ITC Colleague

Online Learning Platform

Graduation Project of DEPI 2024

By

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Under Supervision of

Eng. Mahmoud Khalid

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ABSTRACT

The project is a comprehensive distance learning platform dedicated to offering specialized instruction in programming, graphic design, and all other computer science-related fields. This platform's main goal is to give customers peace of mind regarding the safety and security of their data as they receive top-notch instruction in a safe and secure setting.

Journey to learn duration six months.

This platform seeks to create a safe learning and skill development environment by putting modern security measures in place and prioritizing users' privacy. The project is ideal for a graduation project since it is made to satisfy the increasing need for easily accessible, dependable, and secure online learning. It also demonstrates innovation in data protection and technical education.

ACKNOWLEDGEMENT

Foremost, we would like to thank Allah for enabling us to complete the thesis of this project.

We would like to express our special thanks of gratitude to our project supervisor, Eng. Mahmoud Khalid for their able guidance and support in completing this project and thesis.

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… Thank You …

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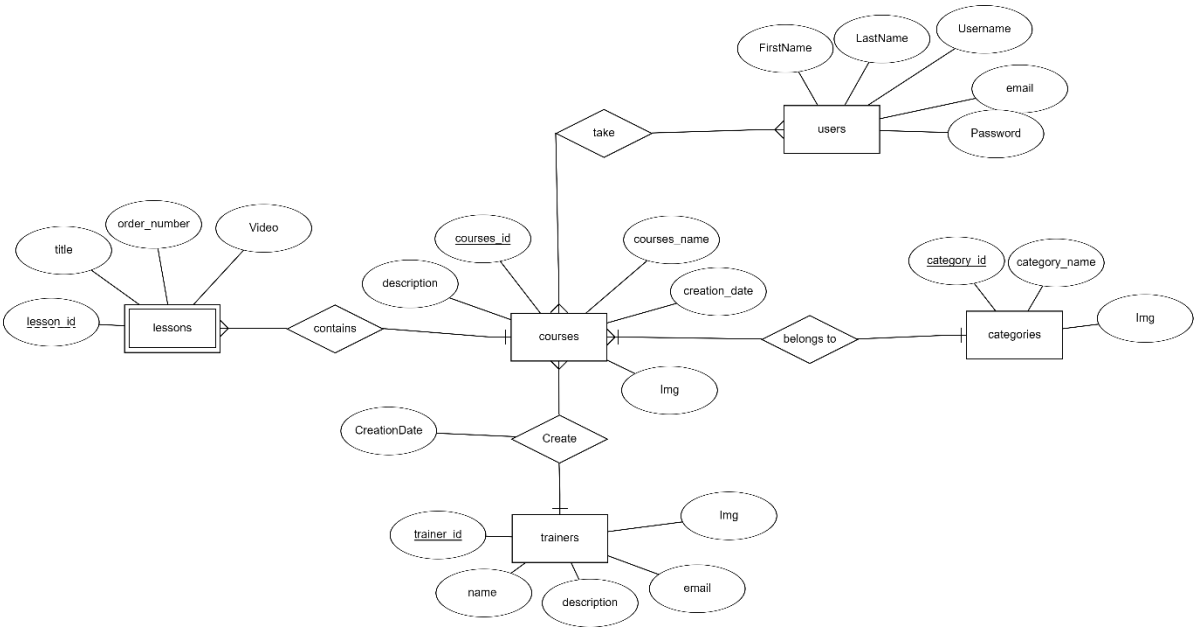
Chapter 1
CASE STUDY/ PROBLEM STATEMENT

The future of education and the labor market is now largely dependent on digitalization and online learning, which are rapidly changing the world. Since technology has become the main tool for both professional and personal progress in this fast-paced world, it is imperative that we become proficient in digital abilities and acquire technological knowledge. It is no longer merely a useful tool; rather, it is now the catalyst for innovation and growth, helping both people and businesses to stay ahead in a world that is continuously changing.

With previously unattainable potential, technology is revolutionizing the way we work and learn. Whether your goal is to gain expertise in data, graphic design, or programming.

Technology is revolutionizing education and employment by providing previously unattainable options. The first step to success is learning technology, regardless of whether you want to advance your abilities in data management, graphic design, or programming. Additionally, as businesses increasingly rely on technological solutions and look for workers who can adjust to the digital revolution, digitization is opening up global employment prospects.
In light of this, it's critical to realize that in the current digital era, ongoing education and technological self-improvement are now essential rather than optional. This stage is essential for creating a bright future full of chances since distance learning enables anyone, from anywhere in the globe, to gain the skills necessary to succeed and thrive in the labor market.

Chapter 2
METHODOLOGY



A learning platform's database model, represented by ERD, has entities such as Users, Courses, Trainers, Lessons, Categories, and Admins. The entities and relationships in the graphic are broken down in depth below:

1. Features of Users:

user_id: The primary key that gives each user a unique identity.

fname, lname: The user's first and last names.

email: The user's email address for login and correspondence.

password: The encrypted password that the user uses to verify their identity.

creation_date: The day the user account was established.

The boolean value **is_active** indicates whether or not the user's account is active.

Relationships: Through the user_courses entity, which maintains track of the users enrolled in various courses, the user's entity and the courses entity have a many-to-many relationship.

2. Features of the Courses:

courses_id: The main key that gives each course a unique identity.

courses_name: The course's name.

courses_date: The creation or publication date of the course.

An overview of the course is provided here.

Connections:

To keep track of which users are enrolled in which courses, a many-to-many relationship with users is maintained via user_courses.

Lessons have a one-to-many link, which allows for the inclusion of several lessons in a course.

Category_courses is used to assign categories to courses in a many-to-many relationship with categories.

A trainer can teach more than one course, but each course is allocated to a single trainer in a many-to-one relationship.

3. Trainers' attributes:

trainer_id: The main key that gives each trainer a unique identity.

fname, lname: The trainer's first and last names.

email: The trainer's contact email.

description: A succinct overview of the trainer.

Relationships: A trainer can teach more than one course because of the one-to-many relationship with courses. The trainers_courses connection illustrates this.

4. Lessons Features:

lesson_id: The main key that gives each lesson a unique identity.

title: The lesson's name or title.

order_number: The lesson's placement within the course, either in terms of order or sequence.

Relationships: Courses have a one-to-many relationship, which means that even though a course may have several lessons, each lesson is only part of that course.

5. Features of Categories:

category_id: The main key that gives each category a distinct identity.

category_name: The classification's name.

A category may be a parent category thanks to **parent_id**, which enables hierarchical classification.

Relationships: numerous courses can belong to numerous categories thanks to a many-to-many relationship with courses via the category_courses entity.

6. Admins Properties:

admin_id: The main key that gives each admin a unique identity.

name: The administrator's name.

email: The administrator's email for contact and login.

password: The encrypted password used for authentication by the administrator.

The system is managed by administrators, who play a vital role in adding or removing users, trainers, courses, and doing other administrative tasks.

7. user_courses Features:

course_id: A foreign key that points to the course database.

user_id: A foreign key that points to the table of users.

Registration_date: The user's course enrollment date.

The goal of this table is to track which users are enrolled in which courses by creating a many-to-many relationship between users and courses.

8. category_courses (Table of Functions)

category_id: An external key that points to the categories table.

courses_id: The courses table is referenced by this foreign key.

The goal of this table is to provide a many-to-many link between categories and courses, enabling each category to contain numerous courses and each course to belong to several categories.

9. The Junction Table's trainers_courses

trainer_id: The trainer's table is referenced by this foreign key.

courses_id: The courses table is referenced by this foreign key.

Goal: This table creates a one-to-many relationship between courses and trainers, meaning that each course has a single trainer, even if a trainer may teach several courses.

Essential Elements of the ERD:

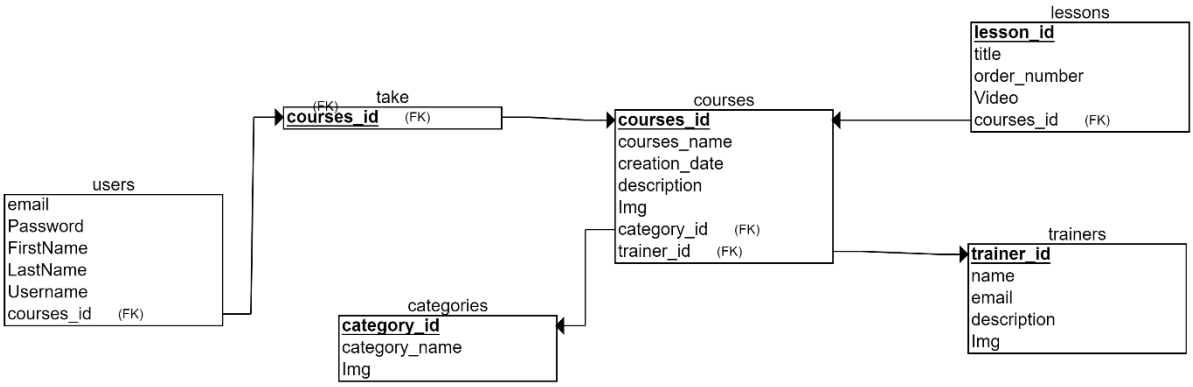
Many-to-Many links: The ERD uses junction tables to represent intricate links, such as those between users and courses and between courses and categories.

The role of trainers is to provide instruction in courses that mirror real-world training or educational platforms.

Lesson Structure: Because courses consist of several classes, each one has a comprehensive curriculum.

Data Security: The fact that both users and administrators have passwords and encrypted data indicates that user information protection is a priority.

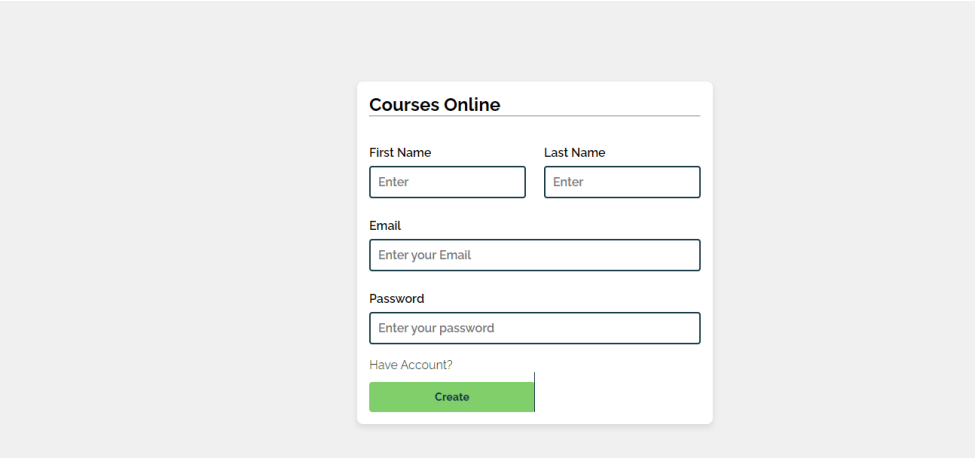
Relational Diagram:



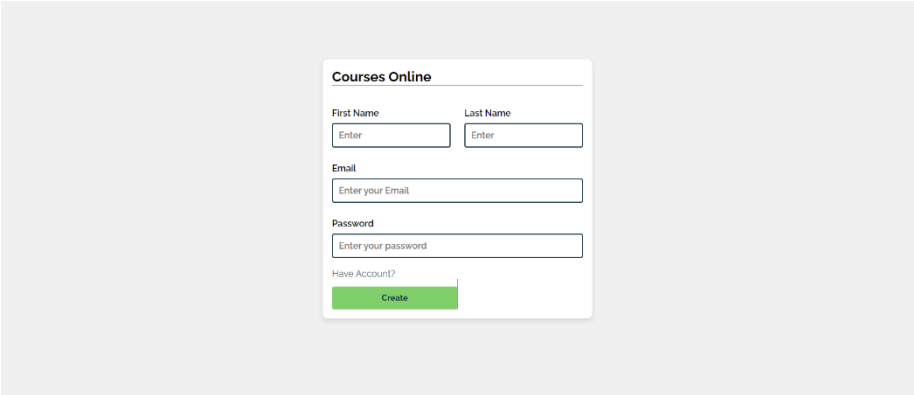
Second: Frontend Technology

The web pages in this project play crucial roles in establishing a seamless user experience for a platform for remote learning. Below is a summary of every page:

Sign Up: New users can create an account, verify their identity, and safely store their data (password, email, etc.) on this page.

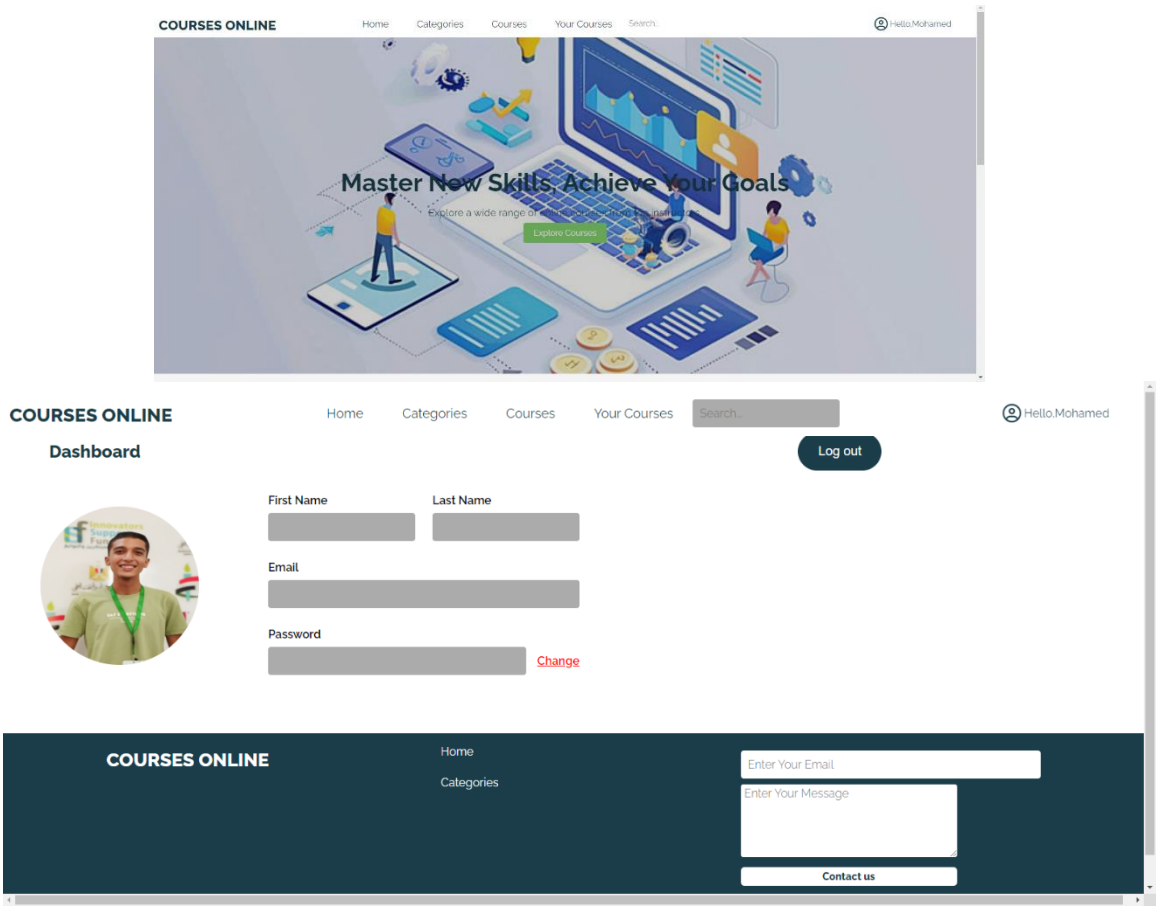


Log in: By confirming their credentials and offering safe access to the site, the login page gives registered users permitted access.



Home: This page, which serves as the website's home screen, provides a summary of the courses that are offered, user progress, promotional material, and featured categories.

Dashboard: Users can see their progress, adjust preferences, and manage their profile settings on this page. It consolidates data pertaining to accounts.

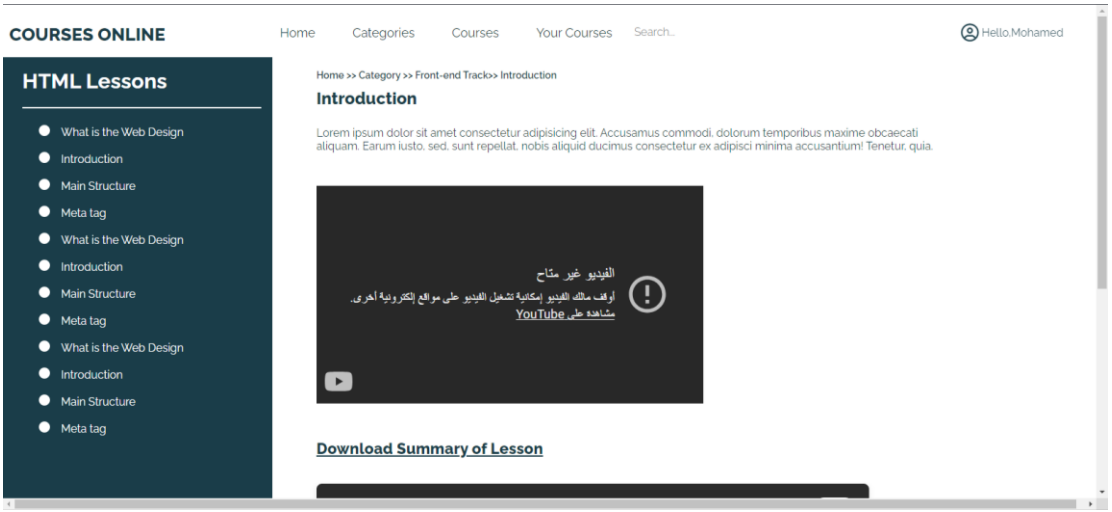


Your Courses: a customized page that shows the user's enrolled courses. It offers easy access to course materials, progress monitoring, and the status of course completion.

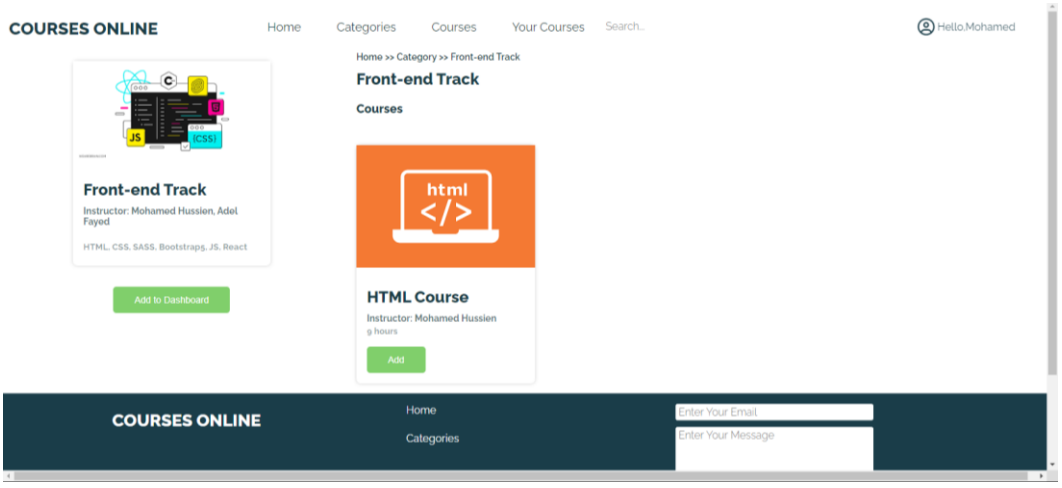
Courses: A list of every course on the platform, arranged by popularity, subject, or degree of difficulty.

Category: By listing every category, this page enables visitors to search courses by certain subjects, such as computer science, graphic design, or programming.

Course Dashboard: This dashboard shows all of the lectures, homework, and materials related to a course while you're inside it. Additionally, it monitors the user's progress during the course.



Track Dashboard: Users can view all courses under a certain track, like web development or data science, thanks to this page's organization of courses into tracks (such as learning paths).



Search Bar: By enabling rapid and effective searching for classes, lessons, categories, or particular content inside the platform, the search feature improves the user experience.

Third: Backend Technologist:

Create logic for the website with ESP.NET Core

Migration database

Authentication: To sign up a new account

Authorization: to Log in new account

EFCore, LINQ: to migration Database.

Chapter 3
CONCLUSION & FUTURE WORK

The website was fully implemented, its logic was designed, and it was linked to the database and front end via MVC using the following technologies:

Frontend Technologist:

HTML, CSS, JS, Bootstrap

Backend Technologist:

MS SQL Server, ASP.NET Core, EF Core, and LINQ

Link for Project

https://github.com/Adel627/Online_learning_platfo