SRMS CETR ,Bareilly

Industrial Internship Report on

"Healthcare management system"

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. Our project contains two modules – the admin module and the user module. Our project will not only help the admin to preview the monthly or yearly data but it will also allow them to edit, add or update records. The software will also help the admin to monitor the transactions made by the patients and generate confirmations for the same. The admin will be able to manage and update information about doctors 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

Summary of the whole 6 weeks' work

Week 1: Introduction to cloud computing: During the initial phase, I embarked on a journey to learn cloud computing development using public coud platforms . With public cloud I gained fundamental insights into cloud deployment, while introduced me to creating interactive web applications effortlessly. Additionally, I initiated my exploration into database concepts, laying the groundwork for integrating data storage into my projects.

Week 2:Using of various development platforms: Building upon my foundational knowledge from Week 1, I delved deeper into web development, intensifying my command over html,css,php and databses. Through extensive practice and experimentation, I honed my skills in creating visually appealing and user-friendly interfaces. Moreover, I broadened my skill set by exploring advanced features and functionalities offered by these frameworks, enabling me to implement more complex programs with ease.

Week 3: UI Design Mastery and database exploration: Week three marked a pivotal stage in my learning journey as I focused on mastering web development and delving deeper into database management. Drawing upon my expertise in php and mongo DB, I crafted sophisticated user interfaces tailored to diverse project requirements. Concurrently, I immersed myself in learning database concepts and techniques, exploring different database management systems and their respective advantages.

Week 4: Fusion of frontend ,backend and Database Integration: In the fourth week, I brought together my proficiency in programming languages and newfound knowledge of database concepts to create comprehensive applications. Leveraging php, SQLand mongo DB for UI design and database systems for data storage, I seamlessly integrated user interfaces with backend data management. This holistic approach not only enriched the functionality of my projects but also facilitated secure and efficient data handling.

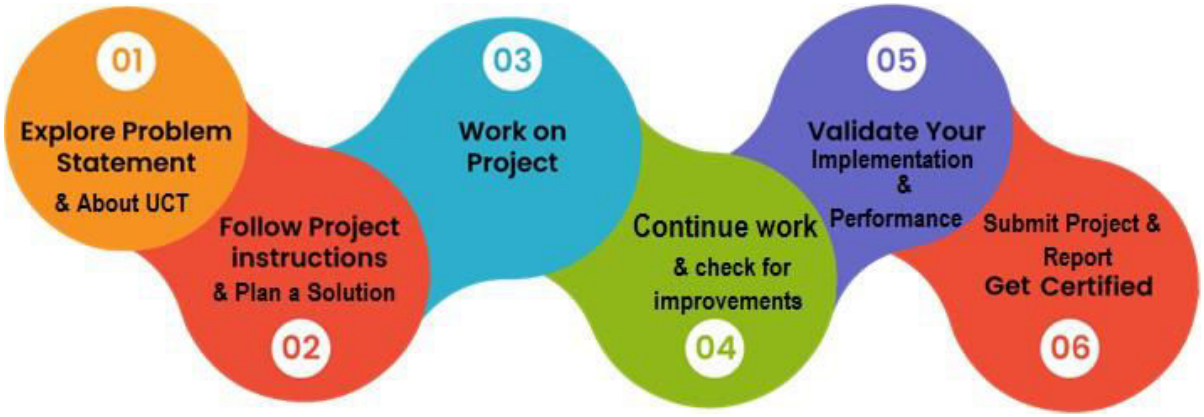
Week 5: Advanced Features Implementation and Optimization: During the final week, I focused on implementing advanced features and optimizing the performance of my applications. Leveraging my expertise in website development and database integration, I incorporated interactive elements, such as dynamic data visualization and user input validation, to enhance the user experience. Additionally, I conducted thorough performance testing and optimization techniques to ensure that my applications were responsive and efficient.

Week 6: Project Completion and Reflection: As the final week of the internship unfolded, I dedicated myself to completing and refining my projects while reflecting on the journey thus far. With the groundwork laid in previous weeks, I focused on tying up loose ends, conducting comprehensive testing, and polishing the user interface and functionality of my applications. I meticulously reviewed the codebase, ensuring adherence to best practices and optimizing performance wherever possible.

About need of relevant Internship in career development: Relevant internships are vital for career development. They provide hands-on experience, helping students apply what they learn in college to real-life situations. Internships also build valuable networks and skills, making students more competitive in the job market. Overall, internships bridge the gap between education and professional success.

- **Brief about Your project/problem statement:**The **healthcare management system** aims to record the data provided by the users or patients and the doctors and the proper management and storage implementation and further processing of the data , there were technical difficulties related to optimizing database performance while handling large volumes of data. Balancing speed and efficiency in data retrieval and storage operations was a critical aspect that demanded continuous troubleshooting and fine-tuning.
- The linking of the pages and different platforms was bit difficult and the data storage and access which is a necessary process in order to access or control the website and thus connected to a single page.
- Overall, these challenges required persistent effort and collaboration among team members to overcome, ultimately enhancing our skills and knowledge in the process.

Opportunity given by USC/UCT:I am sincerely grateful to USC/UCT for providing me with the invaluable opportunity to undertake this internship. Their commitment to fostering learning and professional development has been instrumental in shaping my career journey. I deeply appreciate the support and guidance extended by USC/UCT throughout this enriching experience.



Your Learnings and overall experience: My journey throughout the project has been incredibly enriching, filled with valuable learnings and growth. I gained proficiency in Python programming, database management, and user interface design. The experience taught me the importance of problem-solving, collaboration, and attention to detail. Overall, it was a rewarding and transformative experience that has equipped me with invaluable skills for future endeavors.

Thank to Mr.Ankit Kumar and Upskill Campus, for providing me the best help in the journey of my internship.

My message to your juniors and peers: Hello everyone! I recently wrapped up my Python internship, and I'm excited to share some insights with you all. Firstly, don't underestimate the power of practice. The more you code, the more confident you'll become. Also, don't hesitate to explore different resources and tutorials to deepen your understanding. Remember, it's okay to make mistakes along the way – they're valuable learning opportunities. Lastly, cherish the community around you. Whether it's your peers, mentors, or online forums, there's always someone willing to help. Keep pushing your boundaries, stay curious, and enjoy the journey of coding!

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.

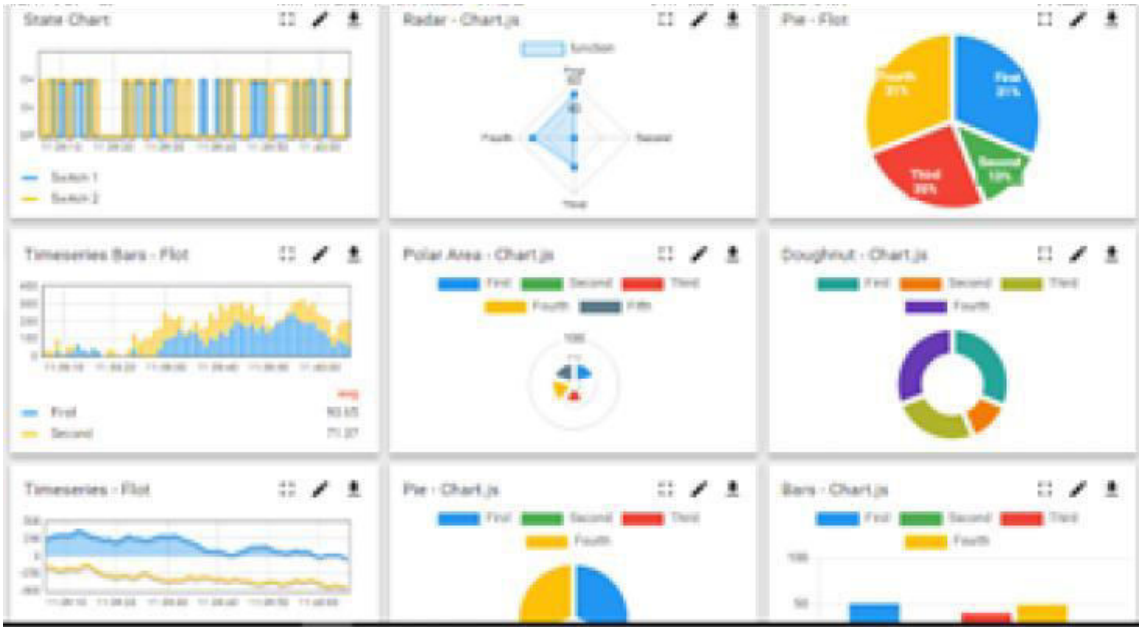
i. UCT IoT Platform (UCT Insight)

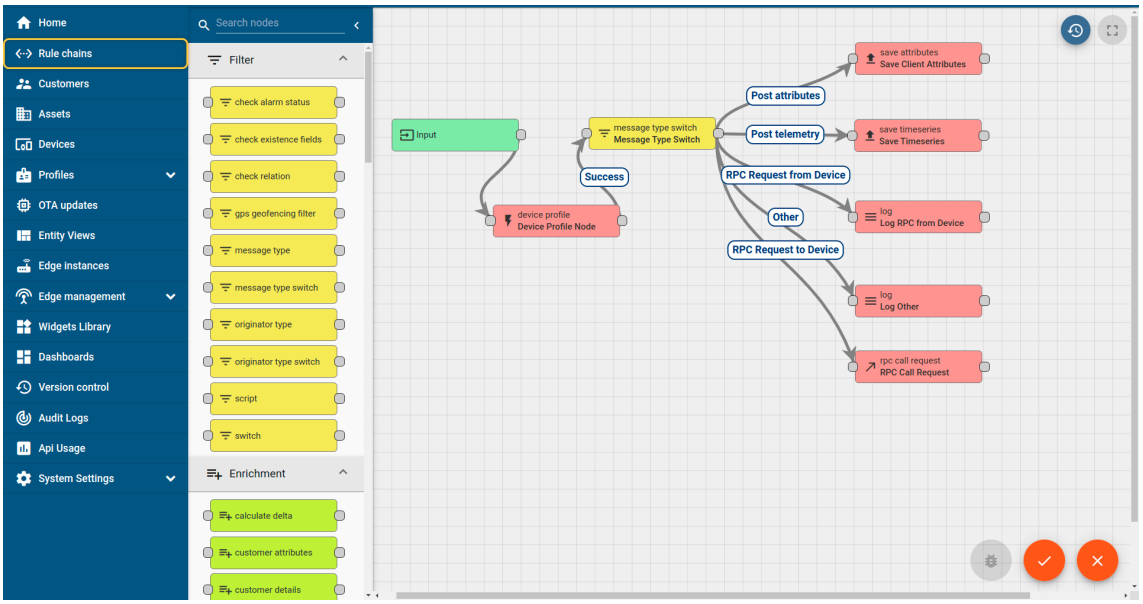
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable "insight" for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- 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





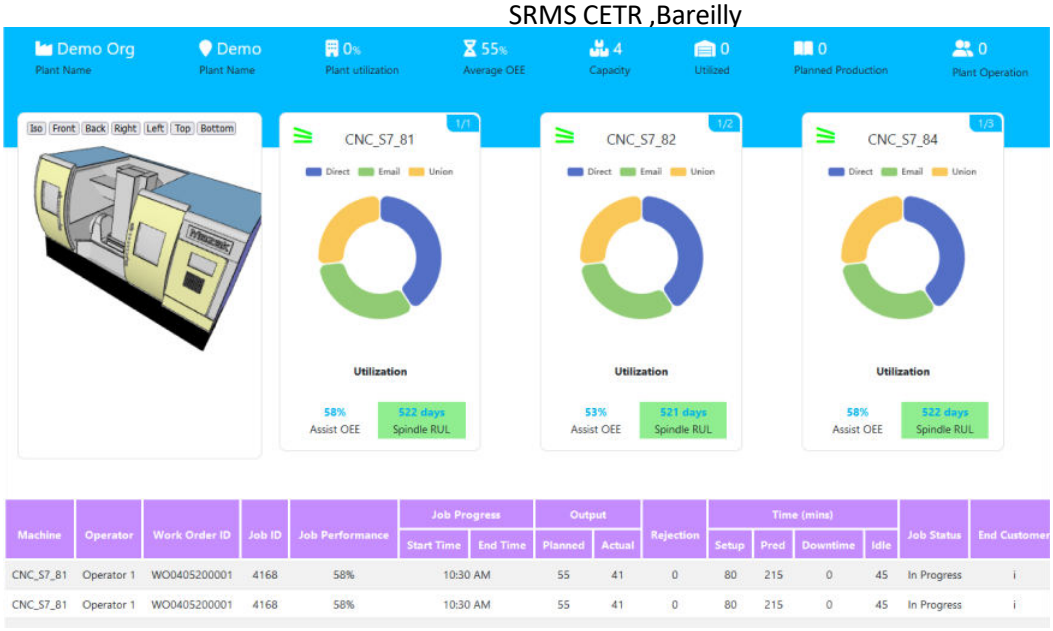
ii. Smart Factory Platform (FACTORY WATCH)

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
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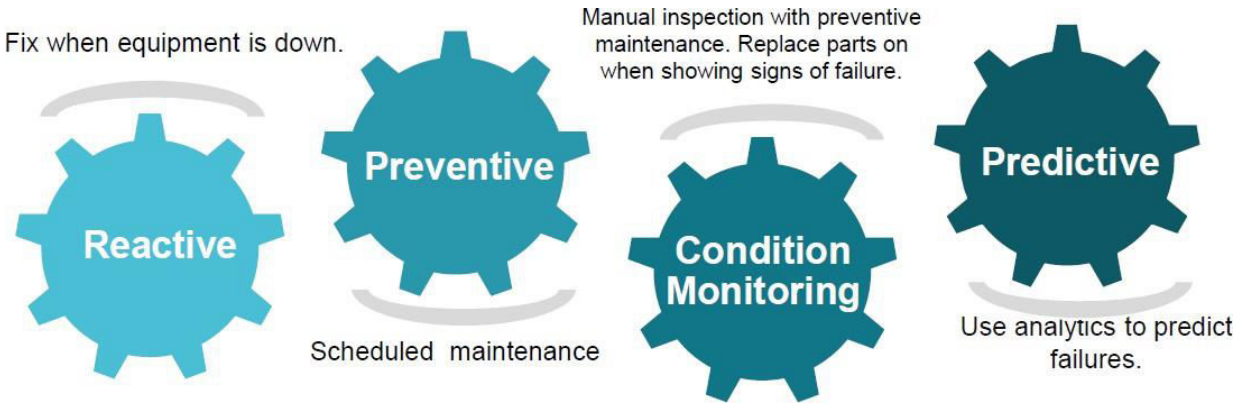
iii. LoRaWAN based Solution

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

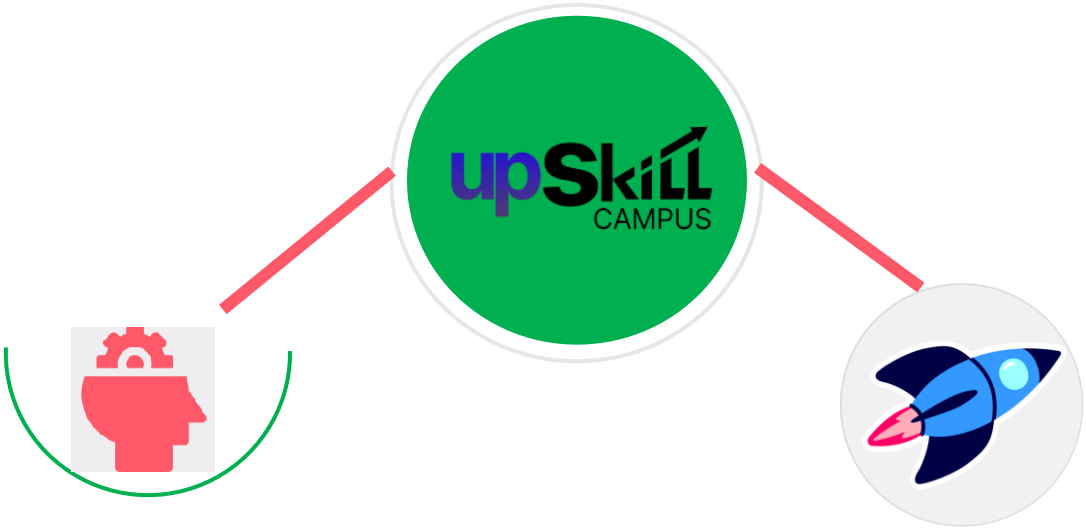
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.

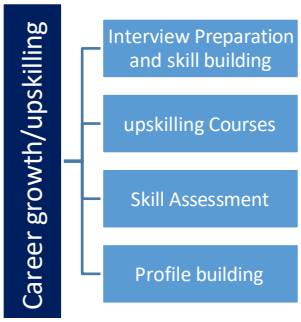
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.

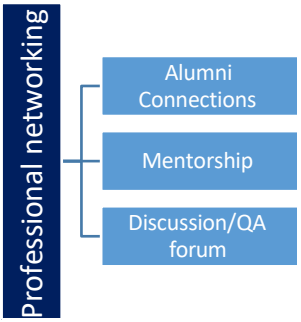


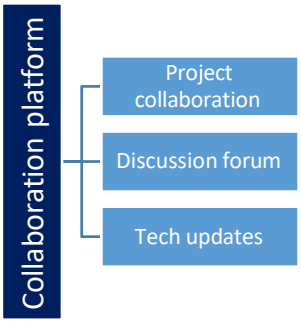
Seeing need of upskilling in self paced manner along-with additional support services e.g. Internship, projects, interaction with Industry experts, Career growth Services

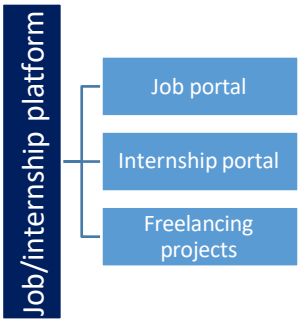
upSkill Campus aiming to upskill 1 million learners in next 5 year

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] Kaggle.com

[2] Book-Fluent Python by Luciano Ramalho,

3 Problem Statement

In today's digital age, educational and recreational activities are increasingly shifting towards online platforms. In line with this trend, the development of a Healthcare system presents an exciting opportunity to engage users in an interactive and intellectually stimulating experience. The primary objective of this project is to create a dynamic and efficient system that allows users to have an ease on the data management on a large scale while providing an enjoyable learning experience.

The Healthcare management system project revolves around the core functionalities of quizzing users, tracking their progress, and calculating their final scores. To accomplish this, the system must be capable of reading questions and answers from a designated source, such as a file or a database. This information will then be presented to users in an organized and visually appealing manner, allowing them to select answers and progress through the quiz.

The scope of the project encompasses several key components. Firstly, the design and implementation of a website are paramount to ensure an intuitive and seamless user experience. The user interface should efficiently display questions, accept user responses, and provide feedback on correctness. Additionally, the system must incorporate mechanisms for navigating between questions and displaying the user's current score.

Furthermore, the project involves the integration of a database or file system to store quiz data securely. This includes storing questions, corresponding answers, and potentially user progress and scores. The choice between using a database or a file system will depend on factors such as scalability, performance, and ease of implementation.

Moreover, the development of a robust scoring algorithm is essential to accurately track the user's progress and calculate their final score. The scoring algorithm should consider factors such as the number of correct answers, the difficulty of questions, and potentially bonus points for achieving certain milestones. Implementing an effective scoring mechanism will enhance the competitiveness and engagement of the Quiz Game.

In summary, the project aims to address the growing demand for interactive and educational online experiences by developing a healthcare system . By leveraging technology to facilitate doctors and patients to submit or collect data , this project seeks to provide users with an engaging platform for learning and

entertainment.

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4 Existing and Proposed solution

Our proposed solution aims to address these limitations by developing a Python-based Quiz Game with a focus on flexibility, scalability, and user engagement. By leveraging versatility and integrating with databases, our solution offers dynamic question generation, comprehensive scoring algorithms, and a customizable user interface. Additionally, we plan to incorporate features for real-time feedback and performance analytics, adding significant value to the user experience.

4.1 Code submission (Github link): https://github.com/saiyedali17/upskillcampus.git

4.2 Report submission (Github link) : https://github.com/saiyedali17/upskillcampus/blob/main/healthcaremanagementsystem_saiyedmouzzam_USC_UCT.pdf

5 Proposed Design/ Model

1. Requirements Analysis and Planning:

Conduct thorough analysis to identify user needs and project requirements.

Define the scope, objectives, and features of the healthcare management

system.

Create a detailed project plan outlining tasks, timelines, and resource allocation.

2. User Interface Design:

Begin by sketching wireframes and mockups to visualize the user interface.

Design an intuitive and visually appealing webpage using Html and css. Incorporate

interactive elements such as buttons, input fields, and progress indicators.

3. Database Integration:

Choose a suitable database management system (DBMS) such as SQLite or MySQL.

Design the database schema to store quiz questions, answers, user progress, and scores.

Implement database connectivity using SQLAlchemy.

4. Question Generation Algorithm:

Develop algorithms to dynamically generate quiz questions based on specified topics and difficulty levels.

Consider factors such as topic relevance, question diversity, and difficulty assessment.

Test the question generation process to ensure accuracy and variety in question selection.

5. Scoring Mechanism Implementation:

Design and implement a scoring algorithm to track user progress and calculate final scores.

Assign points for correct answers, deductions for incorrect answers, and potentially bonus points for achievements.

Test the scoring mechanism under various scenarios to validate accuracy and fairness.

6. User Testing and Feedback:

Conduct extensive user testing to evaluate the functionality and usability of the system.

Gather feedback from testers to identify areas for improvement and refinement.

Iterate on the design and functionality based on user feedback to enhance the overall user experience.

7. Optimization and Performance Testing:

Optimize the codebase for efficiency, scalability, and responsiveness.

Conduct performance testing to ensure the healthcare system operates smoothly under various

conditions. Address any bottlenecks or performance issues identified during testing.

8. Documentation and Deployment:

Create comprehensive documentation covering system architecture, design decisions, and usage instructions

Provide ongoing support and maintenance to address any issues or updates post-deployment.

6 Performance Test

In the development of healthcare management system, several constraints were identified and addressed to ensure optimal performance and usability. These constraints primarily revolved around memory usage, processing speed, and user interaction responsiveness.

Memory Constraint: Given the potential size of the healthcare database and the need to store patient diagnosis details, memory usage was a significant concern. To mitigate this constraint, we implemented efficient data structures and optimized database queries to minimize memory overhead. Additionally, we limited the number of questions loaded into memory at any given time, ensuring optimal resource utilization.

Processing Speed (MIPS): With the dynamic usage of applicagtions, processing speed was critical to maintaining a smooth user experience. To address this constraint, we employed algorithmic optimizations and utilized built-in data manipulation libraries for efficient question generation and scoring. Furthermore, we prioritized asynchronous processing for time-intensive operations to prevent delays in user interactions.

Test Plan and Performance Outcome

Test Plan/Test Cases: A comprehensive test plan was devised to evaluate the healthcare system performance under various constraints. Test cases were designed to assess memory usage, processing speed, and user

interaction responsiveness across different scenarios, including heavy database loads and simultaneous user interactions.

Test Procedure: The test procedure involved executing test cases on different hardware configurations and operating systems to simulate real-world usage conditions. Memory usage was monitored using system monitoring tools, while processing speed was measured using performance profiling techniques. User interaction responsiveness was evaluated through manual testing and user feedback analysis.

My learnings

Embarking on the development of the healthcare system has been an enriching journey, filled with invaluable lessons and growth opportunities. Through hands-on experience and continuous exploration, I have gained a deeper understanding of software development principles, project management techniques, and the importance of user-centric design.

Technical Proficiency: The project has honed my technical skills in programming, database management, and user interface design. I have learned to leverage programming laguage's versatility to create efficient algorithms for dynamic question generation and scoring calculations. Additionally, I have gained proficiency in database integration, utilizing SQLite to store and retrieve quiz data seamlessly.

Problem-solving and Adaptability: Throughout the project, I encountered various challenges and obstacles that required creative problem-solving and adaptability. Whether it was optimizing code for performance, troubleshooting database connectivity issues, or refining the user interface based on feedback, each challenge presented an opportunity for growth. By embracing these challenges and learning from mistakes, I have developed resilience and resourcefulness, essential traits for navigating complex projects in the future.

Collaboration and Communication: Working on the project has underscored the importance of collaboration and effective communication in team settings. Collaborating with peers, exchanging ideas, and pooling our collective expertise have been instrumental in overcoming obstacles and achieving project goals. Moreover, communicating project progress, challenges, and solutions with stakeholders has fostered transparency and alignment, ensuring everyone is on the same page throughout the development process.

User-Centric Design: One of the most significant learnings from this project is the importance of designing solutions with the end-user in mind. By prioritizing user-centric design principles, I have gained insights into understanding user needs, preferences, and behaviors. This perspective has influenced decision-making at every stage of the project, from designing intuitive interfaces to optimizing user interactions. Moving forward, this emphasis on user-centric design will guide my approach to developing solutions that prioritize usability, accessibility, and user satisfaction.

Career Growth and Future Endeavors:

The learnings from the project have equipped me with a diverse set of skills and competencies that will undoubtedly propel my career growth in the field of software development. By mastering technical concepts, refining problem-solving abilities, and fostering collaboration and communication skills, I am better prepared to tackle complex challenges and pursue opportunities for innovation and advancement.

Moreover, the experience gained from developing a real-world project like the has provided me with a solid foundation for future endeavors in the industry. Whether it is pursuing further education, advancing to leadership roles, or venturing into entrepreneurship, the lessons learned and skills acquired from this project will serve as a cornerstone for my professional journey.

In conclusion, the Healthcare management system project has been a transformative learning experience that has not only expanded my technical proficiency but also nurtured essential soft skills and instilled a growth mindset. As I embark on the next chapter of my career, I am confident that the learnings from this project will continue to guide and empower me in overcoming challenges, seizing opportunities, and achieving success in the dynamic and ever-evolving landscape of software development.

7 Future work scope

The scope of the project “healthcare management system” typically includes various aspects related to the efficient functioning of a hospital. This may involve managing patient records, appointments, staff schedules, inventory, billing, and other administrative tasks. Additionally, it might encompass features like electronic health records (EHR), laboratory and pharmacy management, and integration with medical devices. The scope can vary depending on the specific requirements of the hospital and the functionalities desired in the management system.