**Industrial Internship Report on**

**”Quiz Game with Python”**

**Prepared by**

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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 (Tell about ur Project)  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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# Preface

Summary of the whole 6 weeks’ work.

About need of relevant Internship in career development.

Brief about Your project/problem statement.

Opportunity given by USC/UCT.

How Program was planned



Your Learnings and overall experience.

Thank to all (with names), who have helped you directly or indirectly.

Your message to your juniors and peers.

# Introduction

## 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.



1. UCT IoT Platform **(****)**

**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

 

1. **Smart Factory Platform (****)**

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.

 

1.  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.

1. 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.



## 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

<https://www.upskillcampus.com/>

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



## 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.

## 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.

## Reference

[1] Learning Python by Mark Lutz

### [2] Python Crash Course by Eric Matthes (No Starch Press, 2016)

### [3] Invent Your Own Computer Games with Python, 4th edition by Al Sweigart (No Starch, 2017)

# Problem Statement

In the assigned problem statement

The quiz game is a Python project that quizzes users on various topics. It reads questions and answers from a file or database, presents them to the user, and keeps track of their score.

We can add several questions by repeating the code above. However, this will make our code unnecessarily long and harder to update. For a better approach, store information about the question in an object instead.

1. At the top of the Python file, add a class to store information about a quiz question.
2. Underneath the class, add an array of question objects. These objects will store the question text that the quiz displays to the user, along with the correct answer.
3. use a for loop to iterate over the quizQuestions array. For each question, display the question, and compare the user's input with the correct answer.
4. Add another question to the quizQuestions array. Store some multiple-choice options for the question.
5. Modify the part of the for loop that displays the question to the user. If multiple-choice options exist for the question, display them after the question, and before fetching the user's input.

# Existing and Proposed solution

Provide summary of existing solutions provided by others, what are their limitations?

What is your proposed solution?

What value addition are you planning?

## Code submission (Github link)

(https://github.com/swathikiran1/quiz-app.git)

## Report submission (Github link) : first make placeholder, copy the link. (<https://github.com/swathikiran1/quiz-app.git>)

# Proposed Design/ Model

Given more details about design flow of your solution. This is applicable for all domains. DS/ML Students can cover it after they have their algorithm implementation. There is always a start, intermediate stages and then final outcome.

## High Level Diagram (if applicable)

Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

## Low Level Diagram (if applicable)

## Interfaces (if applicable)

Update with Block Diagrams, Data flow, protocols, FLOW Charts, State Machines, Memory Buffer Management.

# Performance Test

This is very important part and defines why this work is meant of Real industries, instead of being just academic project.

Here we need to first find the constraints.

How those constraints were taken care in your design?

What were test results around those constraints?

Constraints can be e.g. memory, MIPS (speed, operations per second), accuracy, durability, power consumption etc.

In case you could not test them, but still you should mention how identified constraints can impact your design, and what are recommendations to handle them.

## Test Plan/ Test Cases

## Test Procedure

## Performance Outcome

1. **Response Time**: Monitor and optimize the time it takes for the app to respond to user interactions. This includes loading questions, processing answers, and moving between quiz pages. A responsive app should have minimal delays.
2. **Scalability**: Ensure that the app can handle an increasing number of users and questions without a significant drop in performance. Scalability is crucial if you plan to expand your user base.
3. **Concurrent Users**: Test the app's performance under heavy loads with multiple users taking quizzes simultaneously. Ensure that it remains responsive and stable during peak usage times.
4. **Load Time**: Measure and optimize the time it takes for the app to load initially. Minimize the app's startup time to provide a smooth user experience.
5. **Database Performance**: Optimize database queries for retrieving questions and recording user responses. Avoid slow queries that can lead to delays in quiz delivery and scoring.
6. **Memory Usage**: Monitor and manage memory usage to prevent memory leaks and ensure the app remains efficient even after extended usage.
7. **Error Handling**: Implement robust error handling to gracefully manage unexpected errors and prevent crashes. Log errors for debugging and improvement purposes.
8. **Security Performance**: Ensure that security measures (e.g., authentication, authorization, data protection) do not significantly impact the app's performance. Security should not compromise usability.
9. **Caching**: Implement caching mechanisms where appropriate to reduce the load on the server and speed up data retrieval, especially for frequently accessed resources.
10. **Content Delivery**: If the app includes multimedia content (e.g., images, videos), optimize content delivery to minimize load times, especially for users with slower internet connections.
11. **User Feedback**: Collect feedback from users regarding app performance. This can help you identify issues and areas for improvement.
12. **Analytics**: Implement analytics to track user behavior and app performance metrics over time. Use this data to make data-driven improvements.

You should provide sumary of your overall learning and how it would help you in your career growth.

# Future work scope

1. **User Profiles and Progress Tracking:**
   1. Implement user registration and login functionality.
   2. Create user profiles to track quiz progress, scores, and achievements.
   3. Allow users to see their quiz history and performance analytics.
2. **Social Features:**
   1. Add social sharing options to share quiz results and achievements.
   2. Implement a leaderboard to compare scores with friends and other users.
3. **Multiplayer Quizzes:**
   1. Enable multiplayer quizzes, allowing users to compete in real-time.
   2. Implement live chat or messaging for multiplayer quizzes.
4. **Categories and Topics:**
   1. Expand the range of quiz categories and topics.
   2. Allow users to filter and choose quizzes based on their interests.
5. **Quiz Creation and User-Generated Content:**
   1. Allow users to create their quizzes and questions.
   2. Implement a review process for user-generated content to ensure accuracy and quality.
6. **Difficulty Levels:**
   1. Introduce different difficulty levels for quizzes (easy, medium, hard).
   2. Adapt question difficulty based on the user's previous performance.
7. **Enhanced Question Types:**
   1. Include various question types such as multiple-choice, true/false, fill-in-the-blanks, and more.
   2. Implement multimedia questions (images, audio, videos).
8. **Hints and Explanations:**
   1. Provide hints for challenging questions.
   2. Offer explanations and additional information after users answer questions.
9. **Gamification Elements:**
   1. Add gamification elements like badges, achievements, and rewards.
   2. Implement a virtual currency system for in-app purchases or unlocks.
10. **Personalized Recommendations:**
    1. Use machine learning algorithms to recommend quizzes based on user preferences and performance.
    2. Implement a recommendation engine that suggests relevant quizzes.
11. **Accessibility and Localization:**
    1. Ensure accessibility features for users with disabilities.
    2. Localize the app for different languages and regions.
12. **Mobile App and Cross-Platform Compatibility:**
    1. Develop a mobile app version for iOS and Android platforms.
    2. Ensure cross-platform compatibility and synchronization of user data.
13. **Analytics and Data Insights:**
    1. Integrate analytics tools to track user behavior and app performance.
    2. Use data insights to improve the app's user experience and content.
14. **Monetization Strategies:**
    1. Explore monetization options such as ads, in-app purchases, or a premium subscription model.
    2. Offer a premium ad-free version with exclusive features.
15. **Security and Data Privacy:**
    1. Enhance app security to protect user data.
    2. Comply with data privacy regulations (e.g., GDPR, CCPA).
    3. Explore integration options with educational platforms or Learning Management Systems for educational institutions.
    4. Consider running ad campaigns to acquire new users.

Top of Form

You can put some ideas that you could not work due to time limitation but can be taken in future.