Industrial Internship Report on

URL Shortener

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 to shorten the long Urls that will be given as input by the user to the system. Using Python, I designed the Url shortening logic and then implemented the same of graphical user interface. I also attached a database to store the mapping of long and short urls that redirect to the original one only. 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

Week 1:

I finalized the project idea and started searching the resources to take me forward in the journey.

Week 2:

I worked on the libraries I need to implement the Url shortener code like secrets library to shorten the url, flask framework to render the html templates to make user interface accessible and interactive. Sqlite3 to create and access database.

Week 3:

Developed the database and also performed basic database tasks before proceeding with the original data. Created html files one for taking input from the user other to show the output shortened link.
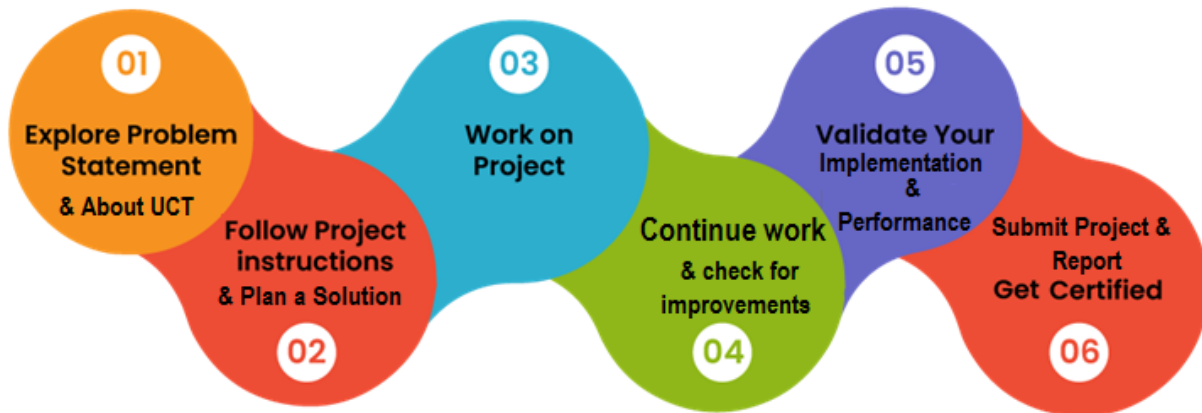
Week 4:

Contributed final flask code to deploy the python logic to web interface and also attached the database to store the mapping of long and short Urls.

Relevant internship opportunity helps an individual to grow professionally as it allows the person to leverage the skills achieved to deliver a result or to derive an outcome that can serve a purpose.

This project is designed in a way that you can input long urls to the user interface and the next interface will show the output shortened url.

The mapping of long and short urls will be stored in the database "urls.db"Opportunity given by USC/UCT.

I got learn about the flask framework and the Sqlite3 library when I was developing the Url shortening project. I am really thankful to the upskill campus to provide me the opportunity to enhance my skills by developing a real-world solution.

Thank to my friend Ram, my faculty co-ordinator Mr. Murthy who have helped me to achieve the asked goals that too within the time duration.

I would like to tell my juniors that you just need to apply the knowledge to get the work done in real-world scenario. Be patient as learning something takes time and doing that takes even more time, but with each second devoted in the process you will learn something that will help you grow both personally and professionally.

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.
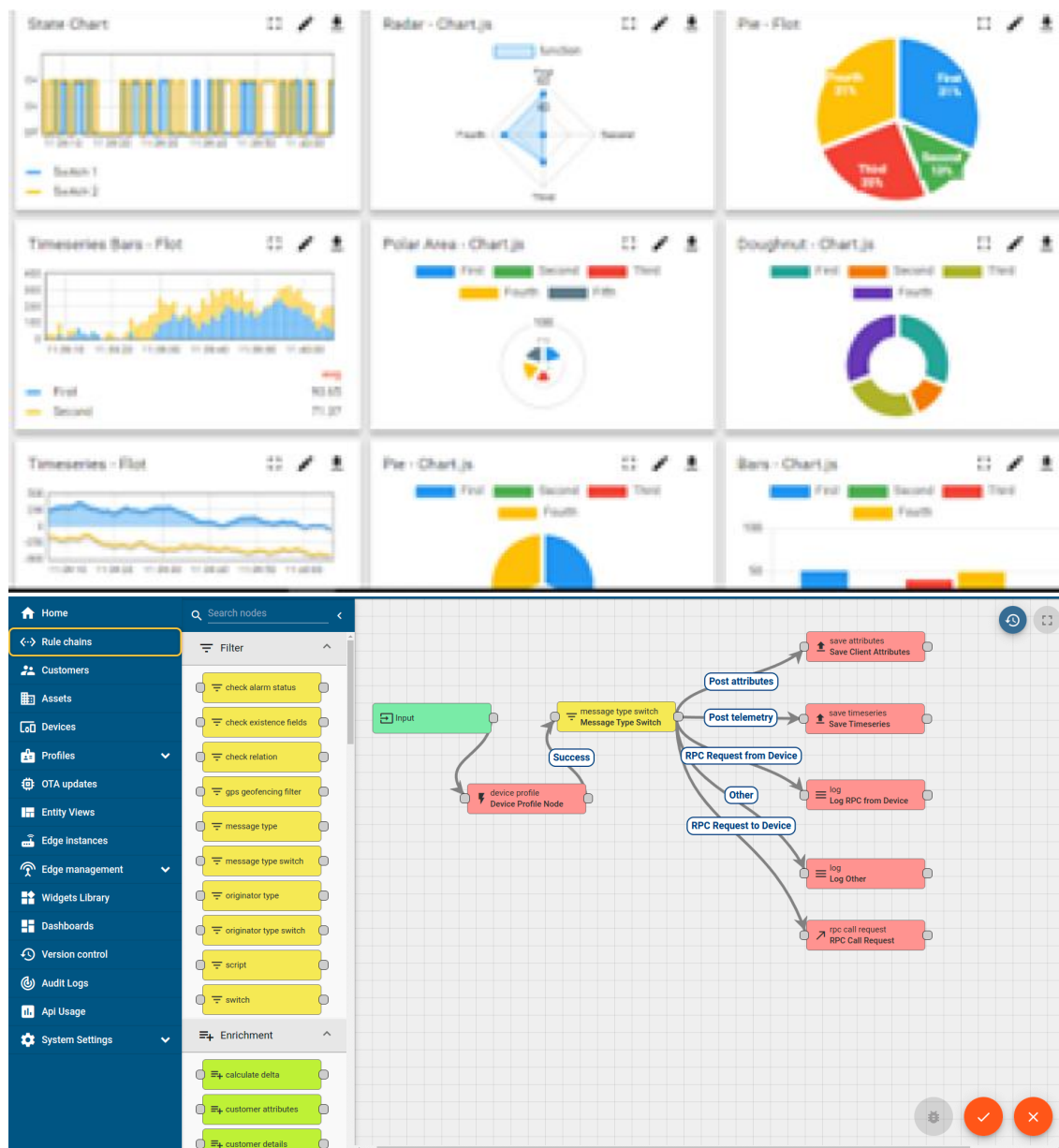

i.   UCT IoT Platform (*uct* Insight)

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)
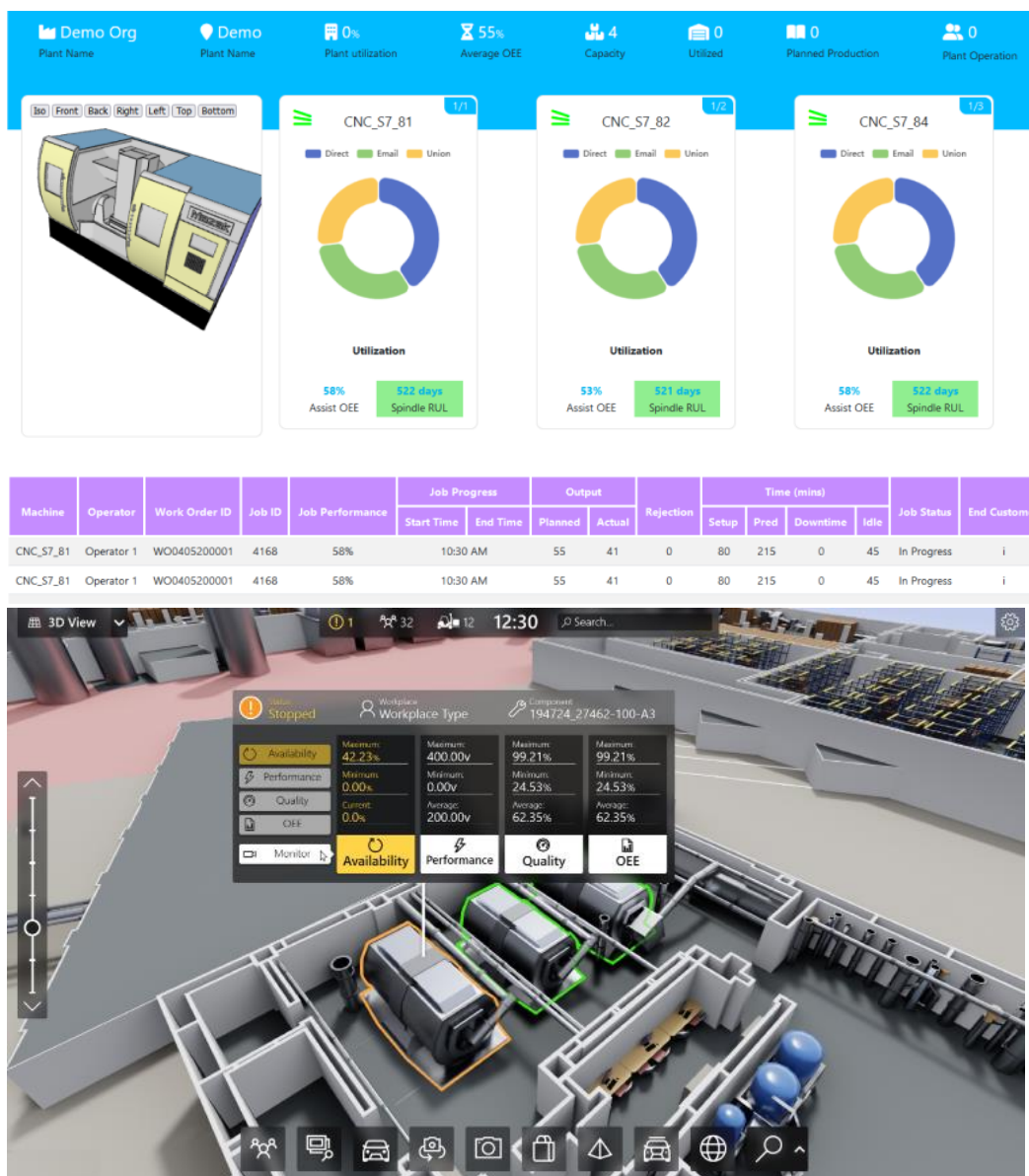
• Rule Engine

ii. Smart Factory Platform (**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.

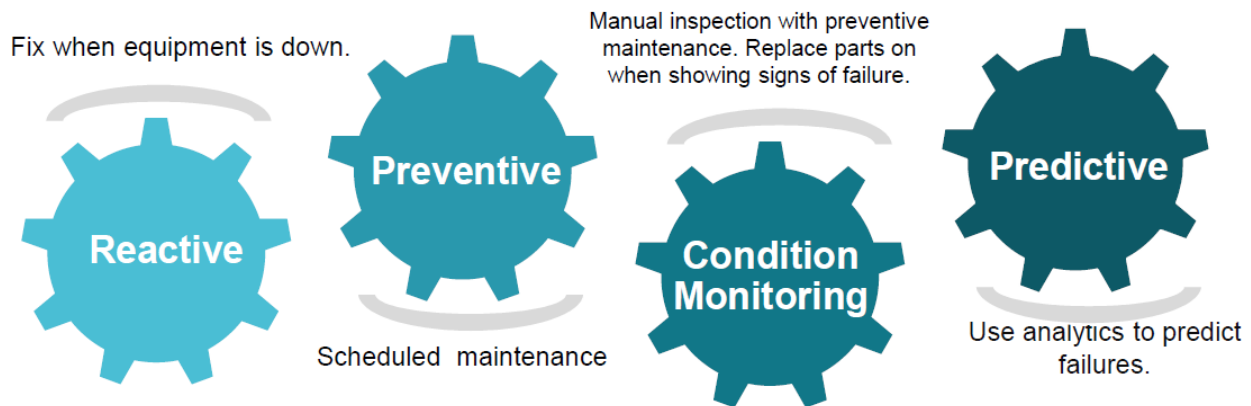| Machine	Operator	Work Order ID	Job ID	Job Performance	Job Progress		Output		Rejection	Time (mins)				Job Status	End Customer
					Start Time	End Time	Planned	Actual		Setup	Pred	Downtime	Idle		
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i
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iii.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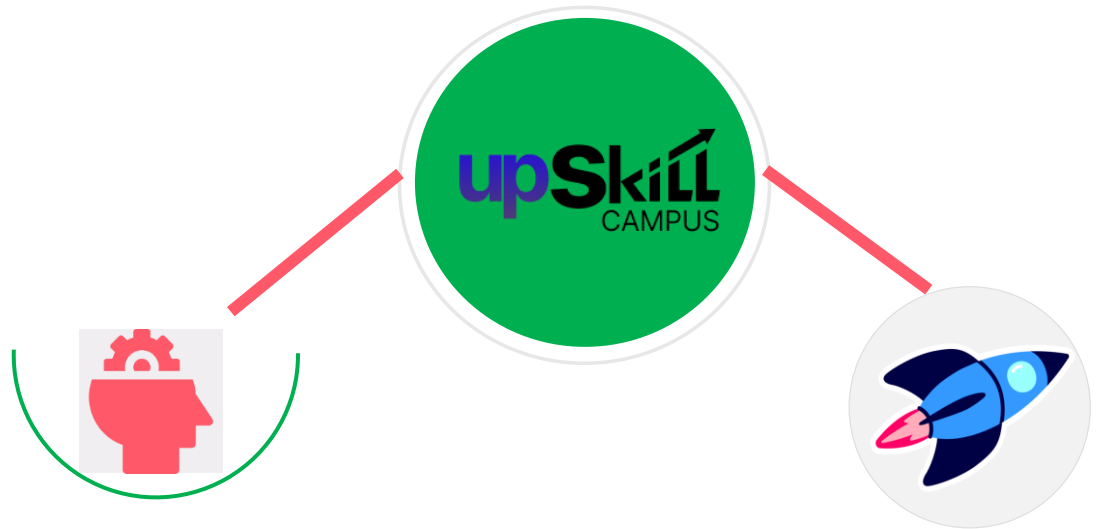
iv. Predictive Maintenance

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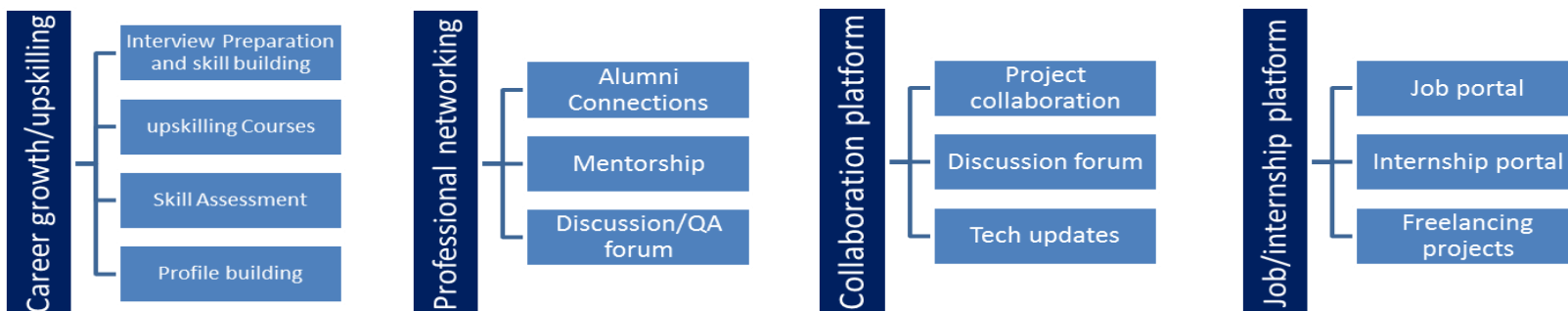
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.

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/

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]   https://flask.palletsprojects.com/en/3.0.x/

[2]   https://www.sqlite.org/docs.html

[3]   https://pypi.org/project/python-secrets/

2.6 Glossary

Terms	Acronym
Database	The storage space that stores the data in tabular format
Url	Universal Resource Locator
User Interface	The visual part for the user to make user experience seamless and appealing.

3 Problem Statement

User need to input long Urls and using python code as logic, with Graphical User Interface a Url shortener project is to be made. The project will take long urls input from the user and then show the output shortened url on a different page. For every successful execution the long and associated short url will be stored in the database attached. The code will generate unique url everytime.

4 Existing and Proposed solution

There are many url shortener available on the internet but what I tried to do is to make the process as simple as possible to provide seamless user experience to the users.

Some existing solutions don't have database connected to store long and short url.

We have used the database also and interactive User Interface for effortless and visualling appealing user experience.

4.1 Code submission (Github link)

https://github.com/VivekTiwari-S/upskillCampus/tree/main/Url

4.2 Report submission (Github link) :

https://github.com/VivekTiwari-S/upskillCampus/blob/main/report.pdf

5   Proposed Design/ Model

When user starts the web interaction it lands on the first webpage that asks for the input.

Then after inputting the long url the user then click on shorten url button which will trigger the code to shorten the url.

The url shortening code check for the uniqueness of code in the database and show the output.

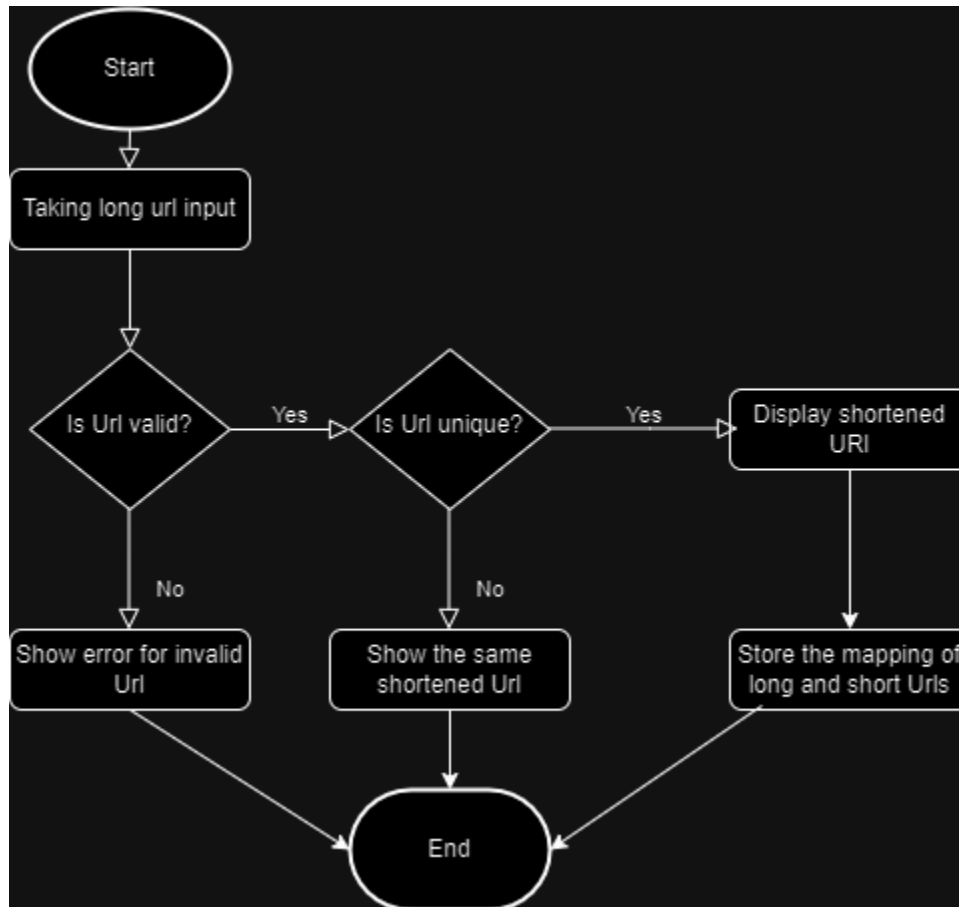The one successful execution stores the long and short url mapping in the database.

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)

6 Performance Test

I tested the project with urls of different lengths and tried executing the code with many different logics using different libraries like secrets and pyshortners and the one that worked well is secrets library that is customized for shortening the url to a specific length.

The url shortener is giving consistent answer and is also working well with the database attached.

6.1 Test Plan/ Test Cases

6.2 Test Procedure

6.3 Performance Outcome

7 My learnings

Technical Skills: Gained experience in frontend UI development using HTML5 and CSS3, backend development with database interaction using Python 3 and Sqlite3 library, and potentially unique string generation using secrets library.

Project Management: Developed project planning, problem-solving, testing, and documentation skills.

General Skills: Enhanced time management, learning agility, and independent learning abilities.

8   Future work scope

Features: Custom URLs, link expiration, analytics, password protection.

Advanced: API integration, bulk shortening, QR codes, geolocation targeting.

Scalability & Security: Load balancing, enhanced security, data encryption, monitoring.

More: Customization, integrations, mobile app.