Industrial Internship Report on

Quiz Game – A Terminal-Based Python Project

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Executive Summary
This report provides details of the Industrial Internship provided by upskill Campus and The IoT Academy in collaboration with Industrial Partner UniConverge Technologies Pvt Ltd (UCT). This internship was focused on a project/problem statement provided by UCT. We had to finish the project including the report in 6 weeks' time. My project was **Quiz Game – A Terminal-Based Python Application**, which is designed specially to ask the users some MCQs, then take their responses, check if the response is correct, calculate the score based on it, and provide feedback at the end. The program is built using Python and follows a simple, interactive format that runs entirely in the terminal. This internship gave me a very good opportunity to get exposure to Industrial problems and design/implement solution for that. It was an overall great experience to have this internship.

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1 Preface

This internship report is a summary of my six-week industrial internship with Upskill Campus and The IoT Academy, under collaboration with UniConverge Technologies Pvt. Ltd. (UCT). During the internship, I undertook the development of a Python Quiz Game — a terminal program that presents multiple-choice questions, accepts user answers, checks correctness, computes scores, and gives performance feedback.

Internship is an important component of professional growth, as it exposes one to actual problems and the ability to practice theoretical concepts in real-life situations. This project provided me with hands-on experience in developing a solution from the ground up, enhancing my programming skills, and comprehending the process of getting a working product done in a given timeframe.

The internship course of study was organized such that every week emphasized a particular phase of development — from choosing the topic and making the initial design to coding, testing, and final optimization. The systematic nature helped make the learning process seamless and objective-driven.

From this project, I was able to learn the way to organize Python programs well, implement loops and conditionals practically, deal with user input, and output in a neat and readable format. It also enhanced my ability to solve problems and learned me the value of iterative testing.

I am grateful to Upskill Campus, The IoT Academy, and UniConverge Technologies Pvt. Ltd. for giving me this opportunity. I also appreciate my mentors, coordinators, and fellow learners who guided me through this process.

To my seniors and colleagues, I would advise — give internships a serious thought, approach them as a chance to try things out, learn, and develop something you will be proud of. The experience and confidence you gain over this duration will serve you well in academics and your career.

2 Introduction

2.1 About UniConverge Technologies Pvt Ltd

A company established in 2013 and working in Digital Transformation domain and providing Industrial solutions with prime focus on sustainability and RoI.

For developing its products and solutions it is leveraging various **Cutting Edge Technologies e.g. Internet of Things (IoT), Cyber Security, Cloud computing (AWS, Azure), Machine Learning, Communication Technologies (4G/5G/LoRaWAN), Java Full Stack, Python, Front end** etc.

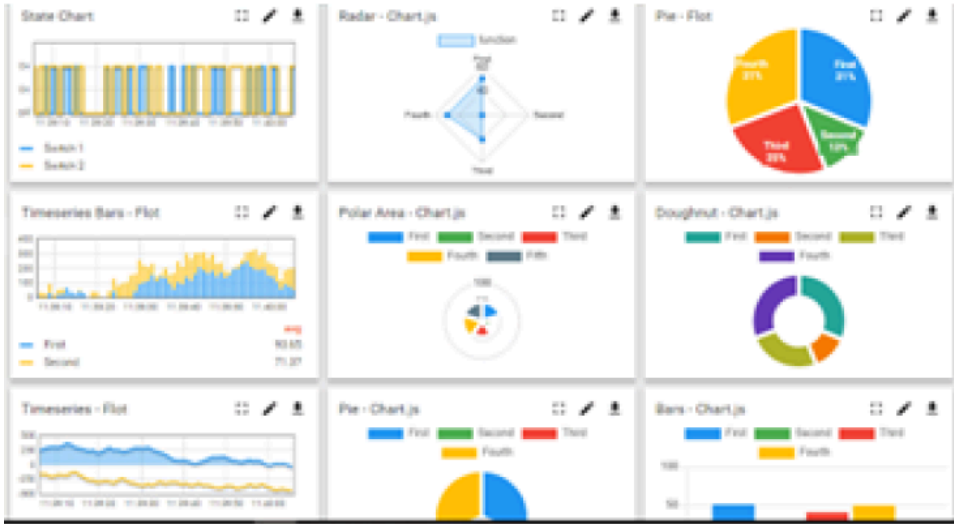
i. UCT IoT Platform (Insight)

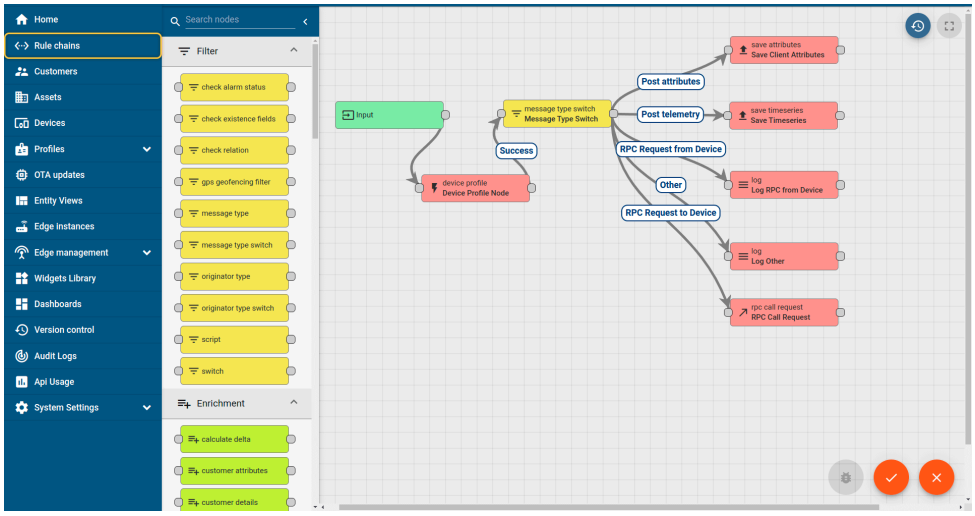
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable “insight” for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- It enables device connectivity via industry standard IoT protocols - MQTT, CoAP, HTTP, Modbus TCP, OPC UA
- It supports both cloud and on-premises deployments.

It has features to

- Build Your own dashboard
- Analytics and Reporting
- Alert and Notification
- Integration with third party application(Power BI, SAP, ERP)
- Rule Engine





ii. Smart Factory Platform (FACTORY WATCH)

Factory watch is a platform for smart factory needs.

It provides Users/ Factory

- with a scalable solution for their Production and asset monitoring
- OEE and predictive maintenance solution scaling up to digital twin for your assets.
- to unleased the true potential of the data that their machines are generating and helps to identify the KPIs and also improve them.
- A modular architecture that allows users to choose the service that they what to start and then can scale to more complex solutions as per their demands.

Its unique SaaS model helps users to save time, cost and money.

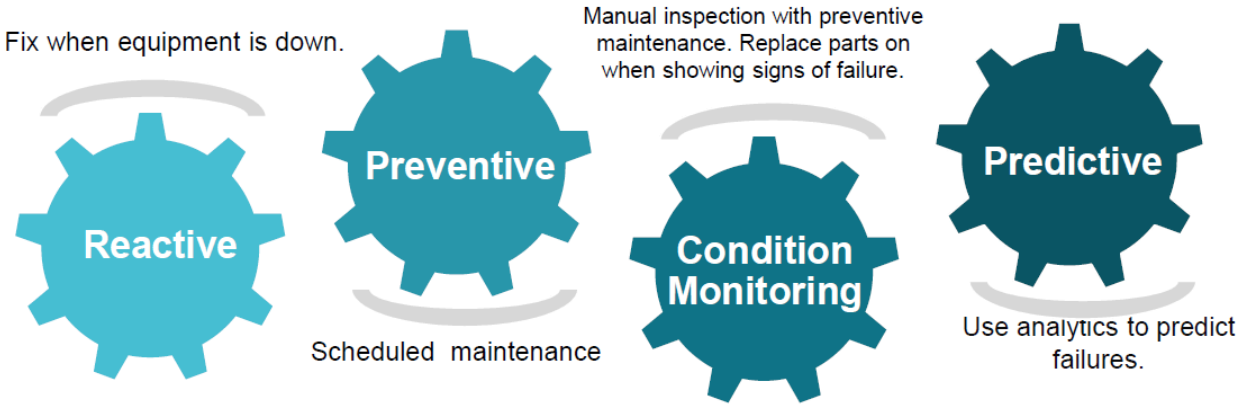
Machine	Operator	Work Order ID	Job ID	Job Performance	Job Progress		Output		Rejection	Time (mins)				Job Status	End Customer
					Start Time	End Time	Planned	Actual		Setup	Pred	Downtime	Idle		
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i

iii. LoRaWAN based Solution

UCT is one of the early adopters of LoRAWAN teschnology and providing solution in Agritech, Smart cities, Industrial Monitoring, Smart Street Light, Smart Water/ Gas/ Electricity metering solutions etc.

iv. Predictive Maintenance

UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



2.2 About upskill Campus (USC)

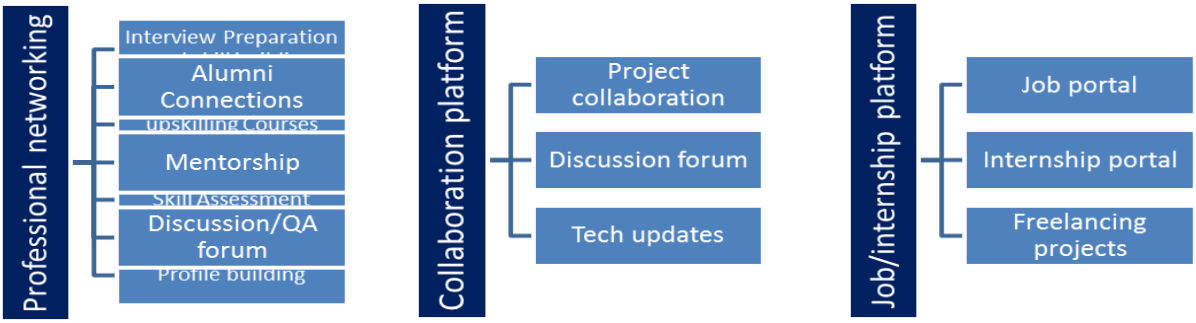
upskill Campus along with The IoT Academy and in association with Uniconverge technologies has facilitated the smooth execution of the complete internship process.

USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.

Seeing need of upskilling in self paced manner along-with additional support services e.g. Internship, projects, interaction with Industry experts, Career growth Services

upSkill Campus aiming to upskill 1 million learners in next 5 year

https://www.upskillcampus.com



2.3 The IoT Academy

The IoT academy is EdTech Division of UCT that is running long executive certification programs in collaboration with EICT Academy, IITK, IITR and IITG in multiple domains.

2.4 Objectives of this Internship program

The objective for this internship program was to

- ☛ get practical experience of working in the industry.
- ☛ to solve real world problems.
- ☛ to have improved job prospects.
- ☛ to have Improved understanding of our field and its applications.
- ☛ to have Personal growth like better communication and problem solving.

2.5 Reference

[1] Python Software Foundation, *Python 3 Documentation*, Available at: https://docs.python.org/3/

[2] W3Schools, *Python Tutorial*, Available at: https://www.w3schools.com/python/

[3] Programiz, *Python Programming Examples*, Available at: https://www.programiz.com/python-programming

[4] GeeksforGeeks, *Python MCQ Game Implementation*, Available at: https://www.geeksforgeeks.org/

[5] Stack Overflow, *Python Q&A Forum*, Available at: https://stackoverflow.com/

2.6 Glossary

Terms	Acronym
MCQ	Multiple Choice Question – A question format with several answer options
Terminal	A text-based interface where the user interacts with the program
Python Dictionary	A data structure in Python used to store data as key-value pairs
Function	A block of reusable code in Python
CSV	Comma-Separated Values file format for storing tabular data
Loop	A programming construct for repeating a set of instructions
Conditional	An if/else statement controlling code execution

3 Problem Statement

The objective of the project was to create a Quiz Game in Python that is executable on a terminal-based system. The program must present multiple-choice questions, accept user input, verify the correct answer, enhance the score, and finally provide the performance of the user. The solution must be interactive, user-friendly, and illustrate key programming concepts in Python.

4 Existing and Proposed solution

- **Current Solutions:**

  Most quizzes offered today are web or mobile-based programs, often requiring sophisticated development frameworks and large databases. These can be troublesome for beginners to implement and may even require additional front-end expertise.

- **Suggested Solution:**

  A terminal program which makes use of Python to contain questions in dictionary format or CSV file, iterates over them using loops, validates user input, calculates scores, and provides final feedback. The solution is light, easy to implement, and demonstrates basic programming understanding while being helpful.

4.1 Code submission (Github link):

https://github.com/ssunskriti/upskillcampus

4.2 Report submission (Github link) :

https://github.com/ssunskriti/upskillcampus/blob/main/QuizGame_Sanskriti_USC_UCT.pdf

5 Proposed Design/ Model

5.1 High Level Diagram (if applicable)

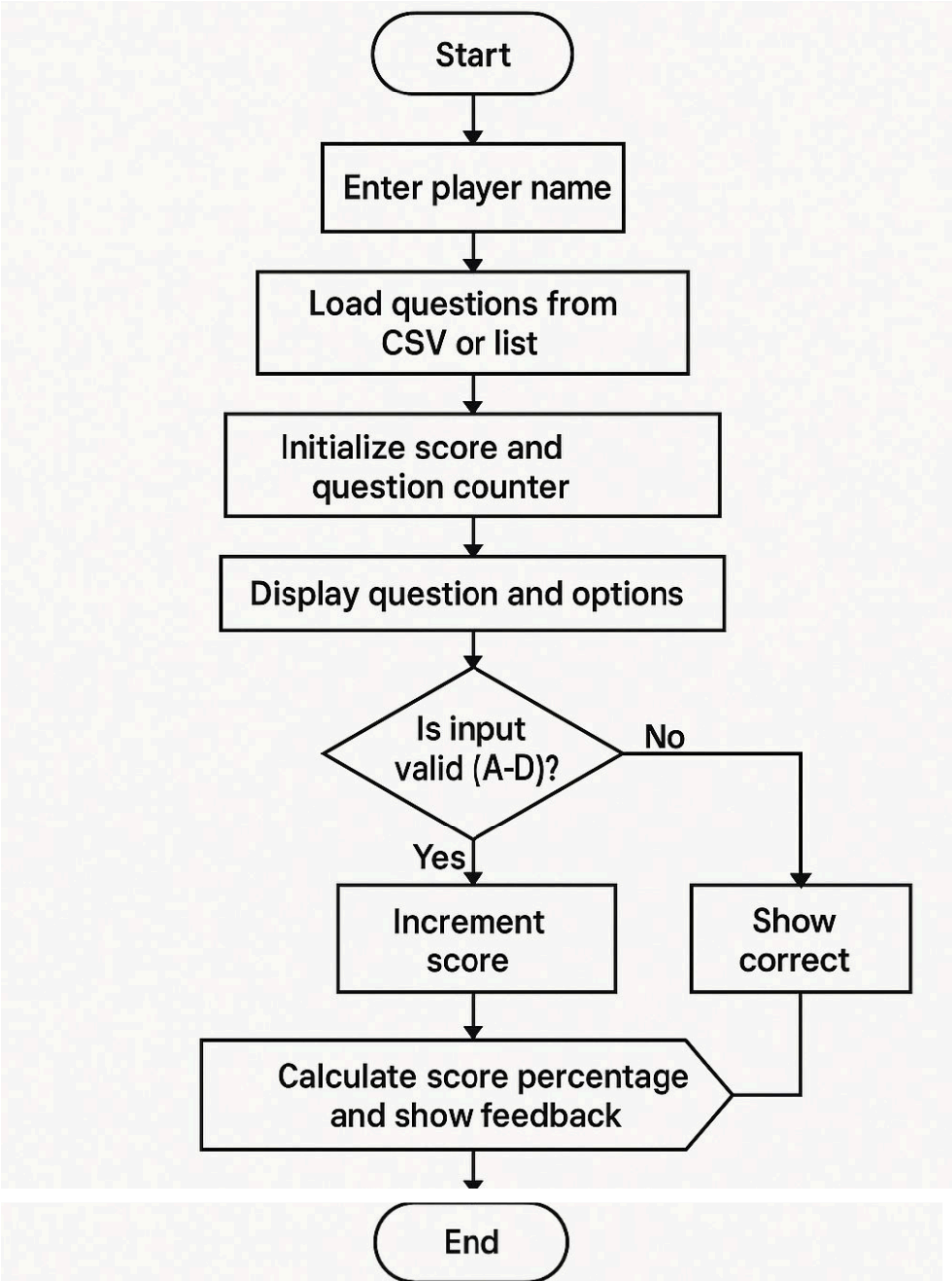
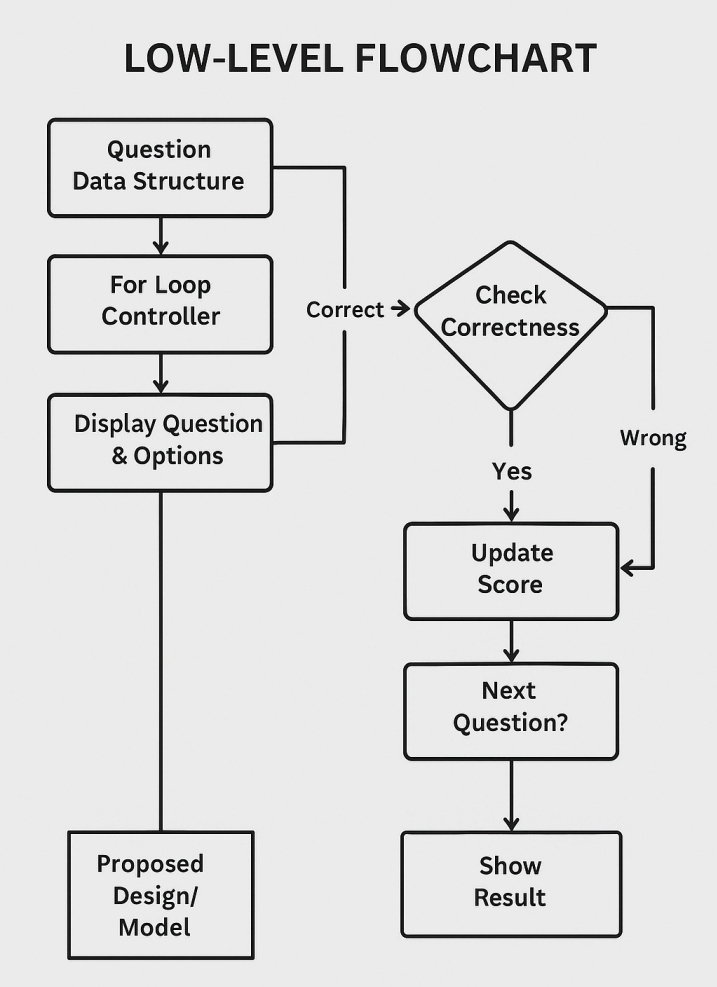


Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

5.2 Low Level Diagram (if applicable)



5.3 Interfaces (if applicable)

Not applicable as this is a standalone terminal-based Python program without external communication or protocols.

6 Performance Test

Constraints Found:

- Accuracy: Only valid inputs (A/B/C/D) should be accepted and processed properly.
- Speed: Program must display questions and process inputs without any delay.
- Memory Usage: Application must be run smoothly on systems with less resources as a single CSV file is utilized.
- Data Integrity: Results should be saved properly in results.csv without replacing earlier tries.

How Constraints Were Solved:

- Applied input validation to only accept A/B/C/D and request again for incorrect inputs.
- Utilized pandas to read questions.csv efficiently, saving processing time.
- Results are timestamped so each attempt is saved separately.

Test Plan / Test Procedure:

- Tested the quiz with valid and invalid inputs to confirm validation logic.
- Verified the calculation of the score by manually answering known correct and incorrect answers.
- Removed the current results.csv and re-ran the program to ensure creating a file is functional.
- Ran the quiz multiple times to ensure the results are appended properly.

Performance Outcome:

- Quiz operates immediately for short data sets.
- Input checking functions properly and disallows invalid input.
- results.csv gets updated correctly with name, score, percentage, remark, and timestamp.

Recommendations:

- Introduce random question selection for large data sets.
- Include encryption for result files if deployed for formal tests.
- Add GUI for improved usability in upcoming versions.

6.1 Test Plan/ Test Cases

Test case	Description	Expected result	Actual result
1	User enters valid input (A/B/C/D)	Input accepted and evaluated correctly	Works as expected
2	User enters invalid input (e.g., E/1)	Prompted to re-enter valid option	Works as expected
3	Score calculation with all correct answers	Full score displayed	Works as expected
4	Score calculation with mixed answers	Partial score displayed accurately	Works as expected
5	`results.csv` file absent initially	New file created and results saved	Works as expected
6	Multiple quiz attempts	Results appended with each attempt	Works as expected

6.2 Test Procedure

- Executed quiz with different combinations of correct and incorrect answers to verify scoring logic.
- Entered invalid inputs to test validation and re-prompt functionality.
- Deleted results.csv to check if a new file was created on next run.
- Replayed quiz multiple times to ensure results were appended correctly.

6.3 Performance Outcome

- Quiz ran smoothly and displayed questions without delay.
- Input validation handled wrong entries correctly and requested valid input.
- Score and percentage were calculated with complete accuracy.
- results.csv updated with name, score, percentage, remark, and timestamp for every attempt without overwriting previous data.

7 My learnings

Throughout this internship, I acquired real hands-on experience in designing a Python application from scratch. I was able to learn how to divide a project into manageable steps—problem analysis, design, coding, debugging, testing, and documentation. This helped me understand systematic software development as well as the necessity of planning prior to implementation.

As I continued to work on the quiz game project, I gained more experience with Python basics like loops, conditionals, functions, and file handling. I also learned how to use external libraries such as **pandas** to read and process CSV files, which helped me realize how valuable it is to use optimized tools in order to efficiently deal with data. Using input validation, dynamic calculation of scores, and storing results with timestamps enhanced my skill to think in terms of edge cases and create user-friendly solutions.

Another key takeaway was acquiring the ability to work with **GitHub** for version control and project management. Uploading code, ensuring suitable file structure, and creating links for final submission exposed me to industry norms. It has made me more assured of working on joint repositories and taking care of project submissions in a professional manner.

Also, developing flowcharts, block diagrams, and structured reports ensured that the importance of proper documentation was learned and how it contributes to giving credibility to a project. In total, this internship increased my technical as well as analytical skills and gave me hands-on exposure that will be extremely useful in future academic projects as well as in professional positions in the software development sector.

8 Future work scope

While the quiz game project successfully met its primary goals, there are some features and improvements that can be made in the future to enhance its usability and functionality:

- **Graphical User Interface (GUI):**

Incorporating a GUI with libraries such as Tkinter or PyQt would make the software more interactive and user-friendly than the existing terminal-based version.

- **Dynamic Question Bank:**

Incorporating a feature wherein questions are randomly picked from a huge dataset saved in a database or retrieved from an external online API. This would present variety and scalability.

- **User Profiles and Scores Tracking:**

Enabling multiple users to register, hold profiles, and monitor their performance across several attempts at quizzes with features for ranking.

- **Category and Difficulty Levels:**

Adding subject-based categories and difficulty levels (easy, medium, hard) to tailor quiz experience for various users.

- **Result Visualization:**

Providing graphical performance reports with the help of libraries such as Matplotlib or Seaborn to visualize score trends and areas to improve.

- **Security and Data Integrity:**

Encrypting stored results for maintaining data privacy in case it is used in actual assessments or competitions.

- **Web and Mobile Deployment:**

Porting the application to a web application (using Django/Flask) or a mobile application so that it can be easily accessed across various platforms.

These enhancements would increase functionality, increase user interaction, and make the quiz system ready for larger audiences and professional applications.