

Industrial Internship Report on Password Manager

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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 4 weeks' time.

My project was about creating a password manager to store and manage your email and website accounts locally in our systems. The app uses fernet cryptography method to encrypt the password and details inside the app to ensure that it cannot be accessed without the user's consent. The app also can generate high level secure passwords for you to store and use it when you need them. The app does not connect or interact with any other applications other than python to access the modules and loading the app so that you can only manually store the credentials and get them out only when you need them.

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

The Python internship duration was of 4 weeks. 1st week of the internship was to teach the basics of python to get started on it and management gave some ideas to start thinking about projects, I also learnt about UCT. 2nd week was all about conditional statements in python and management also provided an e-learning resource for us to get familiar about the concept as per our needs. 3rd week is about Numpy and Pandas operations. 4th week had a quiz containing questions from all the concepts shown in week -1 ,2 and 3. The final task is to submit the project and get the certification.

Internships play a crucial role in career development, particularly in the field of Python programming and software development where we gain:

- Practical Experience
- Skill Development
- Networking
- Resume Enhancement
- Exploration of Career Paths
- Industry Insights

The project that I have created is a tweak and to ensure availability for the users to have a dedicated program which holds the email and website accounts / credentials for you securely. Although there maybe numerous software available in the market to solve this problem, the actual problem seems to be the excessively loaded features and charging the users to access their services. I too face this issue and to temporarily hold these accounts, I either have to rely on browser passkeys or a dedicated excel book to hold my credentials which is neither safe nor the right way to do so. Thus, I have developed an app in Python to locally store these accounts in a database while using cryptography to ensure that there is no backdoor leakage of accounts and they are stored safely in the user's system. The app does not interact with any other applications or browsers while no one can access the user's data with their consent. The app can also generate highly complex password from the dedicated password generator built into the app by randomizing character generations from 3 different levels and can include characters that the user wishes to be in the password while generating. This app overall ensures security and free to use method of working to users.

The internship gave me a very good opportunity to get exposure to industrial problems and implementations while also learning about python. It was a fulfilling experience overall and I thank UCT for this wonderful internship.

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.



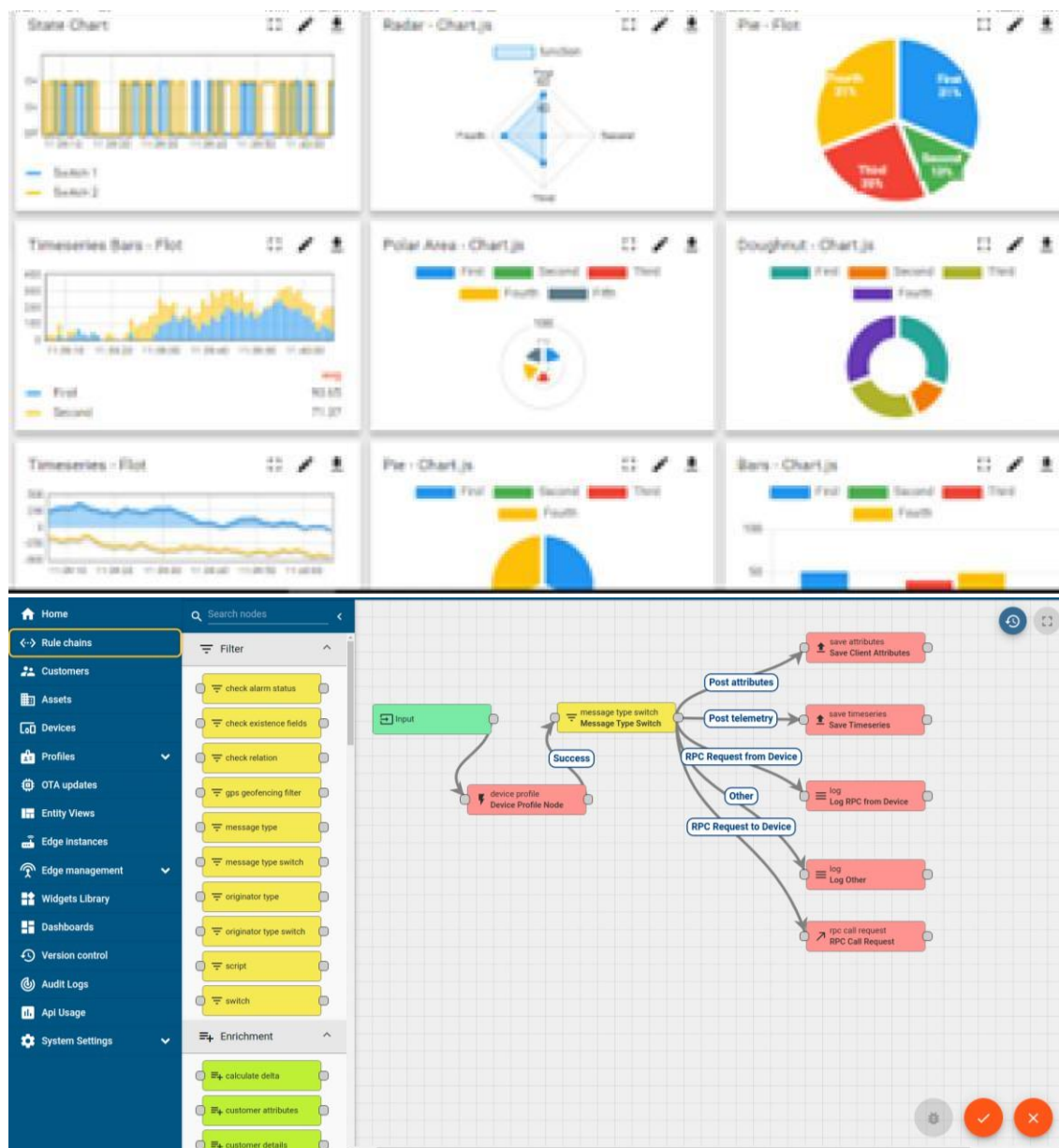
i. UCT IoT Platform (uct Insight)

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



FACTORY **WATCH**

ii. 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 unleash 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 want 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



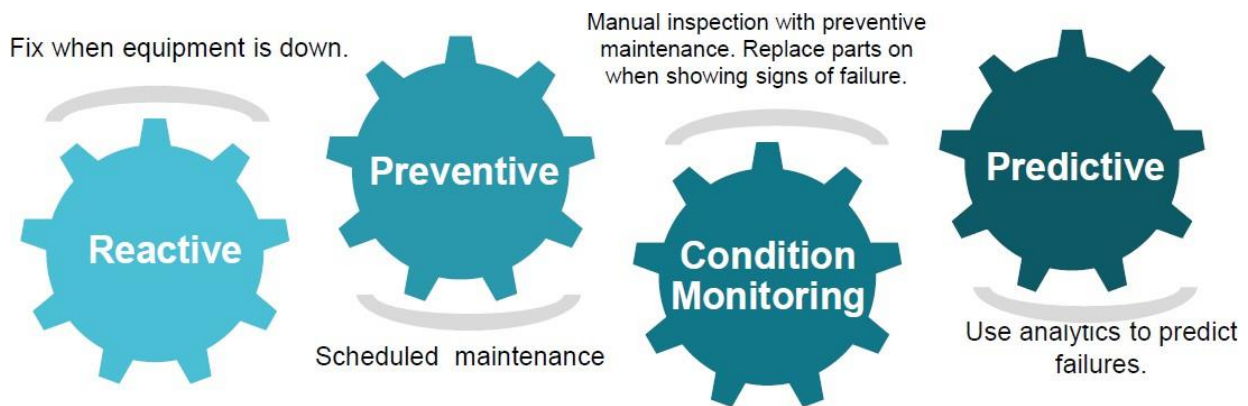


iii. LoRaWAN based Solution

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

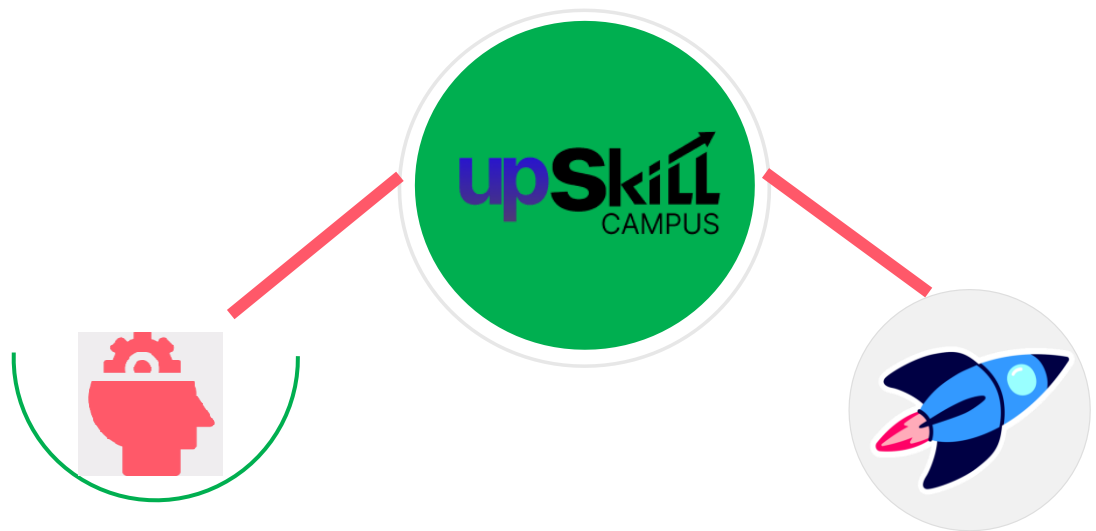
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.

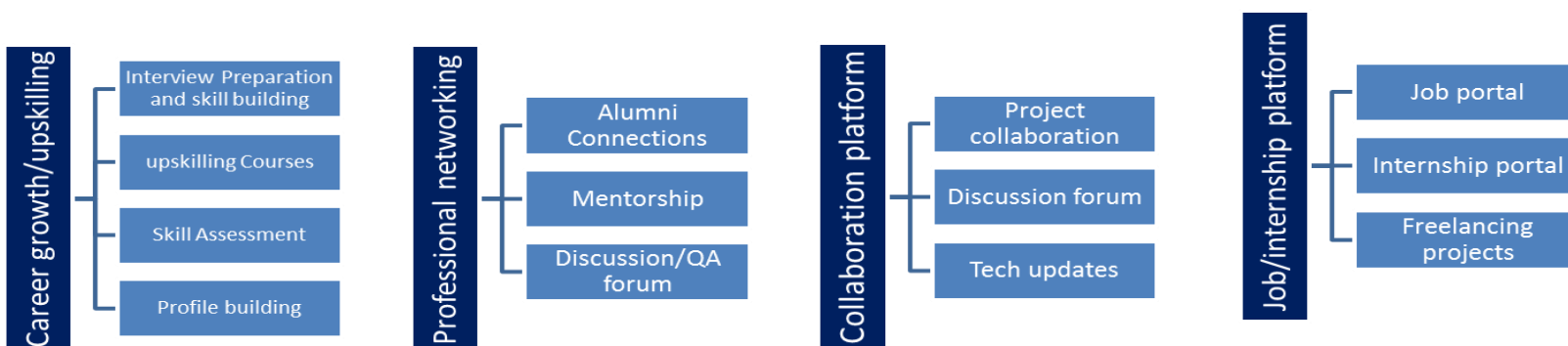
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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] www.upskillcampus.com
- [2] www.upskillcampus.com/blog

2.6 Glossary

Terms	Acronym
nil	

3 Problem Statement

In the assigned problem statement

In today's digital age, individuals often have numerous online accounts, each requiring a unique username and password. Remembering all these credentials can be challenging, leading to security risks such as using weak passwords or reusing passwords across multiple accounts. A password manager application provides a secure and convenient solution for storing and managing passwords. I was made to design an app that securely holds user's accounts and credentials which is free to use. Although there maybe numerous software available in the market to solve this problem, the actual problem seems to be the excessively loaded features and charging the users to access their services. I too face this issue and to temporarily to hold these accounts, I either have to rely on browser passkeys or a dedicated excel book to hold my credentials which is neither safe nor the right way to do so.

The requirements of the problem that I should work on are:

- Password Storage
- Password Generation
- Secure Access
- Backup
- User Authentication
- Data should be Encrypted
- Free to use

4 Existing and Proposed solution

Existing Solution:

There are numerous solutions available for the users to select but most of them are:

- Pay to use
- Excessive Features
- Highly charged
- Data stored on a remote server
- Some free services leak data
- Availability is limited since users need to pay
- Not much transparency on how the program works

Proposed Solution:

The project that I have created is a tweak and to ensure availability for the users to have a dedicated program which holds the email and website accounts / credentials for you securely. Some the features on how the proposed solution works:

- Free to use
- Does not communicate with other apps or browsers
- Locally stored in user's device in a database which is secure
- Cannot access without user's consent
- Available anytime to download from my GitHub
- Transparent to users while ensuring no other data collection or leakage is being done

4.1 Code submission:

<https://github.com/soubhatta/upskillCampus/tree/main/Final%20Project%20Code>

4.2 Report submission

<https://github.com/soubhatta/upskillCampus/tree/main/Final%20Project%20Report>

5 Proposed Design/ Model

S.NO	Email Address	Username	Password	Remarks
1	test@gmail.com	Test User	secure@123	Google Account
2	kidsacc@gmail.com	Kids	password123	Google for Kids
3	work@gmail.com	Work	workpass#123	Google for Work

This project uses Python “Tkinter” module for GUI, “SQLite3” for database management, “Cryptography Fernet” for encryption and some built-in functions like “random” module for password and “sys” modules to create files for the app. The default password is 1234 initially while the user should login and change it immediately by clicking the top leftmost “key” icon to change the password. The app has categories to segregate accounts based on user preference. The user can enter the credentials and while selecting the account from the dropdown. The user can create and delete entries while selecting it. The user can also delete an entire category. The user can copy the email and password directly into the windows clipboard to paste them and clear it. The user can initiate a full level search by filling any one detail in the email category and pressing search.

6 Performance Test

6.1 Test Plan/ Test Cases

The implementation of the project has been divided into five steps:

1. **Create Category:** Create a category to organize the respective credential data into the table.
2. **Add Data:** Add the necessary credentials like email, username, password and remarks
3. **Update Data:** Update the data that has already been entered
4. **Delete Data:** Delete the data entry from the table / category
5. **Search Data:** Search any entry from a table by filling up one row on the left

6.2 Test Procedure

- **Step – 1:** Create a category by giving a name in the dialogue box
- **Step – 2:** Add necessary details and credentials into the box on the left and click Add button on down left
- **Step – 3:** Select any data entry on the right and change the values on the left, finally click update button to make changes
- **Step – 4:** Select any entry from the right and click on delete to confirm the deletion of the entry
- **Step – 5:** Fill up any one column on the left and click on search button to get the details that match the entry.

6.3 Performance Outcome

In the final implementation, the user has to login to the app using the master password and access the functionalities of the app which is:

- Create a dedicated category
- Add details like email, password, username and remarks
- Search the details by filling one column on the right
- Delete any entries or category
- Update any changes by selecting the entry and making changes on left
- Access Password generator on top second left icon
- Access Master Password change on top leftmost icon

7 My learnings

In this internship, I have realized the importance of persistence in programming. Overcame debugging challenges by patiently working through errors and seeking help when needed. Discovered that hands-on practice is key to reinforcing concepts.

Applied theoretical knowledge through coding exercises and small projects, enhancing practical skills. One key lesson was gaining a deeper understanding of how the flow of execution is controlled by conditional statements. This knowledge is crucial for designing programs with logical and predictable outcomes. Learned the importance of choosing the appropriate conditional statement based on the specific requirements of the program. This decision significantly impacts code efficiency and clarity. Emphasized the importance of well-organized code and consistent indentation. Clean and readable code not only helps in debugging but also aids collaboration with other developers.

Acquired proficiency in various data handling techniques within pandas, including data cleaning, manipulation, and analysis. Gained a solid understanding of fundamental concepts in NumPy, such as arrays and indexing. Realized the significance of NumPy arrays for efficient numerical computations and data manipulation tasks. Developed problem-solving skills through encountering and resolving challenges while working with NumPy and pandas.

Learned to approach problems systematically, seek assistance from documentation and online resources, and experiment with different solutions to overcome obstacles effectively. Applied data analysis techniques learned through tutorials and practice exercises to real-world datasets.

8 Future work scope

This app was designed with honesty and security in mind while also providing the service as much as free with necessary resources. The future scope is to create an customized version of this app if it reaches high level organizations for their requirements and monetize from it. I am also looking for constant security measures to implement while the Python technology advances to ensure the core part of the app stays functional.

No data is collected from the user by me and only the user's version of this app holds the credentials which is accessible only by him and no one else can access it without their consent.