

Documentation

E-Learning App

Group 2

21.09.2023

Background

At the outset of this endeavor, we discerned a burgeoning trend in the educational landscape, wherein discerning individuals increasingly turn to online platforms to access knowledge. The discernment process, often guided by meticulous scrutiny of reviews and ratings, underscores the paramount importance of tailored educational resources. Studies reveal a direct correlation between elevated course ratings, akin to those witnessed on platforms like Udemy, and an exponential surge in demand for educational materials.

Presently, a conspicuous lacuna exists in the realm of educational technology—a lack of a comprehensive solution adept at distilling invaluable insights from user feedback to augment platform performance. This hiatus leaves many educational platforms striving for the enhancement of user satisfaction and content quality.

The E-learning App project is poised to address this exigency, employing cutting-edge data analytics to meticulously dissect various educational genres, be it programming, design, language acquisition, and beyond. The primary objective is to delineate the quintessential attributes of an efficacious educational resource, ascertain the pivotal elements most esteemed by users, and ascertain the strategic interventions imperative for content refinement. The envisaged solution, grounded in discerning user feedback, seeks to elevate the performance quotient of educational platforms, facilitating data-informed decision-making, and, above all, tailoring educational content to align seamlessly with user predilections.

Business Objectives

The fundamental business goal of our project is to delve into user feedback and appraisals, unraveling the pivotal elements that influence the success of our E-learning

App. With a keen focus on diverse educational genres, we endeavor to offer actionable insights to augment app performance and engagement.

Beyond the core objective, we aspire to address pertinent business inquiries, encompassing, yet not confined to:

1. **Optimal Learning Experience:** What specific features and functionalities contribute most significantly to an enriched learning experience for our users?
2. **Identifying Pain Points:** Are there recurring challenges or issues that users encounter? By recognizing these pain points, we aim to proactively implement solutions for an improved user journey.
3. **Personalized Learning Paths:** How can we tailor recommendations and content delivery to cater to the diverse preferences and learning styles of our users?
4. **Content Relevance and Engagement:** What types of content garner the highest user engagement, and how can we refine our offerings to ensure maximum relevance and impact?
5. **User Retention Strategies:** What strategies can be employed to foster long-term user engagement and retention, ensuring sustained value and benefit?

This holistic approach to analyzing user feedback and optimizing the E-learning experience is poised to elevate our platform, offering an unparalleled educational journey for our valued users. Through data-driven insights, we endeavor to continually refine and enhance the E-learning App, fostering a dynamic and enriching learning environment.

Team Members

Name	Organizaton
İrem ATAK	Group 2
Oğuzhan YAMACI	Group 2
Ümit ŞAHAN	Group 2
Umut UYGUN	Group 2
Sevil ÖKSÜZ	Group 2

Data

Location	Storage Type	Description	Contacts
ADLS2	JSON	The source files contain educational materials and user feedback.	All members
Synapse Analytics Workspace	External Table	External tables for easy and quick access.	All members
Amazon Web Services	Database	A merged table combining course details with user feedback	All members

Softwares

To accomplish the project objectives, we will utilize the following software and tools:

- Azure Data Lake Gen2 Storage: For data storage and organization.
- Azure Synapse Analytics: For data transformation and preparation.
- Azure SQL Database: Creating live storage for connection to PowerBI
- Power BI: For data visualization and dashboard development.
- Azure Blob Storage: For data storage and backup.
- Python: For scripting and data manipulation.
- Python Modules: Numpy, Pandas, PySpa

Requirements

Completion Schedule:

The E-learning App will be developed in a 5-day timeline with the following milestones:

1. Platform Setup

2. Content Integration
3. User Interface Refinement
4. Interactive Features
5. Testing and Launch

Content Quality:

The content will be presented clearly, ensuring valuable insights. Data will be processed for optimal model effectiveness.

Security and Compliance:

Stringent access controls will be in place, ensuring legal compliance and data integrity.

Data Transformation:

Raw content will undergo thorough processing, including categorization, cleaning, and visualization.

Constraints

Technological Limitations: All project steps will be carried out within the Azure Portal. All resources must be created and interconnected exclusively through the Azure Portal.

Risks and Contingencies

- **Data Quality Risk:** If data quality is lower than expected, the team will implement additional data preprocessing and modeling processes.
- **Budget Constraints:** In case of budgetary issues, the team will try to find cost-effective or open-source alternatives and prioritize critical project steps.
- **Delayed Data Availability:** If data is delayed, the team will adjust project timelines and communicate any necessary changes to stakeholders.

COST AND BENEFITS

A cost-benefit analysis (CBA) provides a critical framework for evaluating the financial implications of the project, comparing projected costs with expected benefits. This

analysis offers insights into potential return on investment (ROI) and helps determine the project's feasibility.

Projected Costs (Monetary Values)

- Storage Costs:
 - SQL Database: Free Plan for one week,
 - cost : 0.00 \$

Contingency Considerations

Scheduling:

In the event of project timeline extensions, there may be associated costs due to prolonged personnel and operational expenses. The delayed realization of benefits may also affect the ROI.

Financial:

Budgetary constraints could lead to a reduction in available resources for the project, potentially affecting the completeness and quality of results.

Data:

Poor-quality data may necessitate additional data cleansing and validation efforts, potentially increasing project costs. It may also impact the accuracy and reliability of project outcomes.

Results:

If initial results fall short of expectations, additional iterations and refinements may be required, which could extend the project timeline and potentially increase costs.

Project Goals

The project for the E-learning App encompasses the following technical and business objectives:

1. **Dynamic Course Presentation:** Develop an interactive interface for courses, akin to platforms like Udemy, utilizing C#, ASP.NET, Razor, HTML, Bootstrap, and CSS to provide an engaging learning experience.
2. **In-depth Content Analysis:** Conduct a thorough analysis of course materials, user feedback, and ratings to identify key aspects influencing the learning experience.

This includes recognizing patterns and trends within various educational genres.

3. **Automated Content Management:** Implement automated content management systems to ensure seamless updates, additions, and removals of courses, guaranteeing that users access the latest and most relevant educational materials.
4. **Effective Content Transformation:** Execute content transformation processes, encompassing validation, normalization, and enrichment, to ensure a consistent and high-quality learning resource.
5. **Personalized Learning Pathways:** Generate personalized learning recommendations for users based on their preferences, learning history, and proficiency levels, enhancing user satisfaction and skill acquisition.
6. **Clear and Insightful Progress Reports:** Deliver comprehensive progress reports, outlining user achievements, areas for improvement, and tailored recommendations for continued learning.
7. **Real-time Engagement Metrics:** Enable real-time tracking of user engagement and learning outcomes, providing instructors and administrators with immediate feedback on course effectiveness.
8. **Adaptation to Diverse Learning Styles:** Recognize and accommodate various learning styles, offering a diverse range of content formats (videos, articles, quizzes, etc.) to cater to different learner preferences.
9. **Data Security and Privacy:** Ensure robust data security measures and compliance with legal regulations, safeguarding user information and privacy throughout the learning experience.
10. **Budget Management:** Manage project costs judiciously, optimizing expenses while delivering high-quality educational services, all within the allocated budget.

By aligning our efforts with these defined objectives, we aim to create a user-centric E-learning platform that not only delivers an exceptional educational experience but also sets a new standard in the e-learning industry.

Project Outputs

The successful implementation of our E-learning App project results in various outputs aimed at providing actionable insights, enabling informed decision-making, and

enhancing the overall learning experience. These outputs encompass data, pipelines, and reports, all aligned with our business objectives.

Data Outputs:

1. Transformed and Cleansed Data

- Description: A refined dataset incorporating course information, user feedback, and relevant attributes.
- Purpose: Forms the basis for analysis, ensuring data accuracy and reliability.

2. Feature-Engineered Data

- Description: An enriched dataset with derived features and engineered variables, enhancing the depth of analysis.
- Purpose: Facilitates the identification of key performance indicators and learning preferences.

Pipeline Outputs:

1. Data Transformation Pipelines

- Description: Automated data transformation pipelines integrated within the E-learning platform.
- Purpose: Streamlines data processing, ensuring information is prepared for effective analysis.

2. Data Loading Pipelines

- Description: Automated pipelines for extracting and integrating updated course content.
- Purpose: Ensures that users have access to the most current educational materials.

Report Outputs:

1. Dynamic Power BI Dashboard

- Description: A dynamic Power BI dashboard featuring an intuitive interface and a range of visualizations.

- Purpose: Allows stakeholders to explore course performance metrics, user feedback, and actionable recommendations.

2. Comprehensive Project Reports

- Description: Detailed reports summarizing project findings, insights, and recommendations.
- Purpose: Provides stakeholders with a comprehensive understanding of project outcomes and actionable strategies.

Alignment with Business Objectives:

These project outputs directly align with our business objectives:

- Objective 1: **Enhance User Experience**
 - Transformed and cleansed data, along with dynamic course pages, support the analysis of user preferences and learning trends.
- Objective 2: **Recommend Personalized Learning Paths**
 - The Power BI dashboard and dynamic course pages offer tailored course recommendations for each user.
- Objective 3: **Maximize User Engagement**
 - Feature-engineered data and dynamic content layout contribute to a deeper understanding of user engagement patterns.
- Objective 4: **Ensure Data Security**
 - User login information is securely stored in the database, providing a safe and personalized user experience.

By leveraging these outputs, our E-learning App aims to provide a dynamic and enriching learning environment, catering to the unique preferences and needs of each user.

Visual Outputs

login page

Login

Email

Password

☐ Remember me?

Log in

[Forgot your password?](#)

[Register as a new user](#)

[Resend email confirmation](#)

registration page

Create a new account.

Email

Password

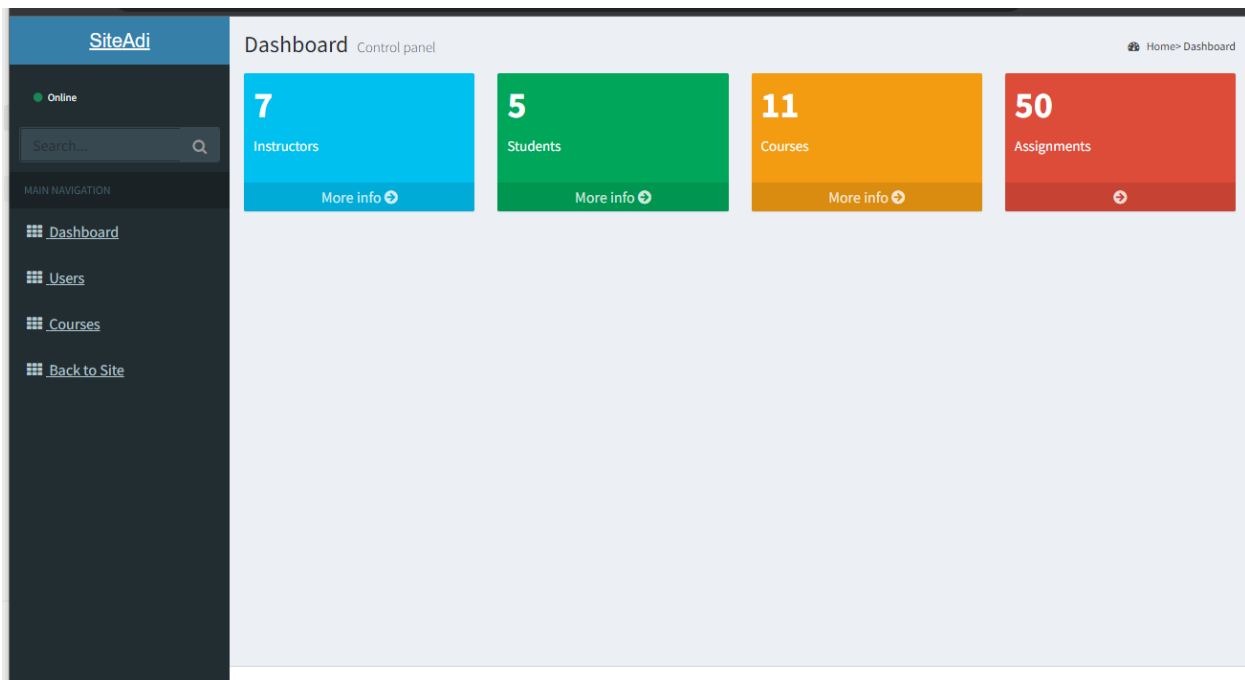
Confirm password

Instructor ☐

Student ☐

Register

control panel



—statistic page

Create New User

Show entries

Search:

User Name	Roles	Actions
admin1233@sevil.com	Admin	Edit Details Delete
admin@admin.com	Admin	Edit Details Delete
Ertan23	Student	Edit Details Delete
hayal@gmail.com	Instructor	Edit Details Delete
instructor@gmail.com	Instructor	Edit Details Delete
james@yahoo.com	Student	Edit Details Delete
johndoe@yahoo.com	Student	Edit Details Delete
marie@yahoo.com	Instructor	Edit Details Delete
newuser@gmail.com	Instructor	Edit Details Delete
oguz	Instructor	Edit Details Delete

Showing 1 to 10 of 14 entries

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Create User/Edit/Delete/Details

Create New Course

Show

10

entries

Search:

Title	Description	InstructorId	Category	CourseDuration	
Culinary Arts: Cooking Techniques	Develop your culinary skills with lessons on knife techniques, food preparation, and cooking methods.	marie@yahoo.com	Culinary Arts	150	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Digital Marketing Mastery	Explore the world of digital marketing, covering SEO, social media, email marketing, and more.	instructor@gmail.com	Marketing	180	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Entrepreneurship and Business Startups	Learn how to launch and grow a successful business, from idea generation to funding.	sevil@admin.com	Entrepreneurship	170	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Environmental Science and Sustainability	Explore key environmental issues, sustainability concepts, and solutions for a greener future.	sevil@admin.com	Environmental Science	170	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Financial Literacy 101	Gain essential financial skills, including budgeting, investing, and understanding credit.	sevil@admin.com	Finance	170	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Graphic Design Fundamentals	Master the basics of graphic design, including typography, color theory, and layout.	sevil@admin.com	Design	170	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Introduction to Programming Like	Learn the fundamentals of programming, including variables, loops, and functions. Ideal for beginners.	sevil@admin.com	Computer Science	240	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Learn Spanish: Beginner to Fluent	Start from scratch and become fluent in Spanish through interactive lessons and practice exercises.	sevil@admin.com	Language Learning	180	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div> <div>Delete</div>
Machine Learning Essentials	Dive into the world of machine learning and build predictive models using Python and	sevil@admin.com	Data Science	180	<div>Edit</div> <div>Details</div> <div>Assignment Lists</div>

Create New Assignment

Show

10

entries

Search:

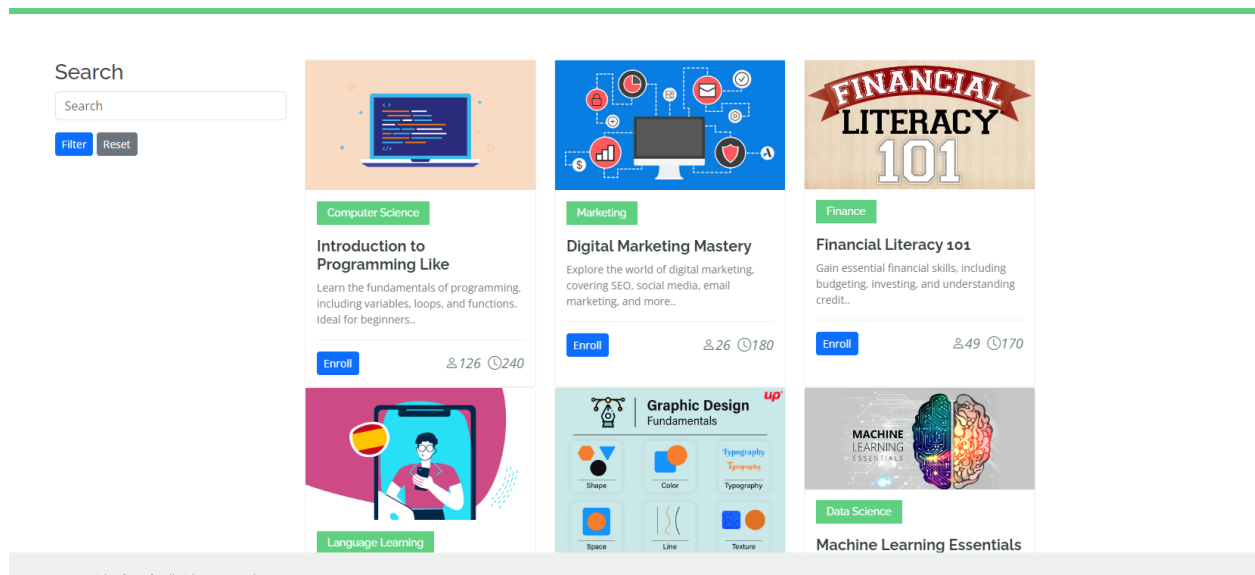
Title	Description	
Knife Skills Mastery	In this assignment, students will practice and demonstrate their knife skills. They will prepare a selection of vegetables with various cuts (e.g., julienne, brunoise, chiffonade) and submit photos or videos showcasing their precision and technique.	<div>Edit</div> <div>Delete</div>
Meat Cooking Techniques:	In this assignment, students will select a type of meat (e.g., chicken, beef, fish) and demonstrate various cooking methods (e.g., grilling, roasting, pan-searing) to achieve different levels of doneness. They should provide cooking times and temperatures.	<div>Edit</div> <div>Delete</div>
Perfecting the Perfect Egg:	Students will focus on mastering different egg cooking techniques. Assign specific tasks, such as preparing a flawless omelet, poaching eggs, and creating the perfect sunny-side-up fried egg. They should present their results with images or videos.	<div>Edit</div> <div>Delete</div>
Plating Presentation:	Plating is an essential culinary skill. Assign students a dish to prepare, and they should focus on the art of plating. They will be evaluated on their presentation, arrangement, and creativity in showcasing the dish.	<div>Edit</div> <div>Delete</div>
Sauce-Making Challenge:	Assign students a sauce-making challenge where they must prepare a classic sauce from scratch (e.g., hollandaise, béchamel, tomato sauce). They should document the process with step-by-step instructions and submit photos or videos of the finished product.	<div>Edit</div> <div>Delete</div>

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courses page



trainer page

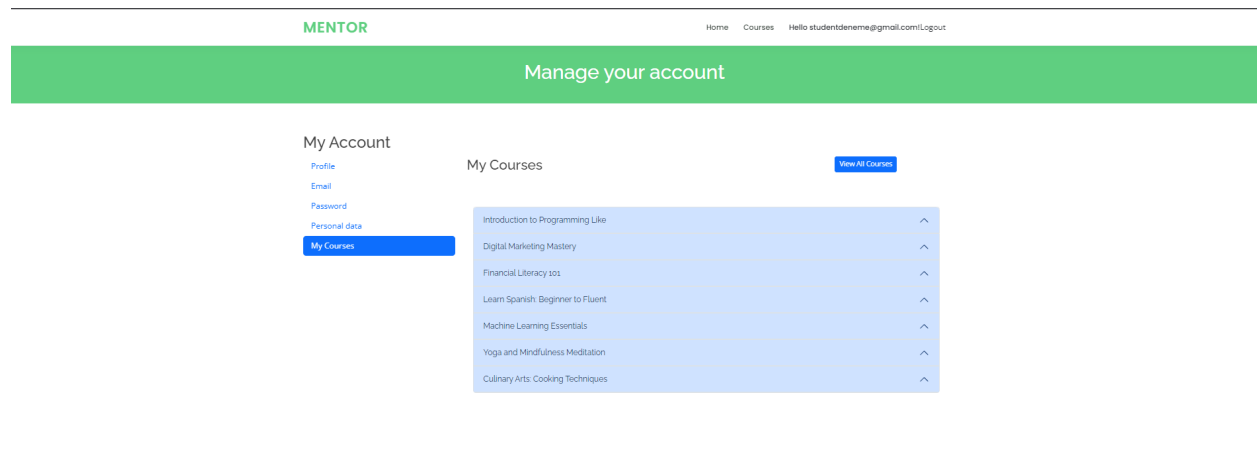


Introduction to Programming Like

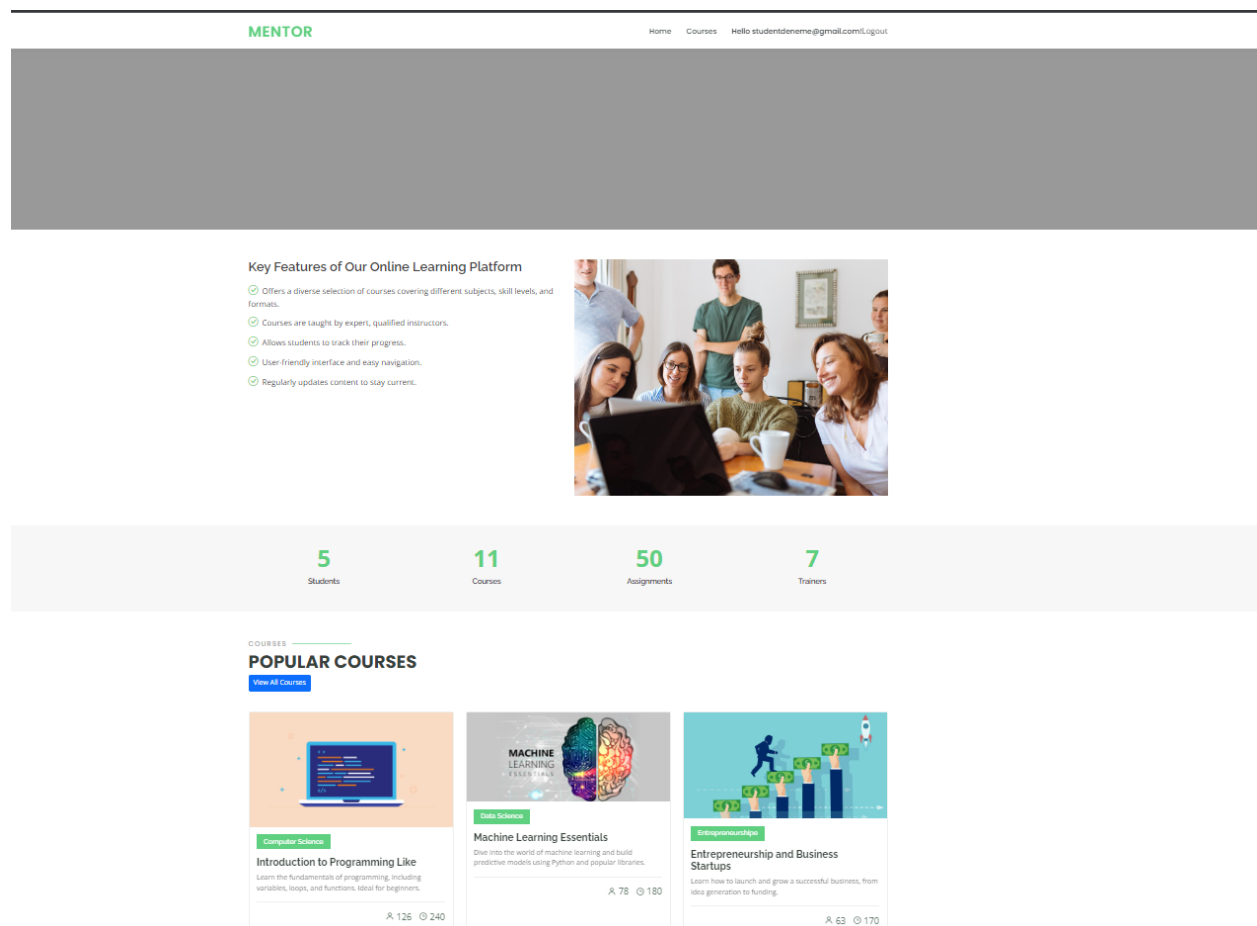
Learn the fundamentals of programming, including variables, loops, and functions. Ideal for beginners.

Trainer	sevil
Students	126
Last updated	19.09.2023 10:30:00
Enroll	

Understanding Computer Programming:	^
Getting Started with Python:	^
Variables and Data Types:	^
Control Structures:	^
Functions and Modular Programming:	^



home page



Project Success Criteria

The success of the E-learning App project, developed using C#, ASP.NET Razor, HTML, CSS, and an Amazon database, will be determined by achieving the following technical and business milestones:

1. **Interactive Power BI Dashboard:** A fully functional Power BI dashboard providing clear and interactive visualizations of course performance metrics, user feedback, and personalized learning recommendations.
2. **Effective Content Transformation:** Successfully execute content transformation processes, including validation, normalization, and enrichment, resulting in a dataset prepared for insightful analysis.
3. **Personalized Learning Paths:** Generate tailored course recommendations for each user based on their preferences, learning history, and proficiency levels, enhancing user satisfaction and skill acquisition.
4. **Real-Time Data Updates:** Implement real-time data updates and integration with Amazon services, ensuring that insights reflect the latest course content and user feedback.
5. **Customized Course Recommendations:** Tailor recommendations for each course category, taking into account specific learning objectives and challenges unique to each subject matter.
6. **Data Security and Compliance:** Adhere to stringent data security measures and legal compliance, ensuring the protection of user data and privacy.
7. **Budget Adherence:** Effectively manage project costs, delivering value within the allocated budget while optimizing expenditures.
8. **Stakeholder Satisfaction:** Attain positive feedback and satisfaction from administrators, instructors, and stakeholders regarding the usefulness and impact of the project's recommendations on course performance.
9. **Enhanced Learning Experience:** Measureable improvements in user engagement metrics, including session duration, interaction frequency, and course completion rates.
10. **Clear and Informative Reports:** Produce clear and informative reports summarizing project findings, insights, and recommendations in a manner that facilitates informed decision-making.

11. **Documentation and Knowledge Transfer:** Provide comprehensive project documentation and knowledge transfer to enable stakeholders to maintain and build upon the project's insights and infrastructure.
12. **User Training and Support:** Deliver effective user training and support to ensure that stakeholders can fully utilize the Power BI dashboard and other project deliverables, empowering them to maximize the platform's potential.

By achieving these milestones, our E-learning App aims to provide a dynamic and enriching learning environment, catering to the unique preferences and needs of each user.