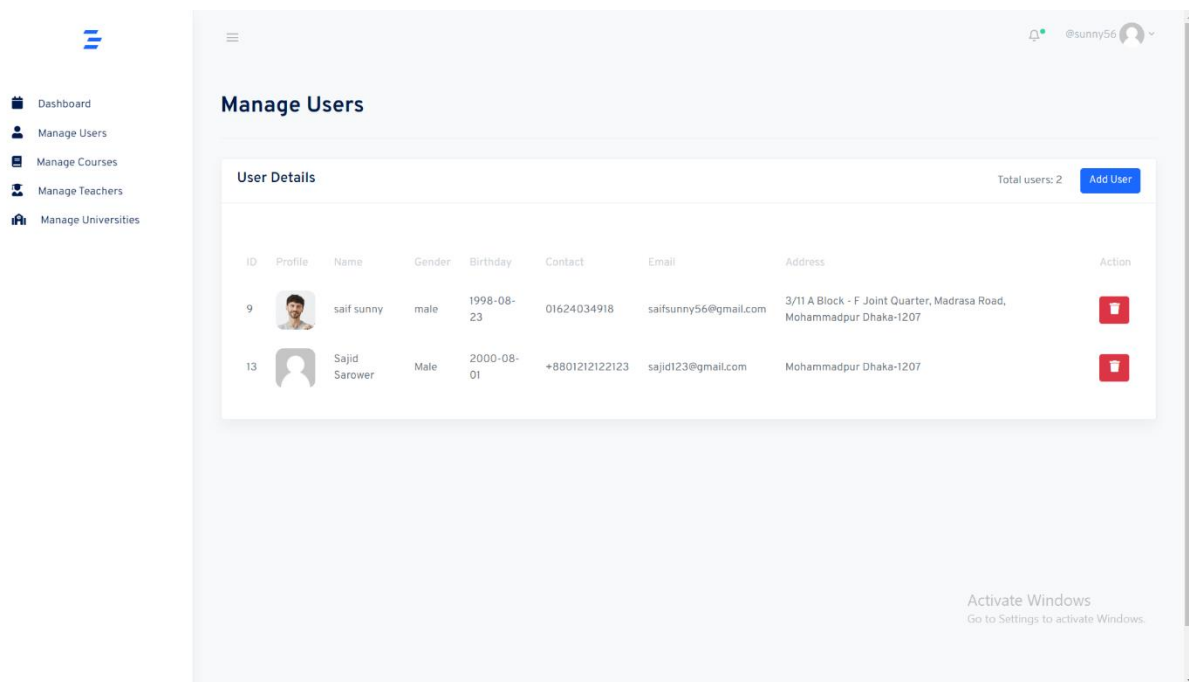


Figure 5.40: Manage Users

The admin will be able to add users by filling and submitting the following form.

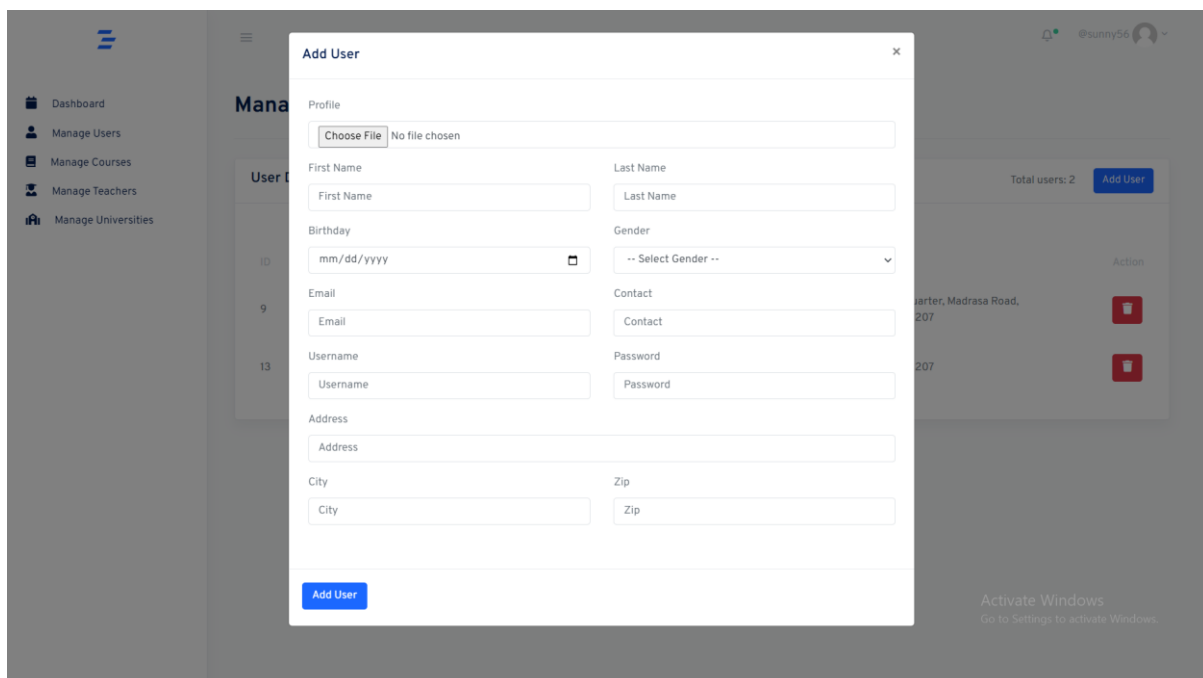


Figure 5.41: Add User

University Admin will be able to view, add and also delete system Courses.

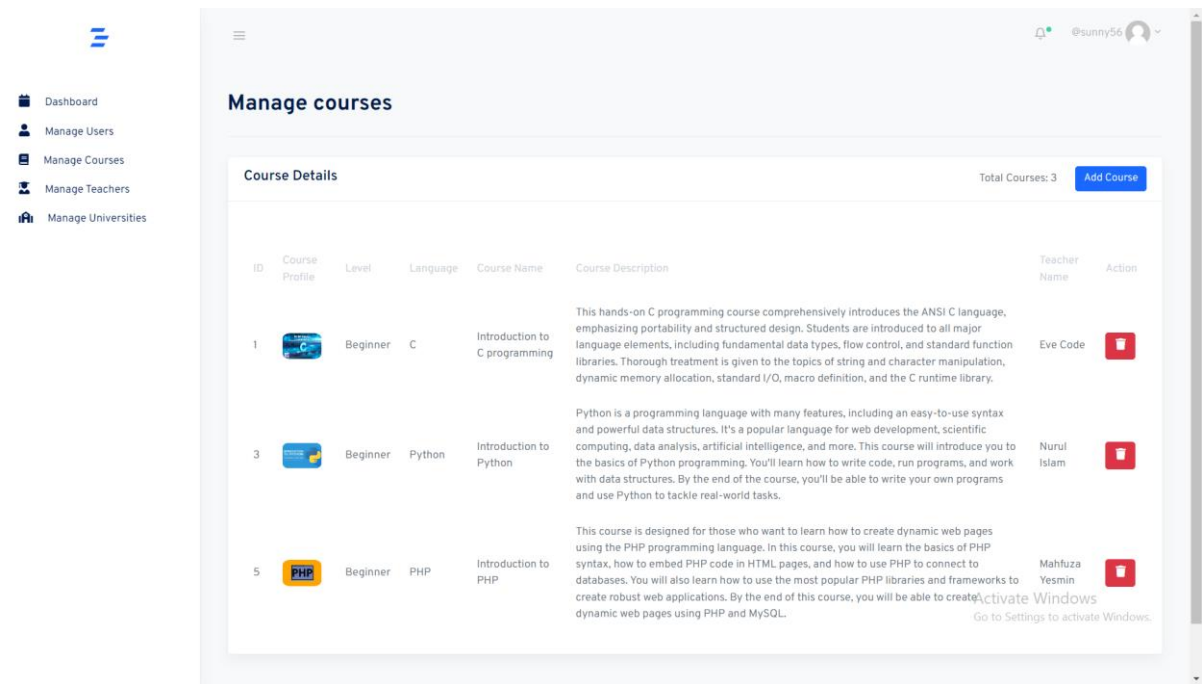


Figure 5.42: Manage Courses

The admin will be able to add Course by filling and submitting the following form.

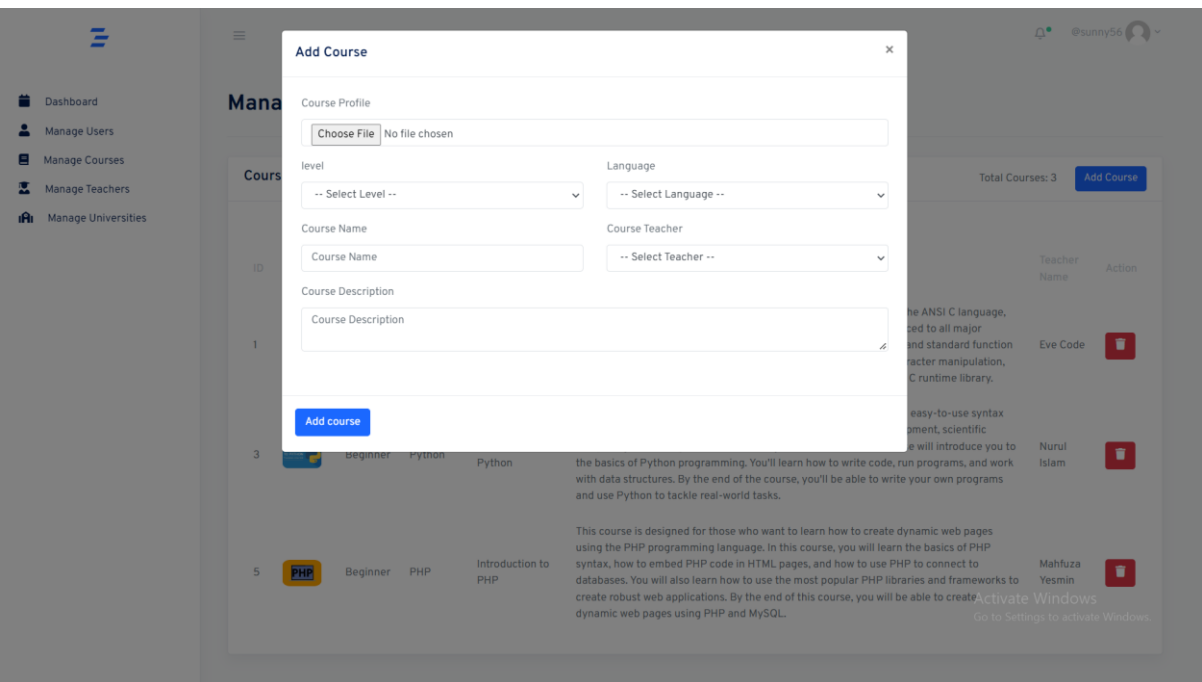


Figure 5.43: Add Course

University Admin will be able to view, add and also delete system Teachers.

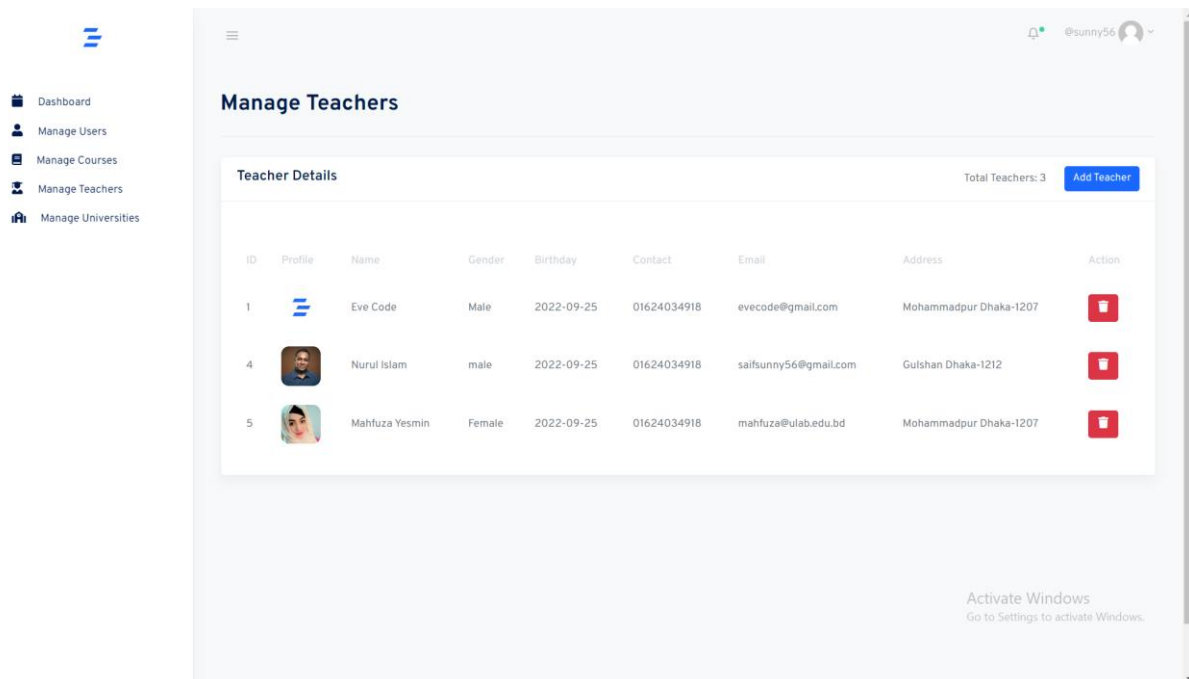


Figure 5.44: Manage Teachers

The admin will be able to add Teachers by filling and submitting the following form.

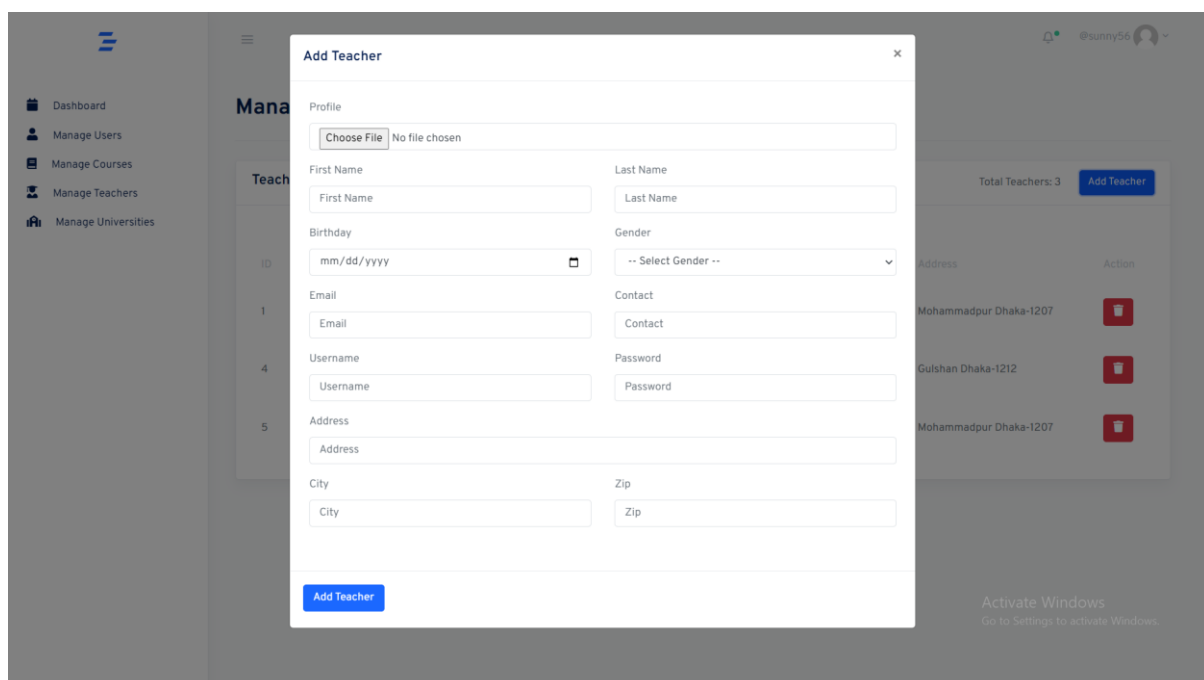


Figure 5.45: Add Teacher

University Admin will be able to view, add and also delete system universities.

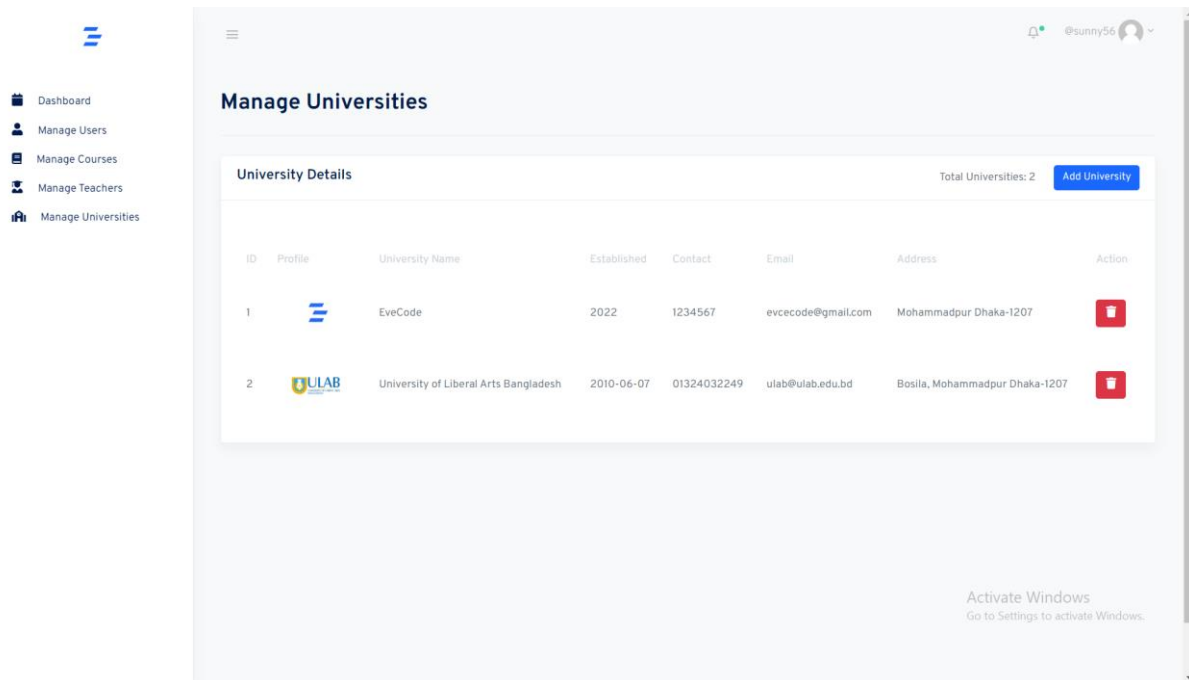


Figure 5.46: Manage University

The admin will be able to add University by filling and submitting the following form.

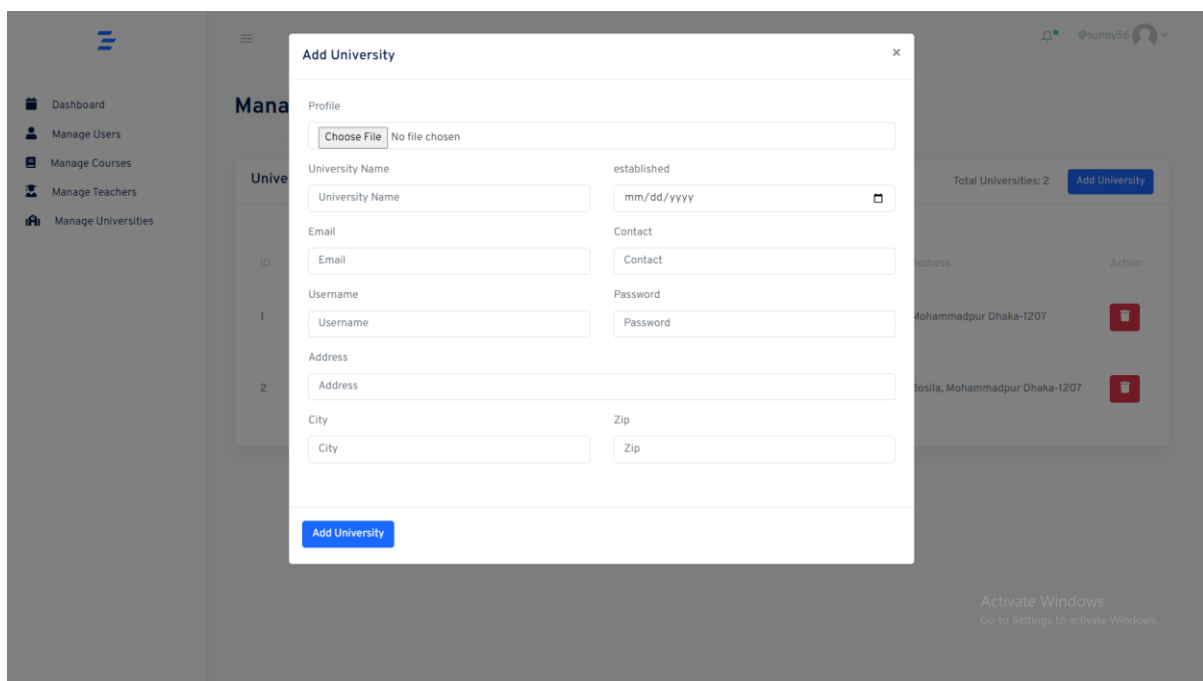


Figure 5.47: Add University

5.3 Test Case Identification

A test case is a set of conditions or variables under which a tester will determine whether a system under test is working correctly or not. The test case identification process includes identifying input values, expected output values, and preconditions and post conditions. There are various methods that can be used for test case identification. The most popular methods include functional decomposition, data flow, and use case analysis.

A functional decomposition is a top-down approach that breaks down the system into smaller and simpler units that can be easily tested. Data flow analysis is a bottom-up approach that analyzes the data flow within the system to identify test cases. Use case analysis is a combination of both functional decomposition and data flow analysis. Test case identification is important because it helps testers design comprehensive and effective test cases. Without test case identification, knowing what inputs to use, what outputs to expect, and what preconditions and post conditions need to be met would be difficult. [19]

Table 5.1 Test Case Identification

Test Case Identifier: TC 1 Pass Criteria: The test will pass if the visitor can successfully use the free compiler for compiling C, C++, Python, PHP and JavaScript. Input Data: Code
Test Case Identifier: TC 2 Pass Criteria: The test will pass if the visitor can successfully register for the system. Input Data: name, username, email, password
Test Case Identifier: TC 3 Pass Criteria: The test will pass if the visitor can successfully log into the system. Input Data: username, password
Test Case Identifier: TC 4 Pass Criteria: The users can view and update their Profile and can change their passwords. Requirement: The user has to be logged in.

Test Case Identifier: TC 5

Pass Criteria: The users can create update and delete repo for C. C++. Python, PHP and JavaScript languages.

Requirement: The user has to be logged in.

Test Case Identifier: TC 6

Pass Criteria: The users can view all the system courses and enroll in any courses.

Requirement: The user has to be logged in.

Test Case Identifier: TC 7

Pass Criteria: The users can view and attempt all the lessons assigned in the course

Requirement: The user has to be logged in.

Test Case Identifier: TC 8

Pass Criteria: The system shows the lesson Instructions, and output.

Requirement: The user has to be logged in.

Test Case Identifier: TC 9

Pass Criteria: The system will mark the lesson green when the user completes the lesson.

Requirement: The user has to complete the lesson.

Test Case Identifier: TC 10

Pass Criteria: The users can rate and comment on the course.

Requirement: The user has to be logged in.

Test Case Identifier: TC 11

Pass Criteria: The Ratings posted user is visible on the course profiles rating section.

Requirement: The user has to be logged in.

Test Case Identifier: TC 12

Pass Criteria: The user can join an academic course via the joining code.

Requirement: The user has to be logged in.

Test Case Identifier: TC 13

Pass Criteria: The user can view academic course profile.

Requirement: The user has to be logged in.

Test Case Identifier: TC 14

Pass Criteria: The user can view attempt, compile and solve course lessons.

Requirement: The user has to be logged in.

Test Case Identifier: TC 15

Pass Criteria: The user can view upcoming assignment deadline

Requirement: The user has to be logged in.

Test Case Identifier: TC 16

Pass Criteria: The user can view assignment marks graded by the system

Requirement: The user has to be logged in.

Test Case Identifier: TC 17

Pass Criteria: The Teacher can create update and delete repo for C. C++. Python, PHP and JavaScript languages.

Requirement: The Teacher has to be logged in.

Test Case Identifier: TC 18

Pass Criteria: The Teacher can create update and delete their courses.

Requirement: The Teacher has to be logged in.

Test Case Identifier: TC 19

Pass Criteria: The Teacher can create and delete their course lessons.

Input: lesson Information

Requirement: The Teacher has to be logged in.

Test Case Identifier: TC 20

Pass Criteria: The Teacher can create and delete their course assignment only for the academic courses.

Input: Assignment Information

Requirement: The Teacher has to be logged in.

Test Case Identifier: TC 21

Pass Criteria: The Teacher can view enrolled students.

Requirement: The Teacher has to be logged in.

Test Case Identifier: TC 22

Pass Criteria: The Teacher can view lesson and assignment course report.

Requirement: The Teacher has to be logged in.

Test Case Identifier: TC 23

Pass Criteria: The University can manage teachers.

Requirement: The University has to be logged in.

Test Case Identifier: TC 24

Pass Criteria: The University can manage their courses.

Requirement: The University has to be logged in.

Test Case Identifier: TC 25

Pass Criteria: The University can manage their course lessons and assignments.

Requirement: The University has to be logged in.

Test Case Identifier: TC 26

Pass Criteria: The Admin can manage system users.

Requirement: The Admin has to be logged in.

Test Case Identifier: TC 27

Pass Criteria: The Admin can manage system teachers.

Requirement: The Admin has to be logged in.

Test Case Identifier: TC 28

Pass Criteria: The Admin can manage system courses.

Requirement: The Admin has to be logged in.

Test Case Identifier: TC 29

Pass Criteria: The Admin can manage system universities.

Requirement: The Admin has to be logged in.

Test Case Identifier: TC 30

Pass Criteria: The Admin can delete temporary system files.

Requirement: The Admin has to be logged in.

5.4 Test Results and Reports

Test results and reports requirements are necessary in order to ensure the validity and accuracy of the data collected during a study. Without these requirements, it would be difficult to determine whether or not the results of the study are reliable and can be used to make decisions about the best course of action.

There are many different types of test results and reports requirements, but some of the most important include specifying the population that will be included in the study, the sample size, the type of data that will be collected, and the methods that will be used to collect and analyze the data. In addition, it is also important to specify how the data will be reported and what type of statistical analysis will be used to interpret the results. [20]

Table 5.2 Test Results and Reports

Test Case Identifier: TC 1	
Test Procedure:	Test Result:
The user clicks on my free compiler option.	The system successfully shows the compiler
The user selects C language and compiles a simple code.	The system successfully compiles the code and shows the output.

The user selects C++ language and compiles a simple code.	The system successfully compiles the code and shows the output.
The user selects Python language and compiles a simple code.	The system successfully compiles the code and shows the output.
The user selects PHP language and compiles a simple code.	The system successfully compiles the code and shows the output.
The user selects JavaScript language and compiles a simple code.	The system successfully compiles the code and shows the output.
Test Case Identifier: TC 2	
Test Procedure:	Test Result:
The user clicks signup option.	The system successfully shows the signup form.
The user inserts their data and presses submit.	The system successfully saves user data and directs the user to the login page.
Test Case Identifier: TC 3	
Test Procedure:	Test Result:
The user clicks login option.	The system successfully shows the login form.
The user inserts their data and presses submit.	The system successfully directs the user to the dashboard.
Test Case Identifier: TC 4	
Test Procedure:	Test Result:

The user clicks my profile option.	The system successfully shows the profile information form.
The user inserts their data and presses submit.	The system successfully updated user data.
The user clicks security option.	The system successfully shows the change password form.
The user inserts their passwords and presses submit.	The system successfully updated user password.
Test Case Identifier: TC 5	
Test Procedure:	Test Result:
The user clicks on create repo option and selects a Language.	The system successfully creates a file in the user's designated directory.
The writes and compiles a simple code.	The system successfully compiles the code and shows the output.
The user selects the delete repo button.	The system successfully deletes the file from the system.
The user selects the download repo button	The system successfully download the file from the system.
Test Case Identifier: TC 6	
Test Procedure:	Test Result:
The user selects all courses.	The system successfully shows all the courses registered in the system
The user selects a course.	The system successfully shows user the course profile page.

The user selects the enroll button.	The user is now successfully enrolled in the course.
Test Case Identifier: TC 7, TC 8, TC 9	
Test Procedure:	Test Result:
The user selects a lesson in the course.	The system successfully opens the course compiler where all the instructions set by the teacher are shown.
The user enters a random input.	The compiler gives user the output.
The user enters the correct input.	The compiler successfully marks the lesson as complete.
Test Case Identifier: TC 10, TC 11	
Test Procedure:	Test Result:
The user selects the rate course button.	The system successfully opens course rating form.
The user fills the form and presses submit	Submission complete.
The user goes back to the course profile page.	The system successfully shows the rating on the rating section.
Test Case Identifier: TC 12, TC 13, TC 14	
Test Procedure:	Test Result:
The user select the join now button in the my classes page.	The system successfully opens join course form.
The user fills the form with the joining code.	The system successfully enrolls the user in the course.

The user clicks on the course image.	The system successfully shows the course profile. Where the user can find the assigned lessons and assignments. The assignment shows a countdown till the deadline.
The user selects an assignment in the course profile page.	The system successfully opens the course compiler where all the instructions set by the teacher are shown.
The user enters a random input.	The compiler gives user the output.
The user enters the correct input.	The compiler successfully marks the assignment as complete.
Test Case Identifier: TC 15, TC 16	
Test Procedure:	Test Result:
The user selects the my assignment option.	The system successfully shows all the assignments the user need to submit with a countdown till the deadline.
The user selects the my grade option.	The system successfully shows all the marks the user received by the auto graded system for their submitted assignments
Test Case Identifier: TC 17	
Test Procedure:	Test Result:
The Teacher clicks on create repo option and selects a Language.	The system successfully creates a file in the teacher's designated directory.
The teacher writes and compiles a simple code.	The system successfully compiles the code and shows the output.
The Teacher selects the delete repo button.	The system successfully deletes the file from the system.
The Teacher selects the download repo button	The system successfully download the file from the system.
Test Case Identifier: TC 18	

Test Procedure:	Test Result:
The Teacher clicks on the add course button	The system successfully shows the course creation form.
The Teacher fills the form and presses submit.	The system successfully creates a course
The Teacher selects the delete course button.	The system successfully deletes the course from the system.
The Teacher selects the update button	The system successfully shows the update course form.
The teacher fills the form and presses submit	The system has successfully updated the course data.
Test Case Identifier: TC 19, TC 20	
Test Procedure:	Test Result:
The Teacher clicks on the add lesson button	The system successfully shows the lesson creation form.
The Teacher fills the form and presses submit.	The system successfully creates a lesson.
The Teacher selects the delete lesson button.	The system successfully deletes the lesson from the system.
The Teacher clicks on the add assignment button	The system successfully shows the assignment creation form.
The Teacher fills the form and presses submit.	The system successfully creates a assignment.
The Teacher selects the delete lesson button.	The system successfully deletes the lesson from the system.
Test Case Identifier: TC 21, TC 22	
Test Procedure:	Test Result:
The Teacher selects the course students option.	The system successfully shows information about all the students enrolled in the course.

The Teacher selects the lesson report option	The system successfully shows a traceability matrix on students who have completed assigned lessons and those who have not.
The Teacher selects the assignment report option	The system successfully shows a traceability matrix on students who have completed the assignments and those who have not.
Test Case Identifier: TC 23, TC 24, TC 25	
Test Procedure:	Test Result:
The University selects the teachers option.	The system successfully shows all the teachers added by the university admin.
The University selects the add teacher option.	The system successfully shows a add teacher form
The University enters the form and presses submit.	The system successfully added the teacher in the system.
The University selects the course option.	The system successfully shows all the courses added by the university admin.
The University selects the add course option.	The system successfully shows a add course form
The University enters the form and presses submit.	The system successfully added the course in the system.
In a course profile university presses on the add lesson button	The system successfully shows a add lesson form
The University enters the form and presses submit.	The system successfully added the lesson in the course.
The University presses delete lesson button	The system successfully deletes the lesson from the course.
In a course profile university presses on the add assignment button	The system successfully shows a add assignment form
The University enters the form and presses submit.	The system successfully added the assignment in the course.
The University presses delete assignment button	The system successfully deletes the assignment from the course.

Test Case Identifier: TC 26, TC 27, TC 28, TC 29

Test Procedure:	Test Result:
The Admin selects the User option.	The system successfully shows all the users in the system.
The Admin selects the add user option.	The system successfully shows a add user form
The Admin enters the form and presses submit.	The system successfully added the user in the system.
The Admin selects the delete user option.	The system successfully deletes the user from the system.
The Admin selects the teacher option.	The system successfully shows all the teachers in the system.
The Admin selects the add teacher option.	The system successfully shows a add teacher form
The Admin enters the form and presses submit.	The system successfully added the teacher in the system.
The Admin selects the delete teacher option.	The system successfully deletes the teacher from the system.
The Admin selects the course option.	The system successfully shows all the courses in the system
The Admin selects the add course option.	The system successfully shows a add course form
The Admin enters the form and presses submit.	The system successfully added the course in the system.
The Admin selects the delete course option.	The system successfully deletes the course from the system.
The Admin selects the university option.	The system successfully shows all the universities in the system
The Admin selects the add university option.	The system successfully shows a add university form
The Admin enters the form and presses submit.	The system successfully added the university in the system.

The Admin selects the delete university option.	The system successfully deletes the university from the system.
Test Case Identifier: TC 30	
Test Procedure:	Test Result:
The Admin selects the dashboard option.	The system successfully shows information on the number of temporary files in the system and the space they are occupying.
The Admin selects the clear space button.	The system successfully deletes all the temporary files from the system.

CHAPTER 6

IMPACT ON SOCIETY, ENVIRONMENT, AND SUSTAINABILITY

6.1 Impact on Society

Evecode is an online coding skill development and learning system that offers a comprehensive and convenient way for users to improve their coding skills. The system is designed to be interactive and user friendly, providing users with the opportunity to practice coding through a series of challenges and tasks. As a result, Evecode offers an innovative and practical approach to learning how to code. The system has the potential to impact society in several ways. First, it can help to close the digital divide by providing individuals from all walks of life with the opportunity to learn coding skills. This can lead to increased economic opportunities and social mobility.

Additionally, Evecode can help build a more diverse and skilled workforce and empower individuals to create their own digital products and solutions. In addition, Evecode can also have a positive impact on society more broadly. For example, the system can help to promote creativity, critical thinking, and problem solving skills. Additionally, it can help individuals better understand and use technology, which is becoming increasingly important in our digital world. Overall, Evecode can potentially have a significant and positive impact on society. By providing individuals with the opportunity to learn coding skills, the system has the potential to close the digital divide, build a more diverse and skilled workforce, and promote creativity and critical thinking.

6.2 Impact on Environment

Technology has a significant impact on our environment. From the invention of the wheel to the development of the internet, humans have always found ways to use technology to make their lives easier. The development of Evecode is no different. Evecode is a system that allows users to learn how to code online. The system is designed to be user friendly and easy to use. Evecode offers a variety of courses that teach users the basics of coding. The system also offers a community of coders that users can interact and ask questions. The development of Evecode has had a positive impact on the environment. The system has made it easier for people to learn how to code, decreasing the demand for paper and textbooks. Besides that, virtual lessons and assignment submissions have reduced the electricity used in classrooms.

Evecode has also made it easier for people to find jobs in the coding field. The system has created a community of coders that helps to support and encourage each other. The impact of Evecode on the environment has been positive. The system has made it easier for people to learn how to code, which has decreased the demand for paper and textbooks. Evecode has also made it easier for people to find jobs in the coding field. The system has created a community of coders that helps to support and encourage each other.

6.3 Ethical Aspects

Evecode is an online coding skill development and learning system. The system is designed to help people learn to code and improve their coding skills. The system is based on social learning, meaning people learn by observing and imitating others. The system provides various resources, including tutorials, code samples, and a community of coders, to help users learn to code. Evecode is committed to providing all users with a safe and respectful learning environment. We do not tolerate harassment or discrimination of any kind. We believe everyone has the right to quality learning in a safe and supportive environment. We are also committed to protecting the privacy of our users. We collect only the information that is necessary to provide our services. We do not sell or share user information with third parties. We take steps to protect user information from unauthorized access, disclosure, or alteration. Evecode is committed to providing a high quality learning experience for all users. We offer a money back guarantee if a user is unsatisfied with our services. We also offer free courses so users can try our system before buying it.

6.4 Sustainability Plan

Evecode is an online coding skill development and learning system. The system will allow users to improve their coding skills through various coding challenges and learning modules. The system will also provide a community for users to connect and share resources. Eve code aims to provide a sustainable platform for users to improve their coding skills. The system will be designed to be self-sustaining through user fees and donations. Evecode will partner with companies and organizations to sponsor coding challenges and learning modules. Evecode will be developed using open source technology to allow for community involvement in the development process. The system will be hosted on a robust and scalable cloud platform to ensure availability.

To ensure sustainability, Evecode will:

1. Generate revenue through user fees and donations.
2. Partner with companies and organizations to sponsor coding challenges and learning modules.
3. Use open source technology to allow community involvement in the development process.
4. Host the system on a robust and scalable cloud platform.
5. Focus on user engagement and retention by providing a personalized learning experience.
6. Constantly update and improve content to keep users coming back.
7. Encourage users to share Evecode with their networks.
8. Promote the use of Evecode through coding competitions and other events.
9. Use data analytics to track user progress and identify areas for improvement.
10. Continuously seek feedback from users to improve the system.

CHAPTER 7

CONCLUSION AND FUTURE SCOPE

7.1 Discussion and Conclusion

Evecode is an online coding skill development and learning system that offers a unique, interactive way for users to improve their coding skills. The system is designed to help users learn how to code by providing them with a set of tools and resources that they can use to practice and improve their coding skills. The system's user friendly interface, comprehensive features, and ability to track user progress make it an ideal tool for both novice and experienced coders alike. Evecode also offers a community of coders who can offer support and advice to users and a platform for users to share their coding tips and tricks. With its focus on helping users develop real world coding skills, Evecode is an invaluable resource for anyone looking to improve their coding proficiency.

7.2 Scope for Further Developments

Evecode is an online coding skill development and learning system that helps people learn to code through interactive exercises and tutorials. Evecode is constantly evolving to meet the needs of its users. In the future, Evecode will become even more user friendly and will offer more features to help people learn to code. Currently, Evecode provides services for C, C++, PHP, Javascript, and python. Evecode will also continue expanding its course offerings so that people can learn about different programming languages and coding frameworks.

Evecode will also continue to partner with leading companies and organizations to provide users with real world coding opportunities. These partnerships will allow users to put their coding skills to use in a variety of settings and help them gain experience in the field.

In addition, Eve code will develop a community of coders who can help support and encourage each other as they learn to code. This community will be a valuable resource for people stuck on a particular coding problem or want to learn more about a specific coding language or framework. With Evecode, learning to code will be fun, interactive, and convenient. Whether users are a beginner or experienced coders, Evecode will have something to offer them.

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