upSkill CAMPUS

Industrial Internship Report on

”Password Manger ”

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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1 Preface

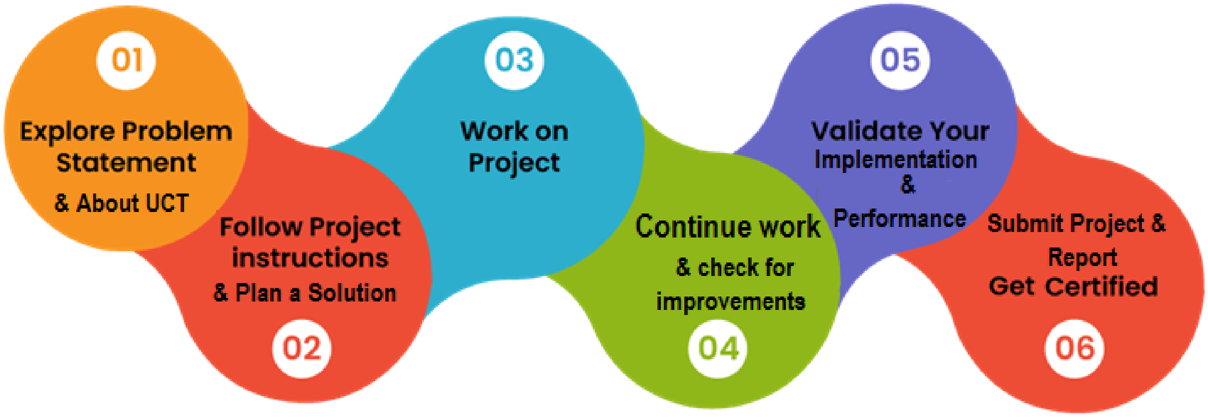
Summary of the whole 6 weeks’ work.

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.

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.

uct

Uniconverge Technologies

IIOT Products

We offer product ranging from Remote IOs, Wireless IOs, LoRaWAN Sensor Nodes/ Gateways, Signal converter and IoT gateways

IIOT Solutions

We offer solutions like OEE, Predictive Maintenance, LoRaWAN based Remote Monitoring, IoT Platform, Business Intelligence…

OEM Services

We offer solutions ranging from product design to final production we handle everything for you..

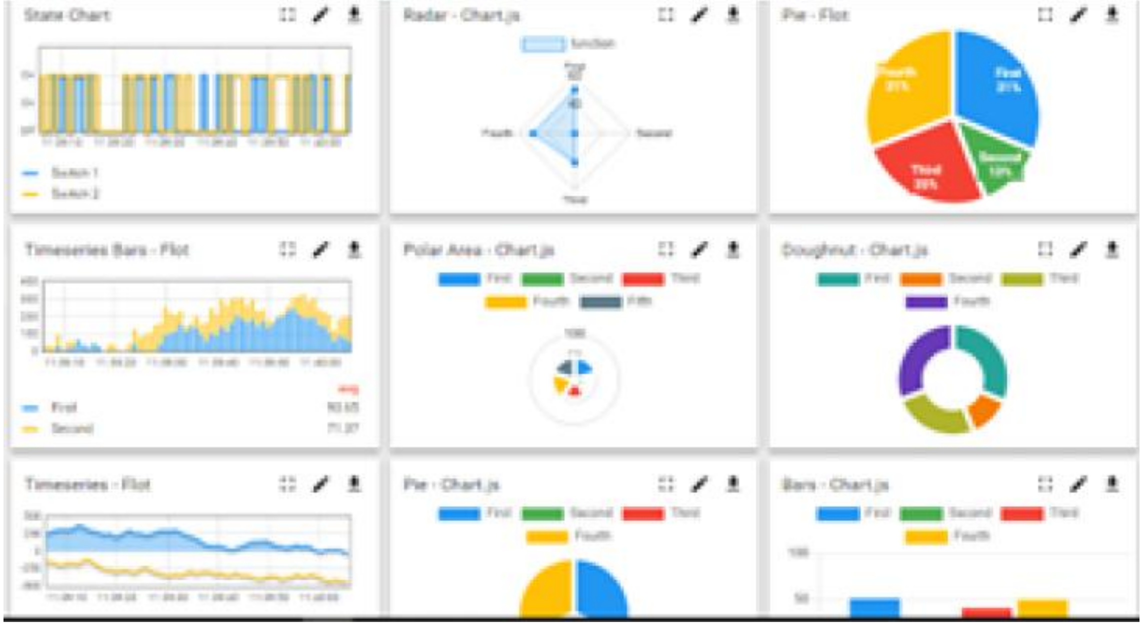
i. UCT IoT Platform (uct Insight)

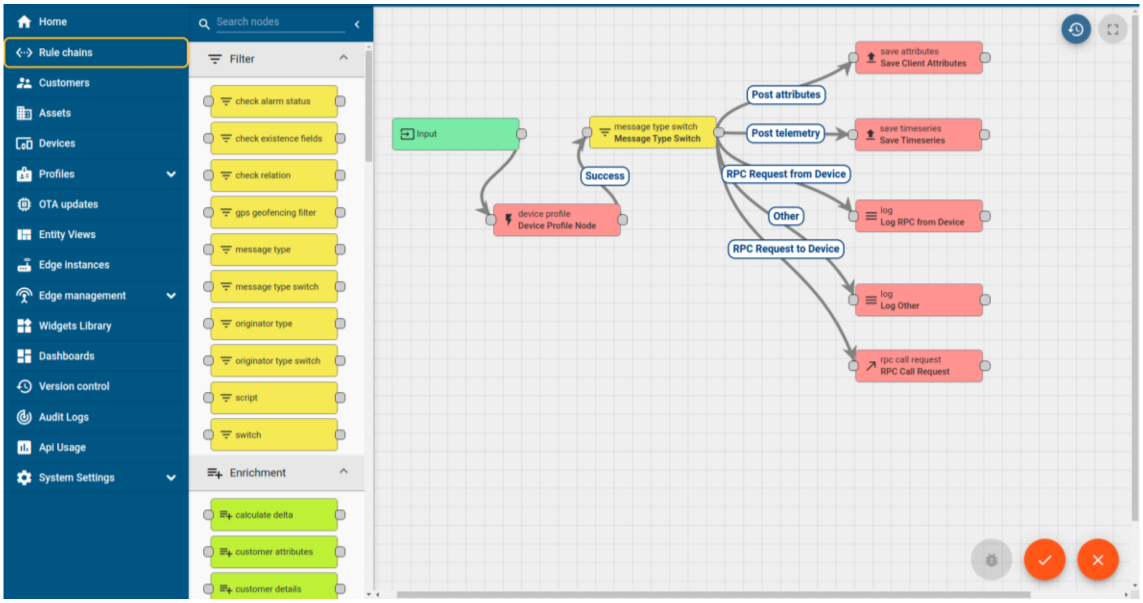
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable “insight” for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- 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





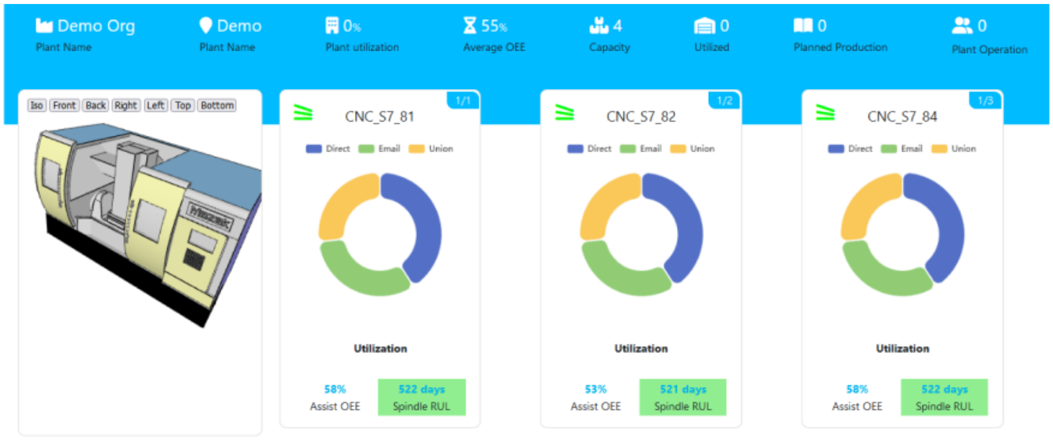
ii. Smart Factory Platform (FACTORY WATCH)

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.

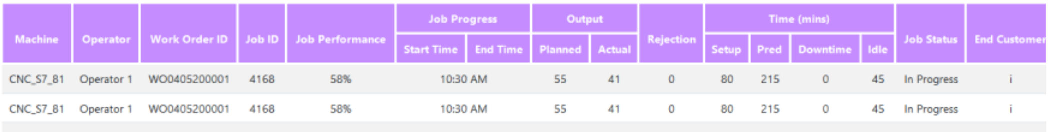


Demo Org Plant Name | Demo Plant Name | 0% Plant utilization | 55% Average OEE | 4 Capacity | 0 Utilized | 0 Planned Production | 0 Plant Operation

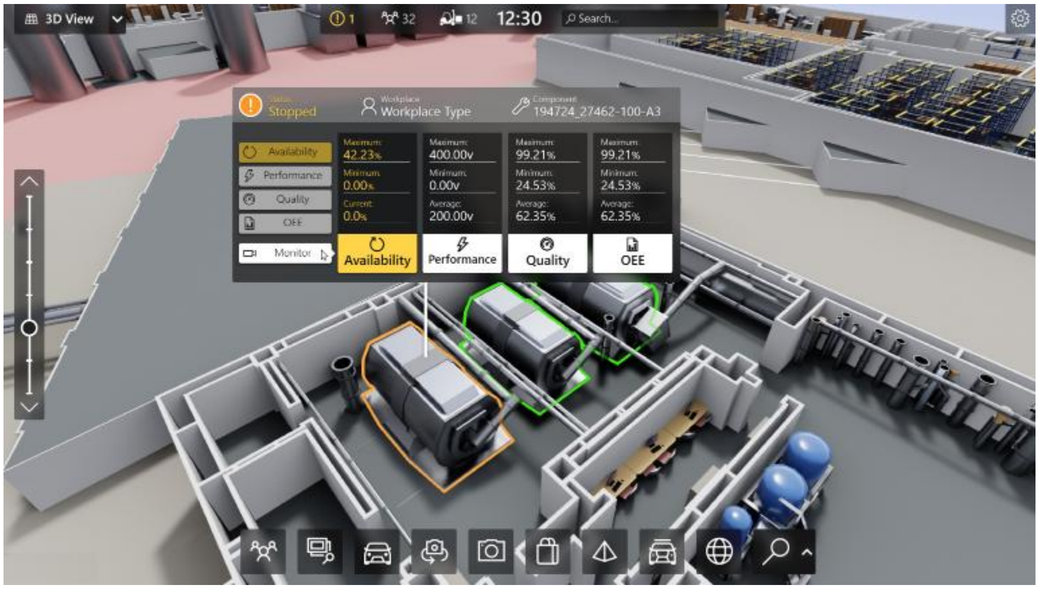
CNC_S7_81 — 1/1 — Utilization — 58% Assist OEE — 522 days Spindle RUL

CNC_S7_82 — 1/2 — Utilization — 53% Assist OEE — 521 days Spindle RUL

CNC_S7_84 — 1/3 — Utilization — 58% Assist OEE — 522 days Spindle RUL



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



Status: Stopped | Workplace: Workplace Type | Component: 194724_27462-100-A3

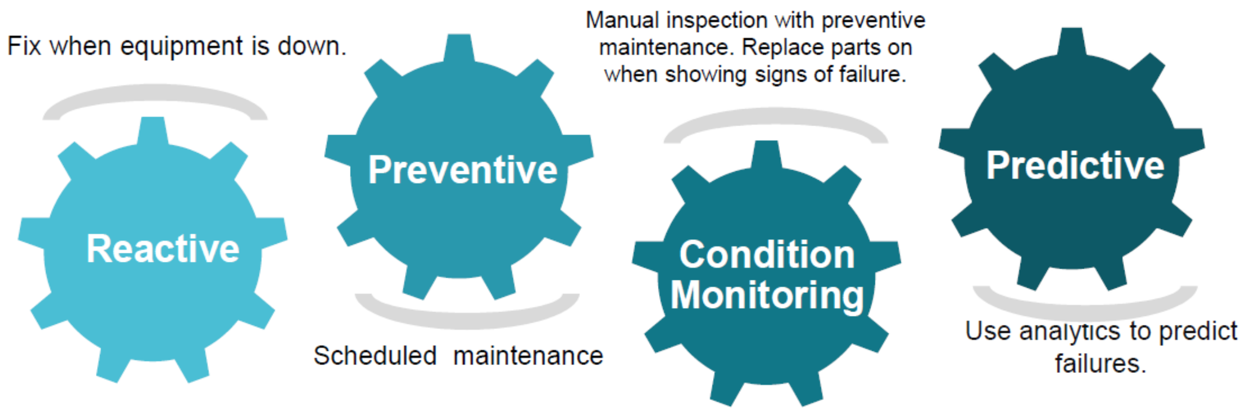
Availability	Performance	Quality	OEE
Maximum: 42.23%	Maximum: 400.00v	Maximum: 99.21%	Maximum: 99.21%
Minimum: 0.00%	Minimum: 0.00v	Minimum: 24.53%	Minimum: 24.53%
Current: 0.0%	Average: 200.00v	Average: 62.35%	Average: 62.35%

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

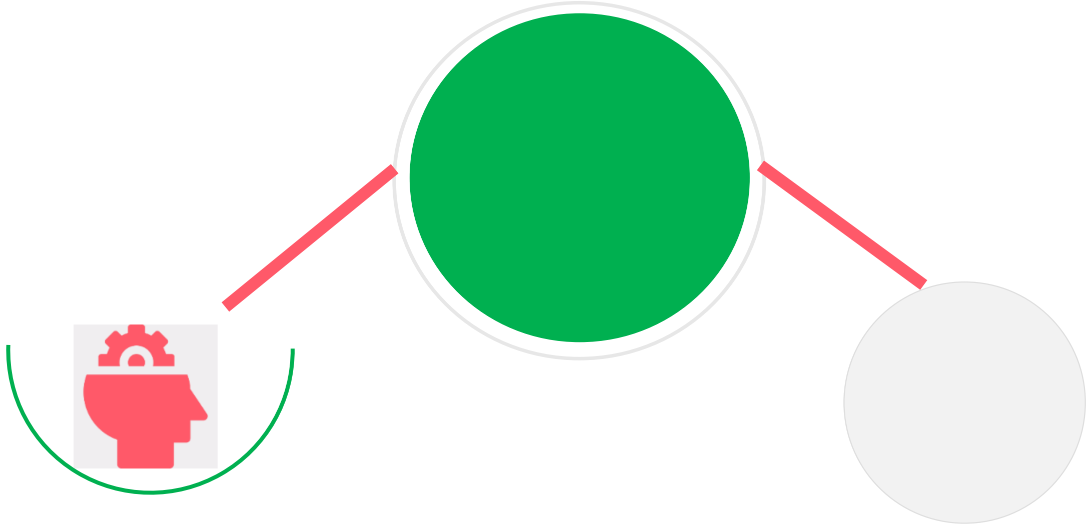
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.


Fix when equipment is down.
Reactive
Preventive
Scheduled maintenance
Manual inspection with preventive maintenance. Replace parts on when showing signs of failure.
Condition Monitoring
Predictive
Use analytics to predict failures.

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.

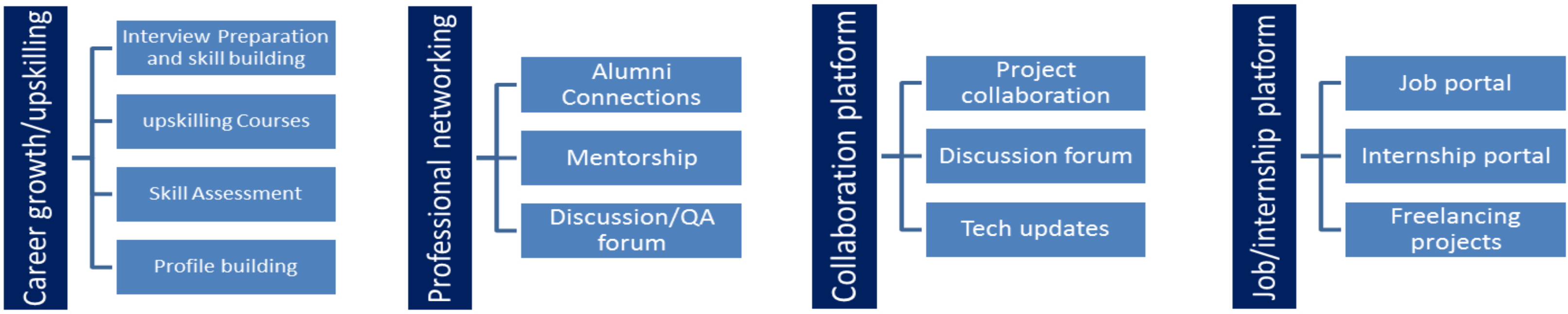
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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/



Career growth/upskilling

- Interview Preparation and skill building
- upskilling Courses
- Skill Assessment
- Profile building

Professional networking

- Alumni Connections
- Mentorship
- Discussion/QA forum

Collaboration platform

- Project collaboration
- Discussion forum
- Tech updates

Job/internship platform

- Job portal
- Internship portal
- Freelancing projects

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]

[2]

[3]

2.6 Glossary

Terms	Acronym

3 Problem Statement

Managing multiple passwords across different platforms is a challenge for users in the digital age. Users often resort to insecure practices such as reusing passwords or saving them in unprotected formats, making them vulnerable to cyberattacks. The problem is to design a secure, user-friendly, and efficient **Password Manager** that addresses these challenges by providing features like password generation, encryption, and easy retrieval.

4 Existing and Proposed solution

Existing Solutions

- **Existing Password Managers** (e.g., LastPass, Dashlane, KeePass) provide functionalities like password storage, autofill, and encryption.

- **Limitations**:
  - Paid subscription for advanced features.
  - Complex interfaces for non-technical users.
  - Security breaches reported in some cases.

Proposed Solution

- A Python-based **Password Manager** that:
- Stores passwords securely using encryption (e.g., AES).
- Generates strong passwords automatically.
- Provides a simple, user-friendly interface.
- Operates locally to enhance privacy.

Value Addition

- Open-source and free to use.
- Simplified design focusing on essential features.
- Enhanced security measures, such as offline storage and encrypted database backups.

4.1 Code submission (Github link)

https://github.com/Pallavi-0622/upskillcampus/blob/main/password_manager.py

4.2 Report submission (Github link) :

5 Proposed Design/ Model

The proposed design of the Password Manager consists of three main components: **User Interface (UI)**, **Encryption Module**, and **Database**. Here's a detailed explanation of each, along with the design flow:

5.1 High Level Diagram (if applicable)

Figure 1 illustrates the overall structure of the Password Manager, including components for user interaction, encryption, and database management

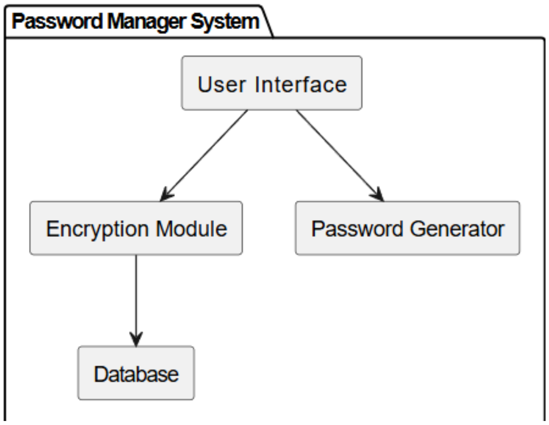
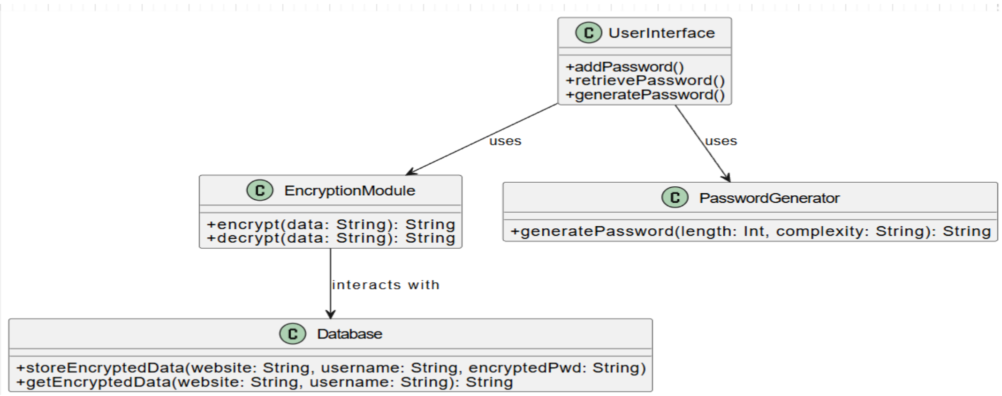


Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

5.2 Low Level Diagram (if applicable)

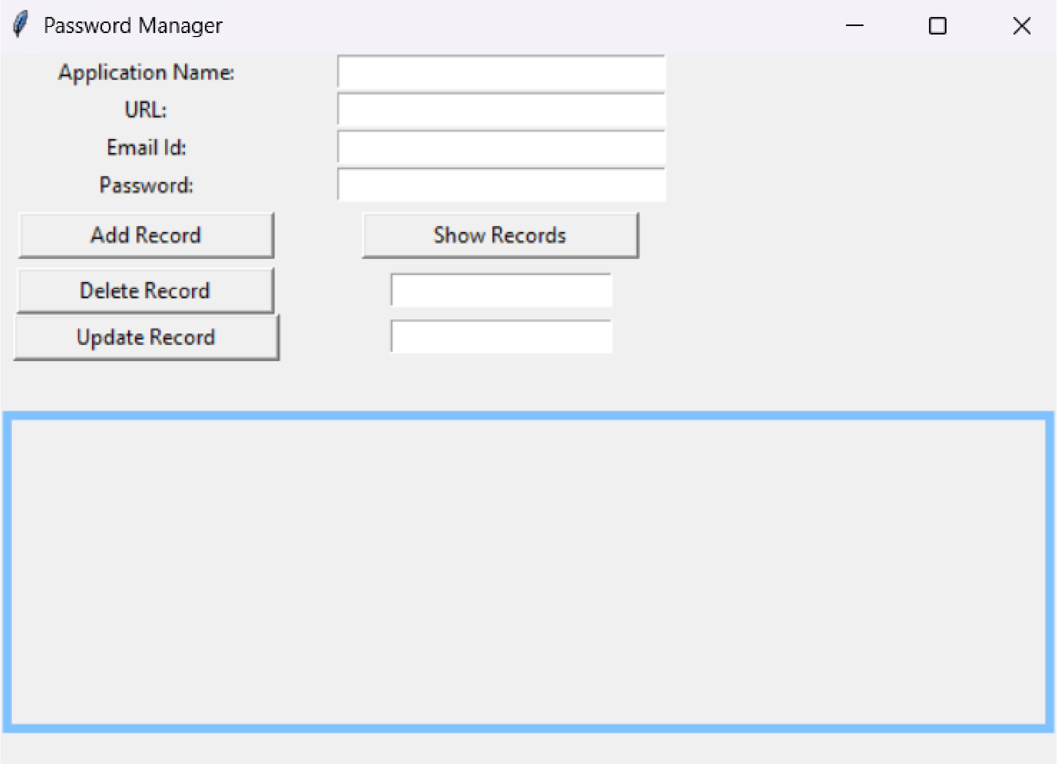
Detailed interaction between modules:

- **User Interface** → Command Line or GUI
- **Encryption Module** → Encrypts/Decrypts passwords using AES
- **Database** → Stores encrypted data in SQLite/JSON


C UserInterface
+addPassword()
+retrievePassword()
+generatePassword()
uses
uses
C EncryptionModule
+encrypt(data: String): String
+decrypt(data: String): String
C PasswordGenerator
+generatePassword(length: Int, complexity: String): String
interacts with
C Database
+storeEncryptedData(website: String, username: String, encryptedPwd: String)
+getEncryptedData(website: String, username: String): String

5.3 Interfaces

- **Block Diagram**: Depicts interaction between UI, encryption, and storage.
- **Data Flow**: Shows user input → encryption → storage/retrieval.
- **Flow Chart**: Describes steps from login to password management (add, retrieve, delete).



6 Performance Test

6.1 Test Plan/Test Cases

Test Case	Input	Expected Output	Result
Add Password	Website, username, pwd	Password stored securely	Pass/Fail
Retrieve Password	Website, username	Decrypted password displayed	Pass/Fail
Generate Password	Strength (low/medium/high)	Generated password meets criteria	Pass/Fail

6.2 Test Procedure

- Test encryption using sample passwords and verify successful decryption.
- Evaluate the random password generator for adherence to specified criteria.
- Simulate user scenarios for adding, retrieving, and deleting passwords.

6.3 Performance Outcome

- **Constraints**: Memory usage, encryption speed, and usability.
- **Outcome**:
    - Encryption tested for robustness.
    - Low memory consumption with efficient database operations.
    - User feedback on interface ease of use was positive.

7 My learnings

This project taught me:

- The importance of secure coding practices in Python.
- Implementation of cryptographic algorithms like AES.
- Designing user-friendly interfaces for complex processes.
- Managing and querying databases efficiently.
- The relevance of performance testing in ensuring system reliability.

This project not only strengthened my understanding of Python programming but also enhanced my ability to develop secure, scalable, and practical software solutions. These skills are directly applicable to real-world projects in cybersecurity and software development, significantly contributing to my career growth.

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8 Future work scope

1. **Cloud Synchronization**: Enable secure, encrypted syncing across devices.
2. **Multi-Factor Authentication**: Add OTP or biometric-based login for enhanced security.
3. **Browser Integration**: Develop extensions for autofill and password capture.
4. **Password Strength Checker**: Provide real-time feedback on password security.
5. **Backup and Recovery**: Implement encrypted backups for data safety.
6. **Improved UI**: Build a user-friendly GUI with accessibility features.
7. **Secure Password Sharing**: Allow encrypted sharing with trusted users.

These enhancements would improve security, usability, and scalability in future iterations.