كلية الهندسة بشبرا

FACULTY OF ENGINEERING AT SHOUBRA

Database Course Project

Student Courses Enrollment System

By:

Ahmed Nashaat

Kareim Alaa

Mohamed Sherif

Supervised by:

Dr. Sabah Saad

Eng. Mahmoud Taha

2022-2032

List of Contents

2. System Capabilities

There are two operating modes for the system: admin mode and user mode. Each of them has a unique set of capabilities for system access.

2.1. Admin Mode

Admin mode is the mode operation that is responsible for managing the system by adding new courses and updating them continuously, deleting any invalid course, see all students that exist in the system, and he have the access to delete any student.

2.2. User Mode

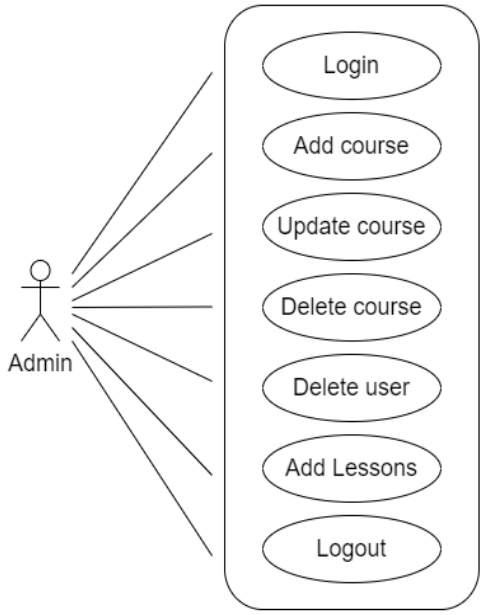
User mode is the mode of operation for students that can register in and start to use the system and benefits from its all features.

user mode has access to:

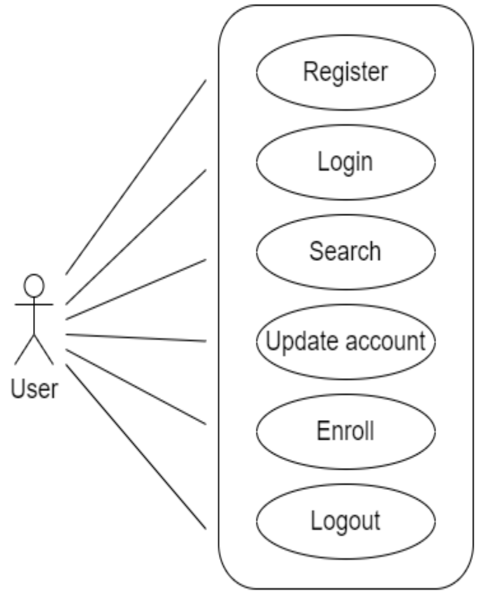
1. Register is he doesn’t have an account.
2. Login if he already a member
3. View all courses exists.
4. Search for any courses
5. Enroll on the desired course.
6. Update his account.
7. Logout

3.System analysis

3.1.Use case Diagrams

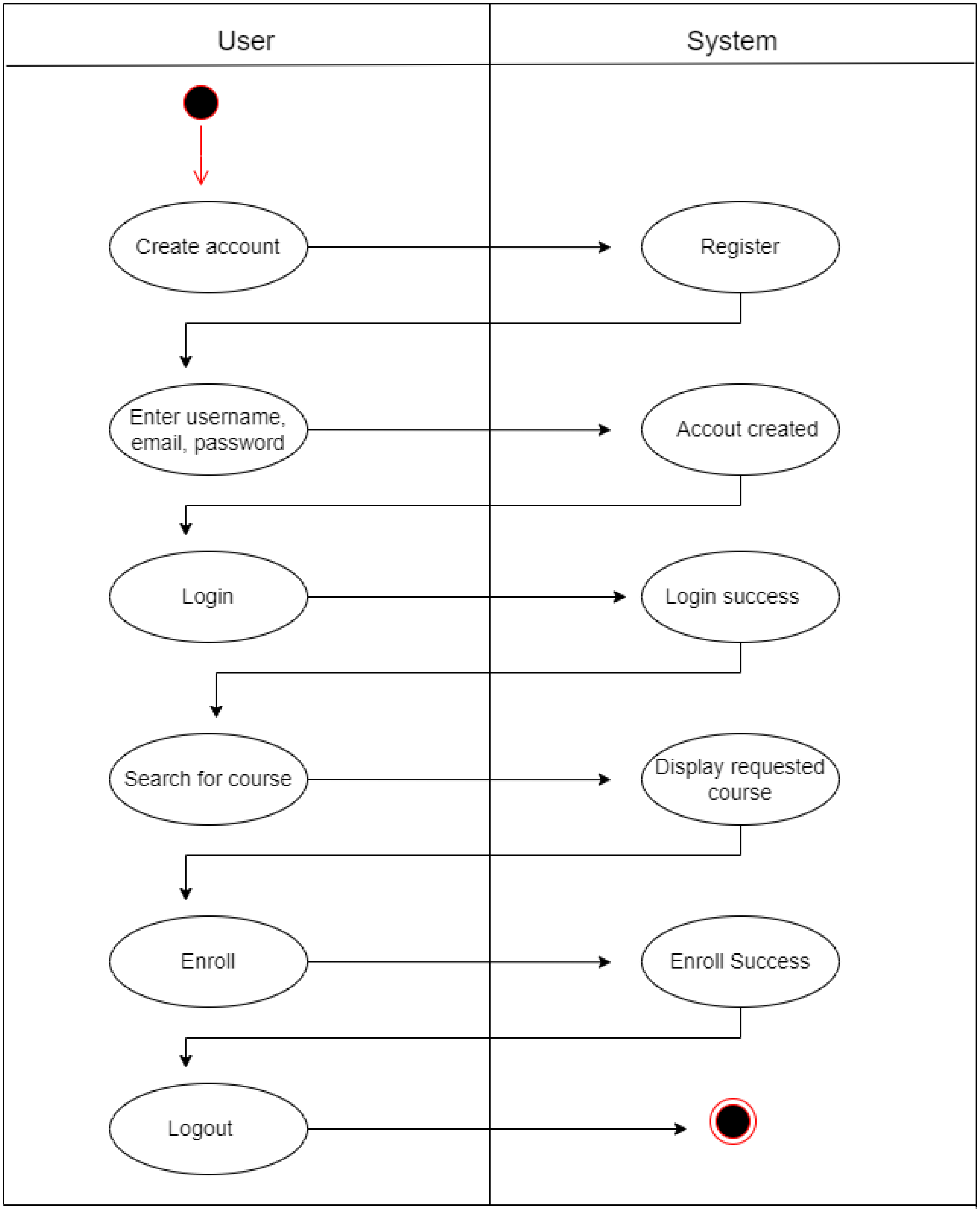


Use Case Diagram for Admin Mode



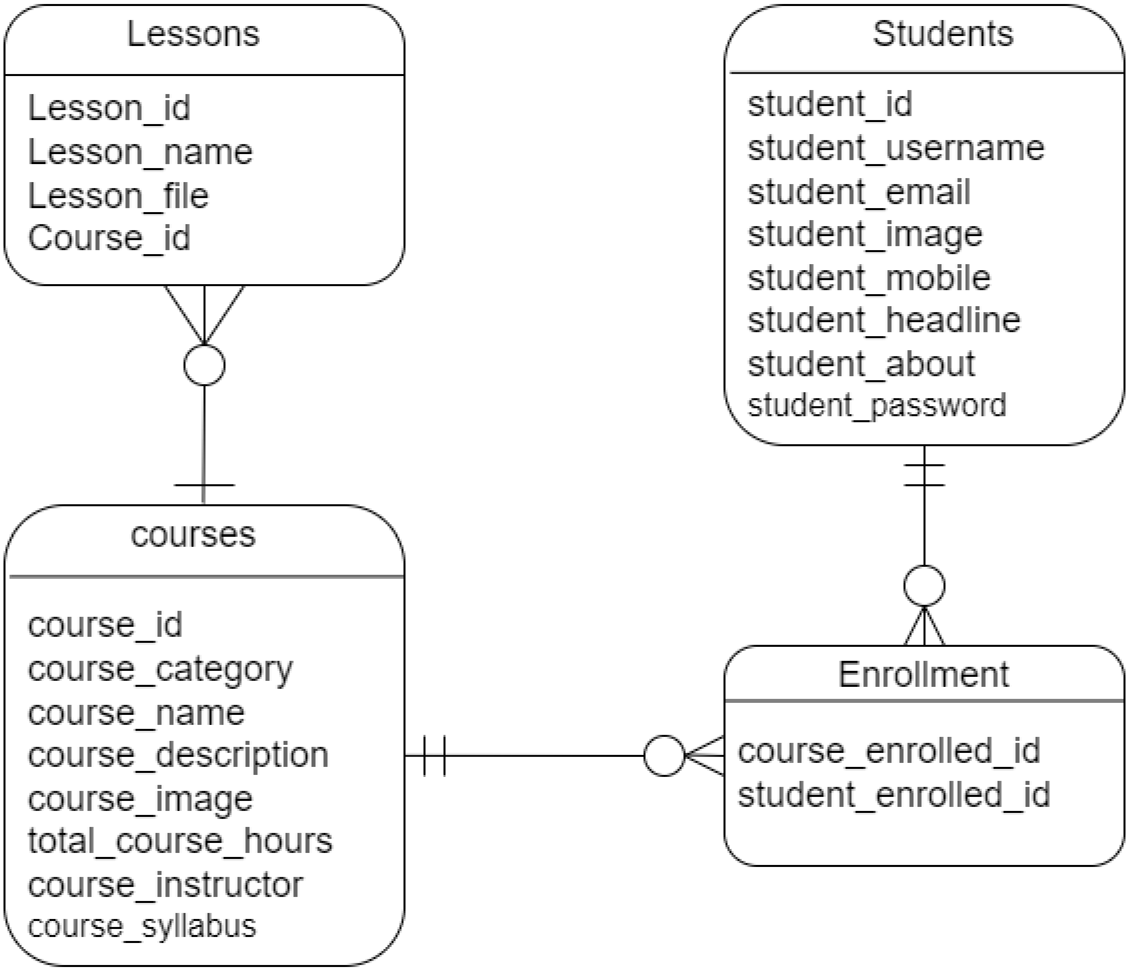
Use Case Diagram for User Mode

2.2.Activity Diagram



Activity Diagram for user sub-system

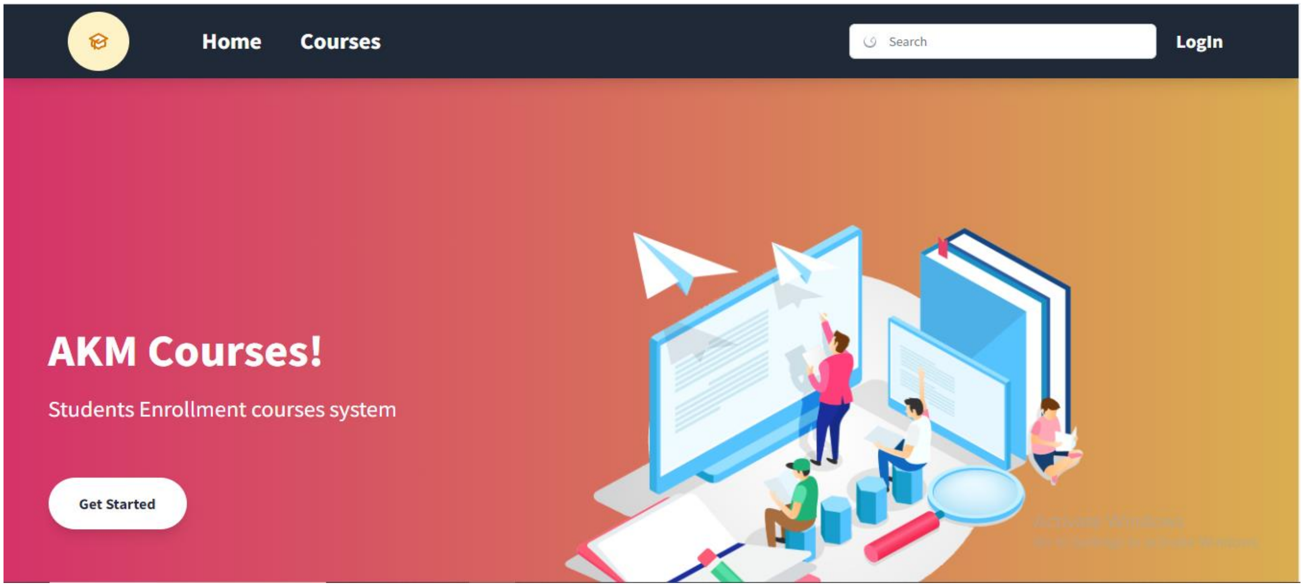
2.3.ER diagram



ER Diagram

4.System interface

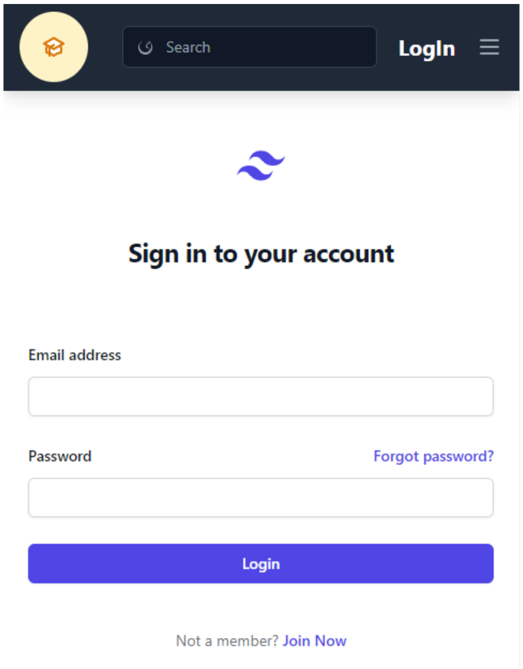
The system is designed to be responsive to all screens and easy to deal with it. It consists of many pages, each of them represents a feature of the system and the user can access system by interfacing with them.



AKM Courses!

Students Enrollment courses system

Landing page

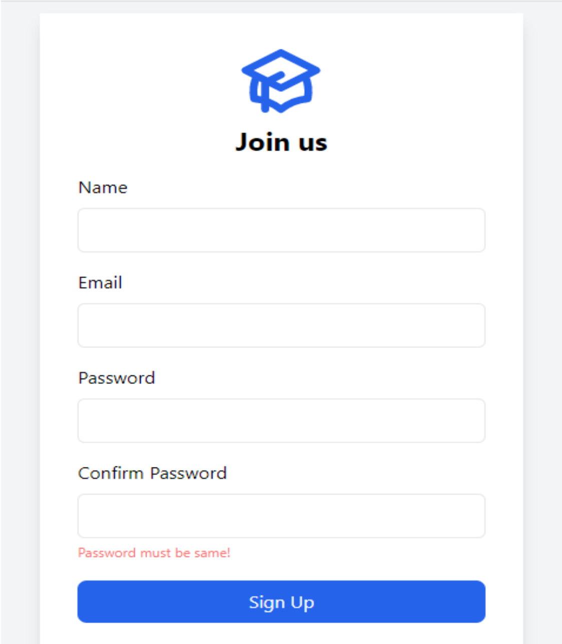


Sign in to your account

Email address

Password Forgot password?

Not a member? Join Now



Join us

Name

Email

Password

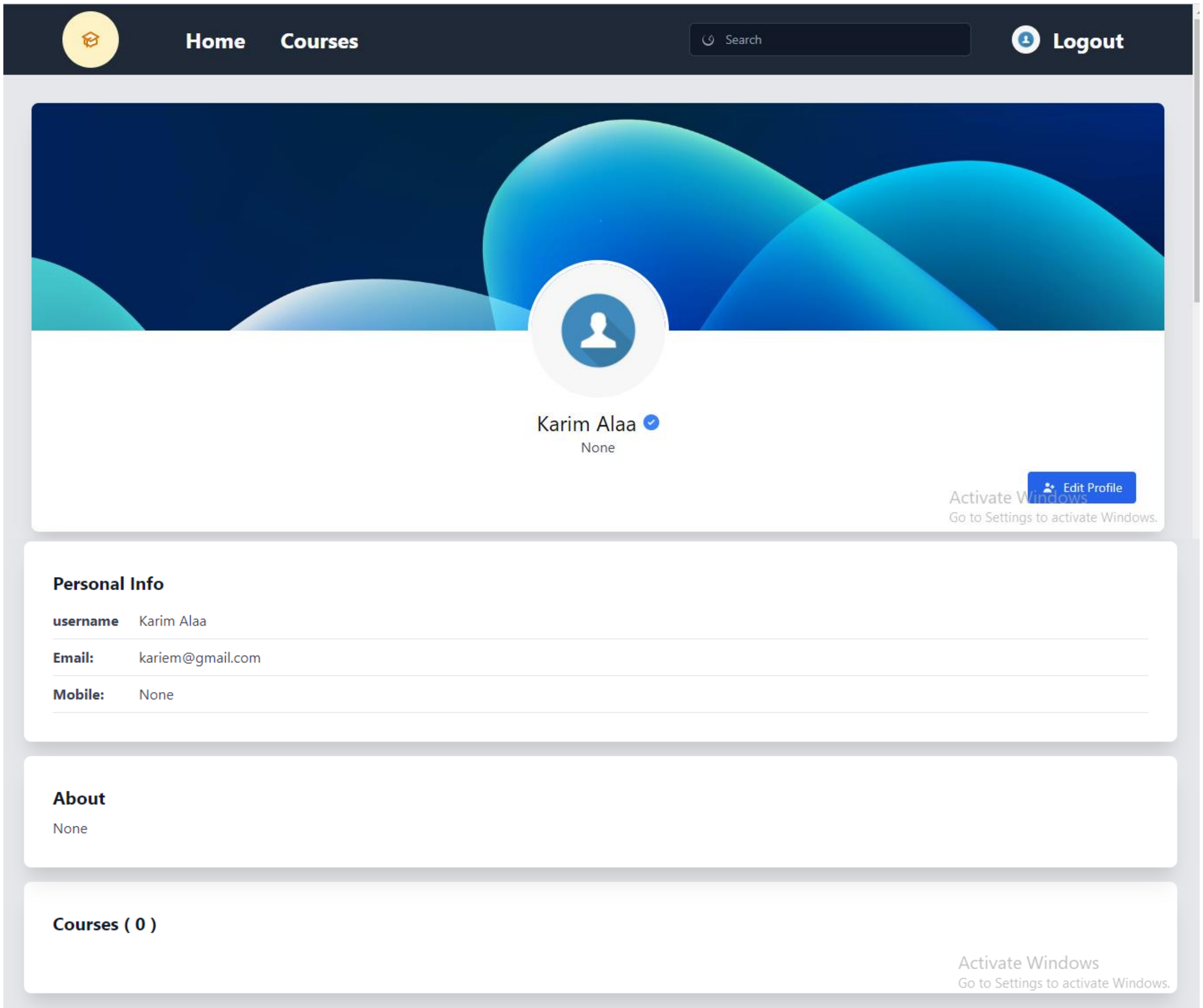
Confirm Password

Password must be same!

Sign in form

Register form.

First page is the landing page with simple design and from it user can go to login or register form to login in the system.



Karim Alaa

None

Personal Info

username	Karim Alaa
Email:	kariem@gmail.com
Mobile:	None

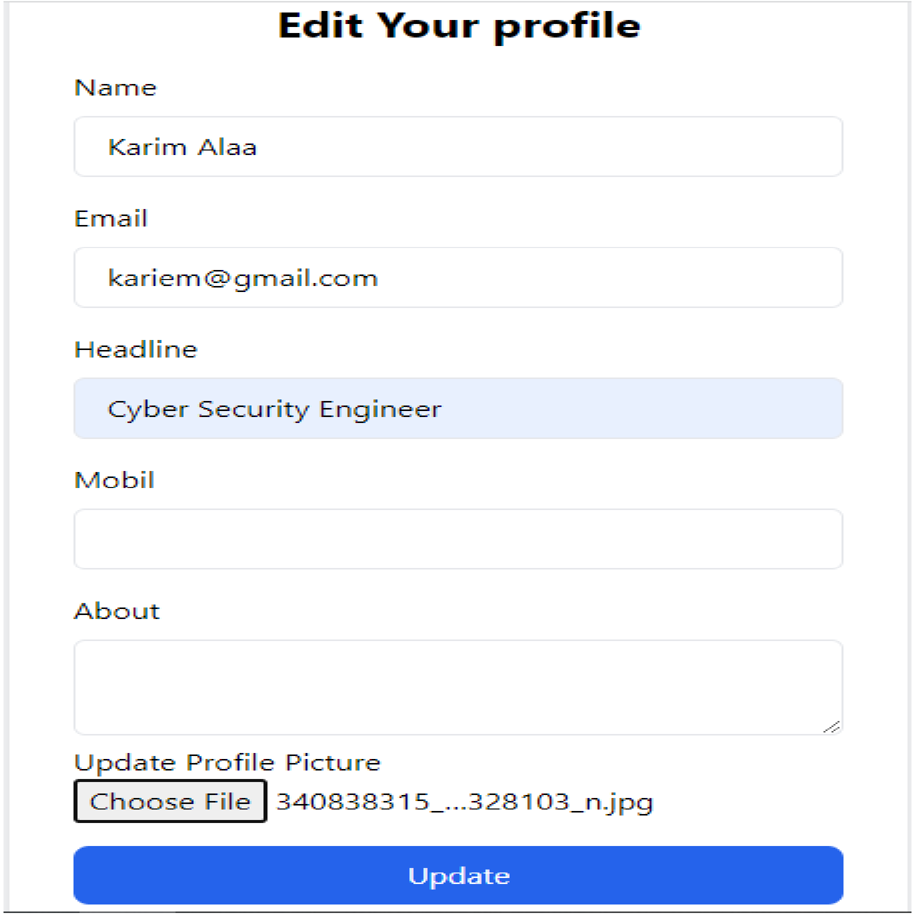
About

None

Courses (0)

Account Page

When a user successfully log in he can go into his account page and update his information.



Edit Your profile

Name

Karim Alaa

Email

kariem@gmail.com

Headline

Cyber Security Engineer

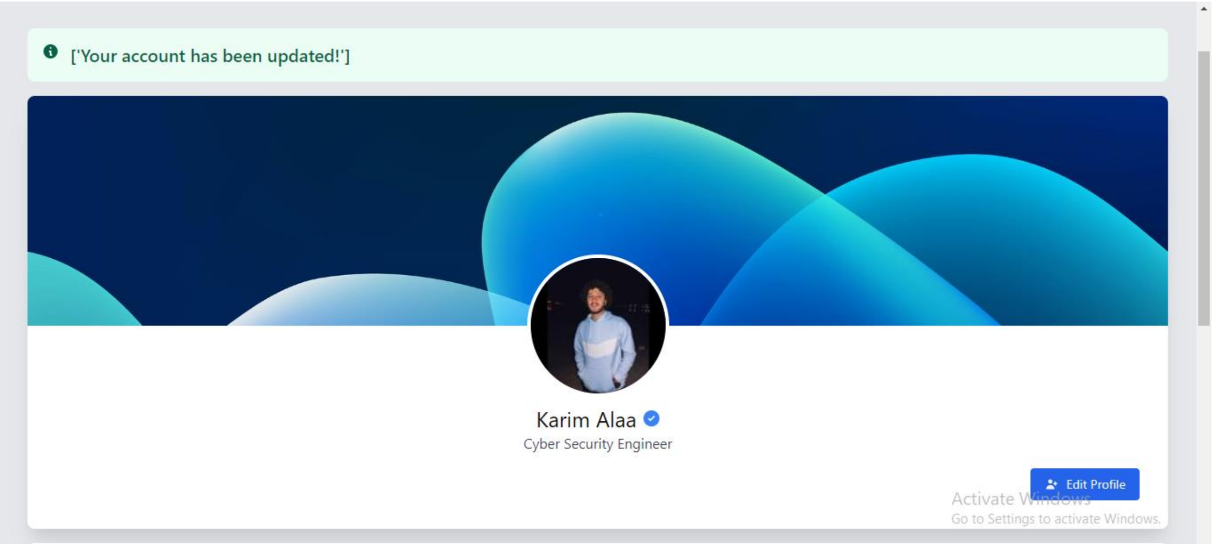
Mobil

About

Update Profile Picture

340838315_...328103_n.jpg

Update Account Form

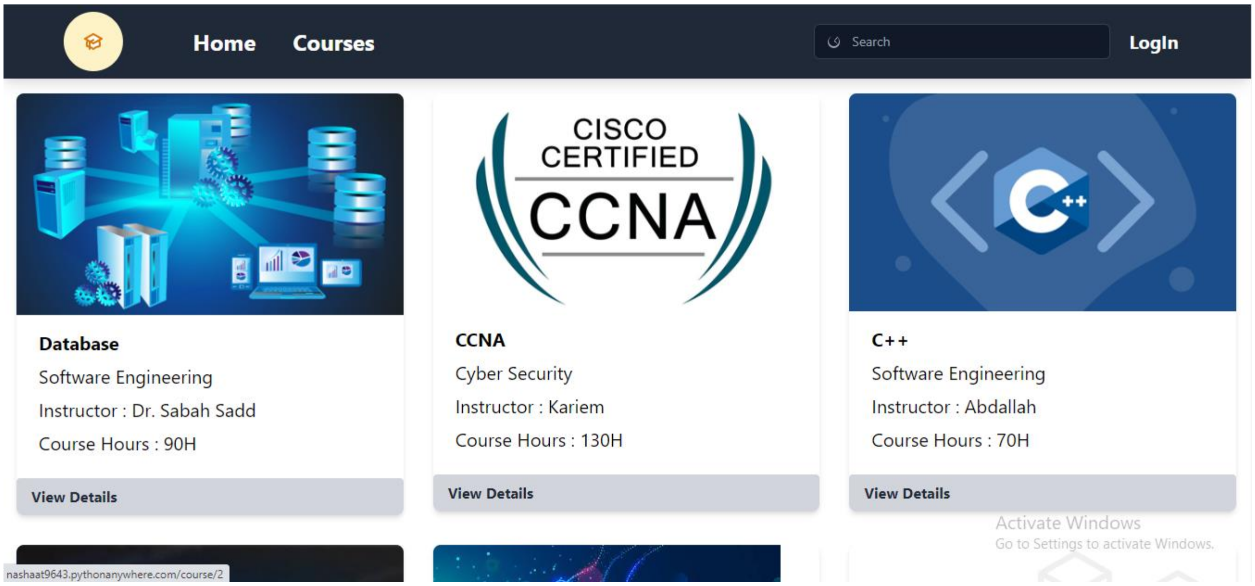


['Your account has been updated!']

Karim Alaa

Cyber Security Engineer

Account Page after updating.

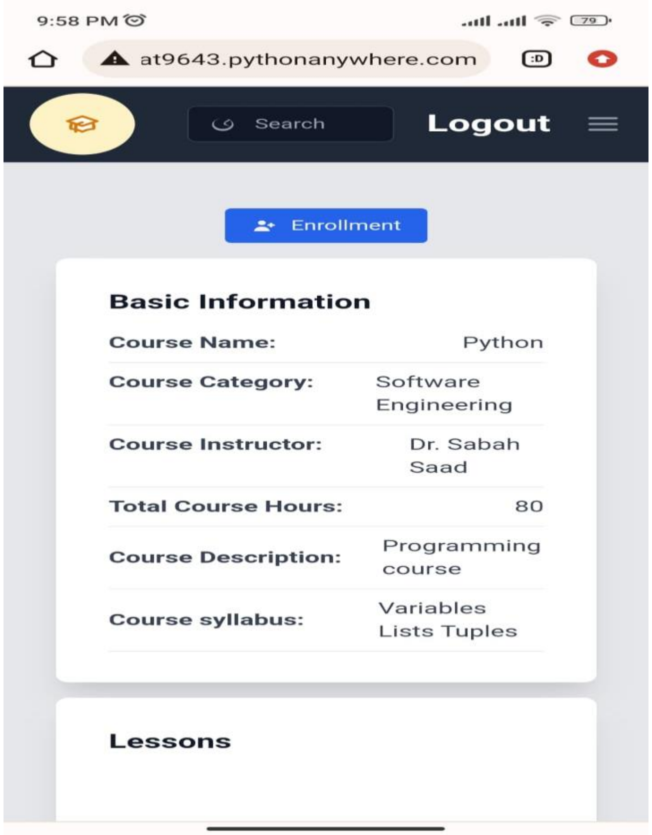

Home
Courses
Search
LogIn
CISCO CERTIFIED CCNA
Activate Windows
Go to Settings to activate Windows.
nashaat9643.pythonanywhere.com/course/2

Database
Software Engineering
Instructor : Dr. Sabah Sadd
Course Hours : 90H
View Details

CCNA
Cyber Security
Instructor : Kariem
Course Hours : 130H
View Details

C++
Software Engineering
Instructor : Abdallah
Course Hours : 70H
View Details

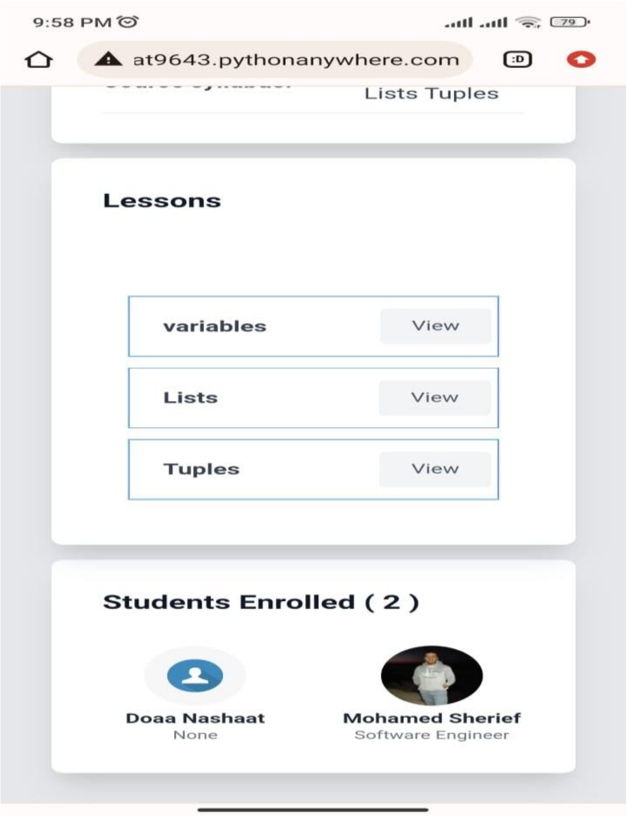
courses page



Basic Information

Course Name:	Python
Course Category:	Software Engineering
Course Instructor:	Dr. Sabah Saad
Total Course Hours:	80
Course Description:	Programming course
Course syllabus:	Variables Lists Tuples

Lessons



Lessons

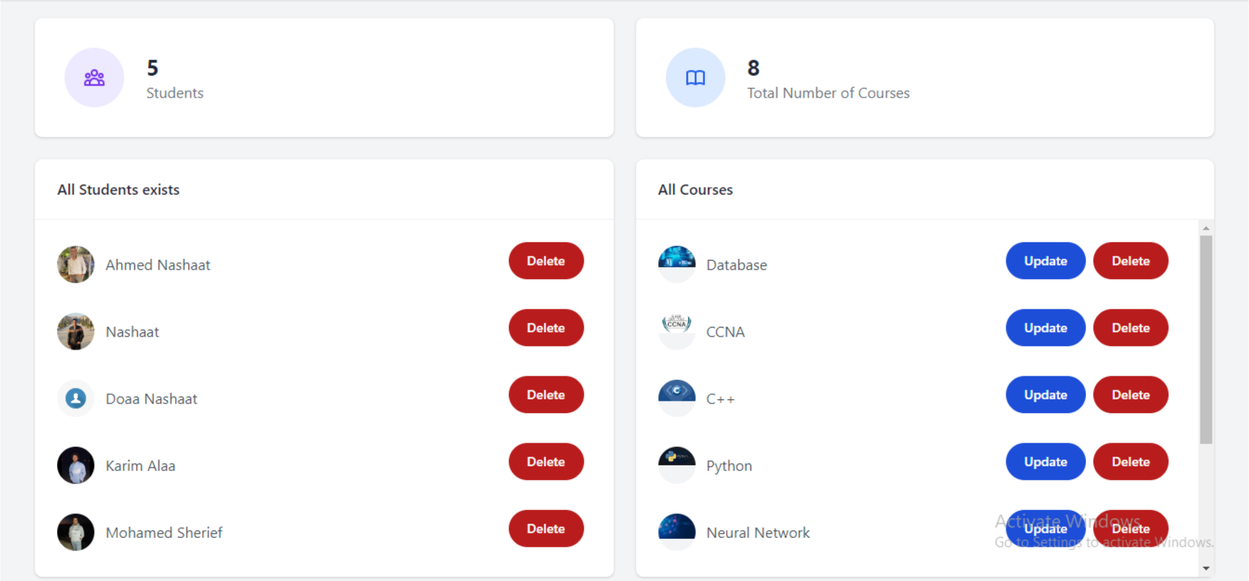
variables View
Lists View
Tuples View

Students Enrolled (2)

Doaa Nashaat
None

Mohamed Sherief
Software Engineer

Course Details page



5
Students

8
Total Number of Courses

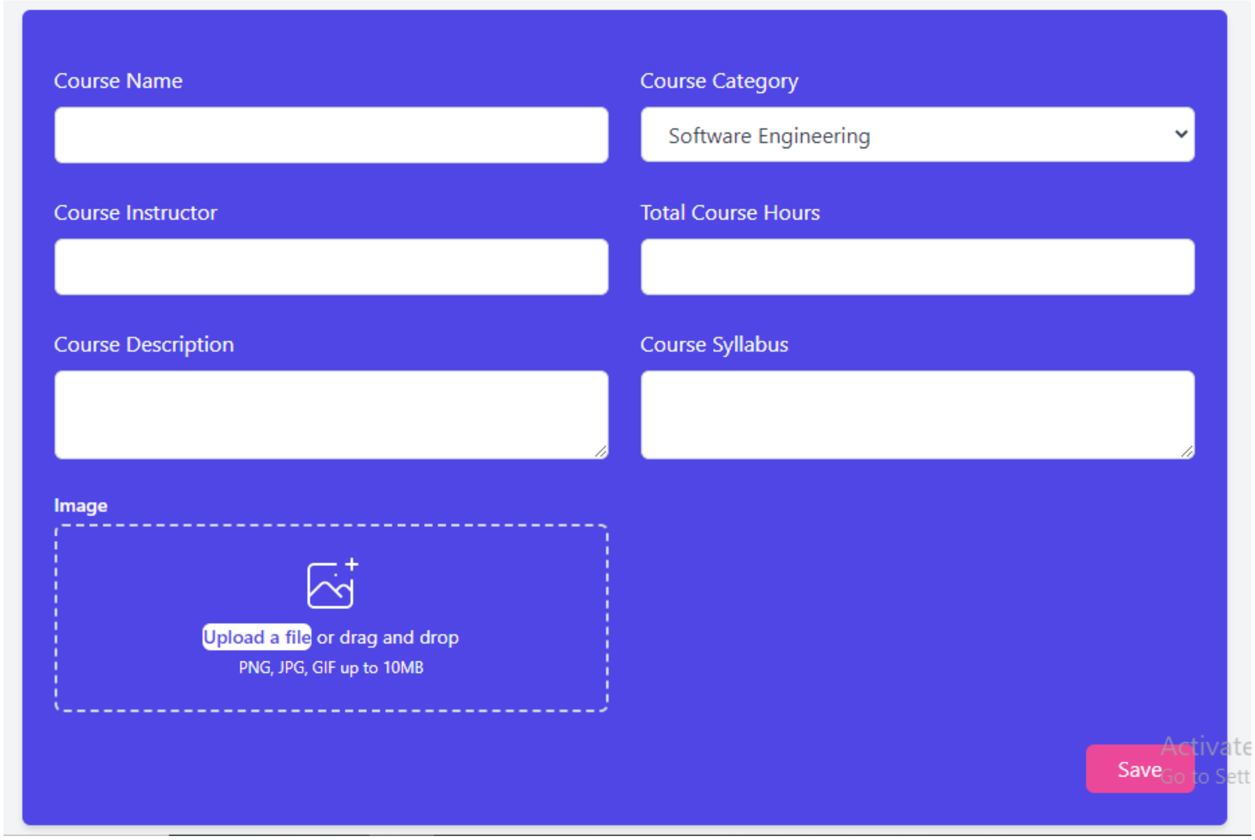
All Students exists

- Ahmed Nashaat
- Nashaat
- Doaa Nashaat
- Karim Alaa
- Mohamed Sherief

All Courses

- Database
- CCNA
- C++
- Python
- Neural Network

Admin page



Course Name

Course Category: Software Engineering

Course Instructor

Total Course Hours

Course Description

Course Syllabus

Image

Upload a file or drag and drop
PNG, JPG, GIF up to 10MB

Add course form

4.System Implementation

System was implemented with frontend to provide user interface and backend to provide the functionality of the system.

4.1. Frontend

In frontend part of implementation HTML and Tailwind CSS are used. HTML stands for Hyper Text Markup Language, it is the standard markup language for creating Web pages and describes the structure of a Web page.

System consists of many HTML pages, each one created for specific purpose to represent some elements, for example homepage created to be the landing page of the system, viewcourses page created to display the all courses in the system, etc.

Tailwind CSS is an open-source framework used for providing the styles to HTML pages, The main feature of this library is that, unlike other CSS frameworks like Bootstrap, it does not provide a series of predefined classes for elements such as buttons or tables. Instead, it creates a list of "utility" CSS classes that can be used to style each element by mixing and matching.

4.2. Backend

In the backend part of implementation Flask framework is used. Flask is a micro web framework written in Python. It is classified as a microframework because it does not require particular tools or libraries. It has no database abstraction layer, form validation, or any other components where pre-existing third-party libraries provide common functions. However, Flask supports extensions that can add application features as if they were implemented in Flask itself. Extensions exist for object-relational mappers, form validation, upload handling, various open authentication technologies and several common framework related tools.

Third-party libraries used to provide some functions:

1. **SQLAlchemy**
   SQLAlchemy is a library that facilitates the communication between Python programs and databases. Most of the times, this library is used as an Object Relational Mapper (ORM) tool that translates Python classes to tables on relational databases and automatically converts function calls to SQL statements.
2. **Flask-Login**
   Flask-Login provides user session management for Flask. It handles the common tasks of logging in, logging out, and remembering your users' sessions over extended periods of time.

3. **WTForms**
   WTForms is a Python library that provides flexible web form rendering. It can used to render text fields, text areas, password fields, radio buttons, and others. WTForms also provides powerful data validation using different validators, which validate that the data the user submits meets certain criteria you define.
4. **Flask-bcrypt**
   Flask bcrypt is a flask extension that enables users with utilities related to bcrypt hashing. The bcrypt is a hashing function for password that is based on the Blowfish cipher and incorporates salt for protecting the application against any rainbow table attacks. We know, too many new terminologies.

6.Handling Errors

There are many errors that will occur, and it causes the system to fall if it doesn’t handle. These errors can be handled with a variety of libraries and check conditions.

Some examples of the errors that the system can face:

- If the user doesn’t fill field of any form and this field is stored at not nullable column at database, this action will be raised non nullable error into database, this error handling by making this field at form to be required field.
- If the user tries to enroll in course that he already has enrolled in before, this action will be raised a unique identifier error, this error handled by checking if the user enrolled before or not, if he enrolled before system display message tell him that he already enrolled in the course and system doesn’t insert anything at enrollment table.
- Login-Manager class is used for managing users login and displaying the correct data for each one to avoid conflicting in data.
- If user try to access page that required the user to be log in the thy system, login_requierd decorator is used to limit the user to access the page until he log in.