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Blockchain System Management for Learning 4.0

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Abstract

The E-learning Management System for Learning 4.0 purpose is to automate the existing manual framework with the aid of electronic tools and unquestionable PC programming, fulfilling their requirements so their crucial information/data can be stored for a longer period of time with easy access to and control of something similar. The required software and hardware are readily available and easy to use. The aforementioned E-learning Management System can result in an error-free, safe, reliable, and efficient administration framework. The customer may benefit from concentrating on their various exercises rather than the record-keeping. As a result, it will aid the association in making better use of its resources. Without unnecessary passages, the association can keep up with electronic records. That suggests that while having the choice to access the data, one need not be distracted by irrelevant info. The goal is to automate its current manual framework with the help of automated equipment kinds and unquestionable computer programming, meeting their needs so their important information/data may be stored for a longer period of time with easy access and control of something comparable. The project essentially outlines how to manage for improved performance and better client services.

Keywords: *Voice Assistant, API, AES, Cryptography, Learning 4.0*

1. Introduction

E-learning is instruction delivered through a desktop, organization, or the Internet. Fundamentally, eLearning is the institution that has the authority to impart knowledge and skills. Elearning refers to learning through the use of electronic tools and cycles. E-learning encompasses all forms of learning and teaching supported by technology [1]. Whether or whether structured learning is taking place, the data and correspondence frameworks serve as explicit media to support the learning system. This typically incorporates innovative learning experiences outside of the classroom as well as inside the classroom, even while technological and educational program advancements continue [2]. During the epidemic, the majority of individuals suffered without studying, attending school, or attending universities. Many of them discover chances when they join the LMS, allowing them to self-study and learn from any location without even attending classes. Since this LMS system is so flexible and doesn't need to be updated frequently, we can virtually explore most of its contents and learn more than we could with a conventional one [3].

2. Literature Review

Steven D. Lonn's contextual analysis of the understudy's use of the Learning the Board framework for group projects looks at communication, cooperation, and information development [4]. Learning management systems (LMS) that are based online enable instructors and students to communicate online, share educational resources, and announce

class announcements. The results show that students used the LMS to collaborate and, to a significant extent, work together, but there was no evidence that students had developed new information using the LMS technology. Chikumbutso's article, The Educational Value of Combining a Learning Management System and a Social Networking Platform Gremu, David Because of the features they offer that make it easier to administer and deliver course information to students, LMSs are used widely in universities and other types of companies [5]. Despite their widespread use, they put more emphasis on content delivery than on the learner. The opportunities for learners to communicate, work together on projects, and create content that can add to the body of knowledge already present in the systems are few or nonexistent in LMSs [6]. Use of a learning management system by academics and students: Quality suggestions Judith Weaver Chenicheri Sid Nair and Christine Spratt.A learning management system (LMS) has been implemented by many higher education institutions to manage online teaching and learning. Staff and students receive varying levels of support, but frequently there is little follow-up research on the quality of the online resources or how effectively they are used [7].

3. Description

The creation of a configurable voice recognition system with automatic login authentication is the project's ultimate goal. It improves efficiency among tiny organizations by bringing more utility and customs. The user's voice must be considered while choosing the job to be processed. The project's additional objectives include operation-free operation and no physical indulgence [8].

4. Proposed Work

With the Anaconda Tool environment, the domain "Machine Learning" and the topic "Voice Recognition" are regarded as complete. To make the most of the tool, each participant in the project has completed a certain assignment [9]. To ensure that all participants in the project are fully exposed to its technical components, each person contributes an equal amount of work. The project's fundamental duties can be divided into three modules: creating a voice assistant-friendly environment with the necessary packages and APIs; creating functionality for the package and APIs using Python; and building new features using automation tools [10].

5. Proposed Methodology

Creating a voice assistant would be enjoyable, but careful preparation and an intentional approach are needed. For this project, R programming and Python programming can both be used separately. Python is chosen as the ideal language since its code has the finest user readability [11]. Both PyCharm and Spyder IDE are appropriate for the project's environment, but Spyder IDE can readily accommodate a new environment with preferred packages and APIs. Spyder IDE is therefore contacted. The integrity and confidentiality of AES encryption make it the best choice among the several encryption types and keys available. The end users are never made aware of automated processes like employing encrypted credentials and an AES encryption key to log into the intended online accounts, as these processes play a crucial role in time-saving and process optimization. There are various ways to process the software in a particular way. Here, the project was completed entirely with the "Anaconda" software [12]. Anaconda is a tool for scientific computing that includes distributions of the Python and R programming languages. Spyder IDE is the greatest option for the implementation and efficient process of the project out of all the environments that are offered in Anaconda for its efficiency. For the resources that need to be processed, datasets are obtained through the Google APIs.Since the project requires a vast amount of datasets for the exact operation of the

voice assistants, none of the datasets are developed manually. Since this uses 192 bit address length encryption, AES encryption is utilized here for optimal credential safety [13].

6.Implementation

Python programming is where the project's initiation phase begins. While Python is utilized as the primary language when constructing a project, it is scalable and simple for the developer to understand. The prototype modeling took an estimated three to four weeks to complete. Using the Python library pysstx3, rudimentary voice recognizable dictation is initially created for the voice assistant [14]. The system is programmed to repeat what the end user says. The system is then integrated into the environment for the following step if the maximum number of tests are completed. When the password is typed, the AES encryption algorithm processes the password encrypted and passes it on to the JSON file. The encryption procedure takes proper steps to preserve the user's credentials. To view the encrypted cipher text, the JSON file is first modeled. The tasks and subtasks that have been developed and processed in order to meet the project's goals and objectives are listed in the bulletins below [15].

- The only purpose of the platform "Anaconda" is to build a project-specific environment.
- Since we do projects related to the fields of machine learning, automation, and cryptography, several packages and APIs need to be linked with the environment to improve the project. Anaconda comes with a default environment where some default packages are already installed.
- Packages like pyaudio, pycrypto, selenium, wolfram-alpha, sample audio, google, Wikipedia, youtube search, pysttx3, and time packages are downloaded and installed in a new environment called "assistant."
- At the main, packages and APIs are imported. The python programming languages add a py file, dependencies, and functionality.
- Each.py file contains specific operations, and when a user requests to execute a certain action, the voice assistant causes the main function to contact the appropriate.py file to carry out the requested action.
- The environment has now been constructed and loaded with the required modules, and Spyder IDE has been adapted for it. Spyder has a console as a user interface and a code window.
- Selenium, the Chrome driver, and cryptographic keys are used in the automatic login authentication process.
- A symmetric key is used to decrypt the encrypted password when Selenium automates the chrome driver.
- After entering the credentials into the command prompt, the AES encryption processes begin to encrypt the password and send it as cipher text to the JSON file.
- Finally, the entire environment and code are combined into a desktop application.

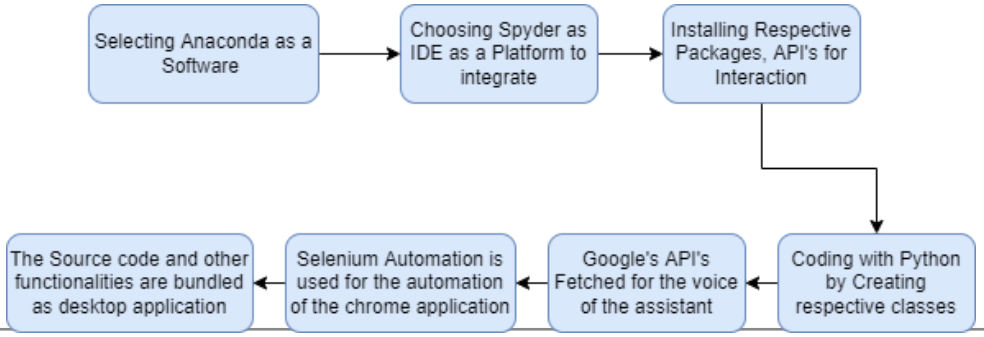

Figure 1. Workflow

7. Results And Discussion

After much investigation, I discovered that there is a wealth of knowledge available on the subject of creating a course repository, but the biggest issue with the information indicates a conflict between whether the system itself is very advantageous to an institution. There is disagreement around what, and What are the course's contents should be the question. repository and what the appropriate bounds are [16].

8. Conclusion

The purpose of choosing the LMS project is to offer learners an integrated system that is managed and organized [17]. You can access a full virtual educational package with this LMS system, which also integrates with discussion forums, file sharing, gamification, tracking for assessment, and progress [18], [19]. And at the end of the project, we came to the conclusion that we tried to describe the necessary system specifications and the steps to be taken. Along with the available screenshots, we have included the features and operations for each session. Last but not least, the LMS system is continually evaluated to ensure it meets our test cases [20].

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