Industrial Internship Report on

”Banking Information 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. My project was Managing basic banking operations like deposits, withdrawals, and account tracking doesn’t have to be complex. The Online Bank Management System Project in Java provides a clean, functional desktop application for simulating real-world banking processes using Java Swing and MySQL. 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.

TABLE OF CONTENTS

1 Preface

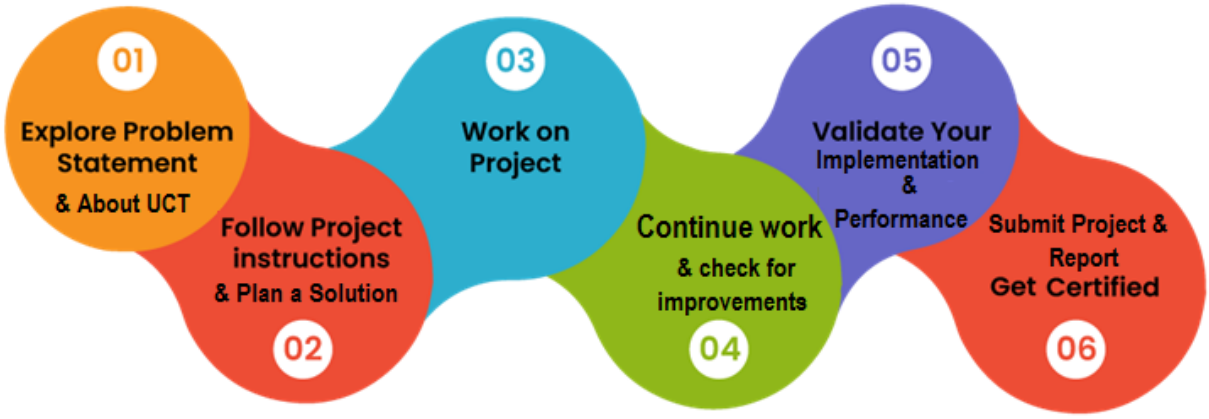
Summary of the whole 6 weeks' work.

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.

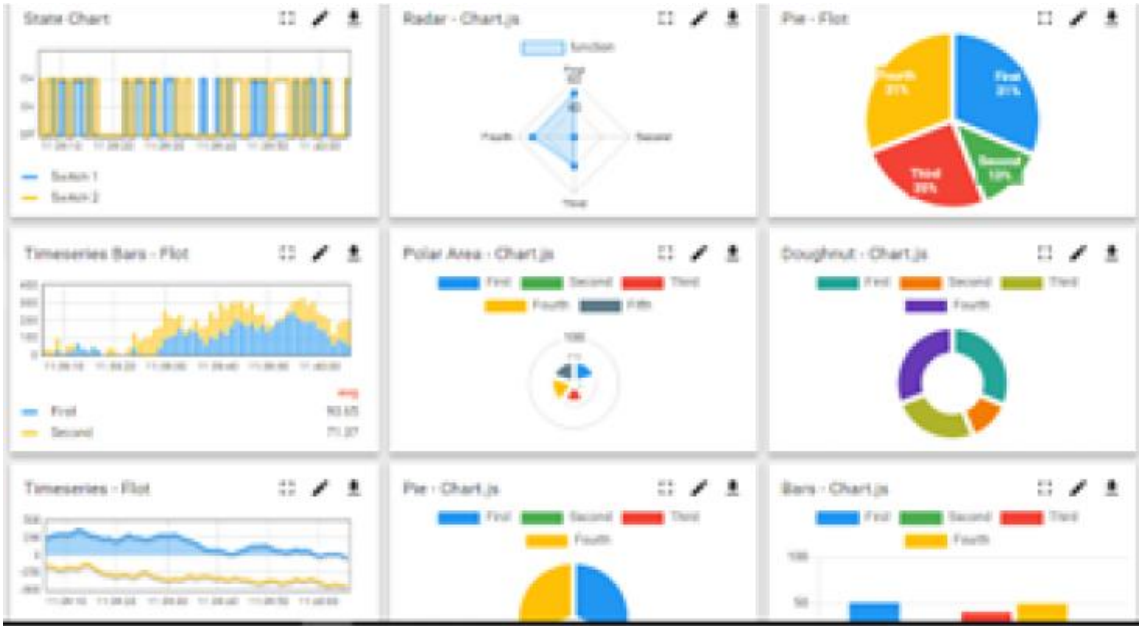
i. UCT IoT Platform (UCT Insight)

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.

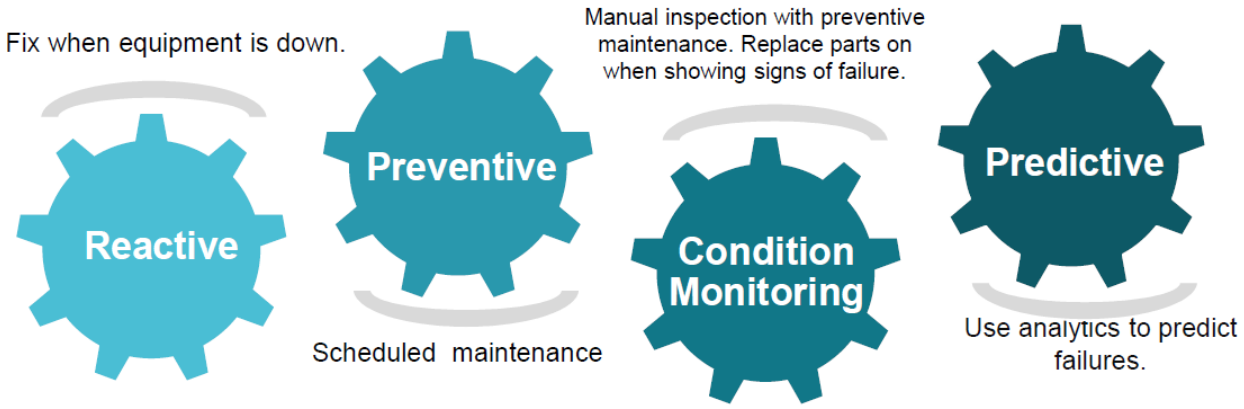
Machine	Operator	Work Order ID	Job ID	Job Performance	Job Progress		Output		Rejection	Time (mins)				Job Status	End Customer
					Start Time	End Time	Planned	Actual		Setup	Pred	Downtime	Idle		
CNC_S7_81	Operator 1	WO0405200001	4168	58%	10:30 AM		55	41	0	80	215	0	45	In Progress	i
CNC_S7_81	Operator 1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

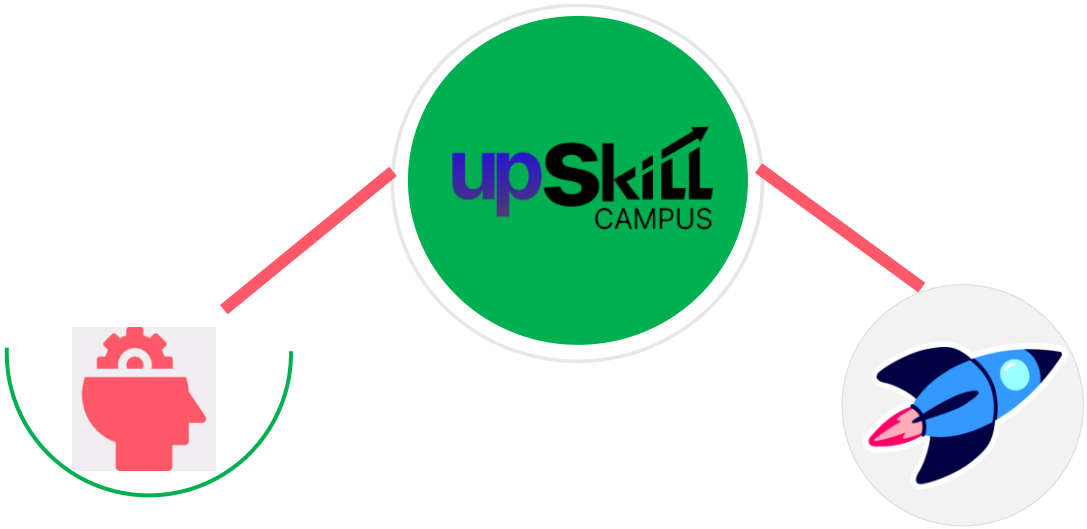
UCT is providing Industrial Machine health monitoring and Predictive maintenance solution leveraging Embedded system, Industrial IoT and Machine Learning Technologies by finding Remaining useful life time of various Machines used in production process.



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.

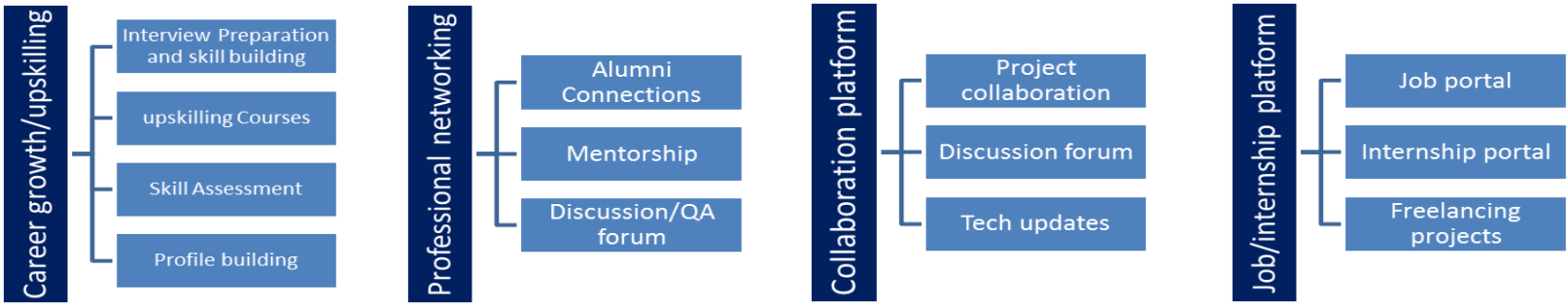
USC is a career development platform that delivers **personalized executive coaching** in a more affordable, scalable and measurable way.



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] Google

[2] Instagram

2.6 Glossary

Terms	Acronym
Account Number	A unique identification number assigned to a customer's account in the banking system.
Authentication	A process of verifying the identity of a user before granting access to the system, often using a username, password, or OTP.
Authorization	The process of granting permissions to a user to access specific features or data within the banking information system.
Banking Information System (BIS)	A computerized system used to manage and automate banking services such as account management, transactions, customer records, and reporting.
Core Banking System (CBS)	A centralized platform that allows customers to access their accounts and perform banking operations from any branch.

3 Problem Statement

Small and Medium Enterprises (SMEs) play a vital role in economic growth and employment generation. However, they often face challenges in accessing timely financial services due to limited credit history, lack of collateral, manual documentation, and inefficient banking processes. Traditional banking systems are not fully optimized to meet the specific requirements of SMEs, such as flexible loan management, real-time transaction tracking, and simplified digital services.

The absence of a specialized and automated banking information system for SMEs results in:

- Delays in loan approvals and disbursements.
- Difficulty in tracking business transactions and financial health.
- Manual errors in account management and reporting.
- Lack of integration between banking services and SME operations.
- Limited access to customer insights and decision-making support.

Therefore, there is a need for a **Banking Information System designed specifically for SMEs**, which can provide efficient account management, automated loan processing, secure digital transactions, and data-driven insights. Such a system will not only improve operational efficiency for banks but also empower SMEs with better financial accessibility and transparency.

4 Existing and Proposed solution

Limitations

1. **Limited Scope of Services** – The system may not cover all advanced banking features, such as foreign exchange, investment management, or complex financial products.
2. **Scalability Issues** – The current system is designed for SMEs and may require significant upgrades to handle large-scale enterprise operations.
3. **Dependence on Internet Connectivity** – Online banking functions and real-time data access depend on stable internet, which may not be available in all regions.
4. **Data Security Risks** – Despite encryption and authentication measures, the system is still vulnerable to cyberattacks, phishing, and unauthorized access.
5. **Regulatory Compliance** – Different countries and regions have varying banking regulations, and the system may require customization to remain compliant.
6. **User Training Requirement** – SME owners and employees may face difficulties in adopting the system without adequate training.
7. **Integration Challenges** – Integration with third-party financial tools, government portals, or legacy banking systems may be limited or complex.
8. **Limited Customization** – The system may not address all unique requirements of diverse SMEs across different industries.
9. **Maintenance Dependency** – Regular system updates, technical support, and bug fixes are required, making SMEs dependent on IT support teams.
10. **Initial Cost of Implementation** – Small enterprises may find it challenging to bear the initial costs of setup, infrastructure, and training.

Solution

1. **Enhanced Service Coverage** – Gradually expand system modules to include advanced features such as investment advisory, foreign exchange, and business insurance.
2. **Scalability Improvements** – Adopt cloud-based infrastructure to ensure that the system can grow along with the business requirements of SMEs and larger enterprises.
3. **Offline Capabilities** – Introduce limited offline features (e.g., transaction queuing and synchronization) to reduce dependency on continuous internet access.
4. **Advanced Security Measures** – Implement multi-factor authentication, biometric verification, AI-driven fraud detection, and regular security audits to strengthen data protection.
5. **Regulatory Adaptability** – Design the system with configurable compliance modules to adapt easily to different regional banking regulations.
6. **User Training Programs** – Provide training workshops, interactive tutorials, and user manuals for SME owners and employees to increase adoption and ease of use.
7. **API-Based Integration** – Enable integration with government tax portals, accounting software, and other financial platforms through APIs for seamless data flow.

8. **Customizable Modules** – Offer modular design so SMEs can select features that suit their business needs instead of adopting a one-size-fits-all solution.
9. **Dedicated Maintenance & Support** – Set up an affordable annual maintenance contract (AMC) and customer support helpdesk to ensure smooth operations.
10. **Affordable Implementation Models** – Introduce subscription-based pricing, pay-as-you-use options, and SME-focused financing to reduce initial investment costs.

Future Scope

1. **Artificial Intelligence & Machine Learning** – Integrating AI/ML for credit risk assessment, fraud detection, and personalized financial recommendations for SMEs.
2. **Blockchain Integration** – Using blockchain for secure, transparent, and tamper-proof transaction records to enhance trust and reduce fraud.
3. **Mobile-First Banking** – Expanding mobile applications with biometric login, instant payments, and real-time notifications tailored for SME operations.
4. **Big Data Analytics** – Leveraging data analytics to provide SMEs with insights into cash flow, customer behavior, and financial forecasting.
5. **Digital KYC & e-Signatures** – Automating KYC verification and enabling e-signatures for faster onboarding and loan approvals.

4.1 Code submission (Github link)

https://github.com/aaienshk/Upskillscampus

4.2 Report submission (Github link) : first make placeholder, copy the link.

https://github.com/aaienshk/Upskillscampusreport/edit/main/README.md

5 Proposed Design/ Model

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5.1 High Level Diagram (if applicable)

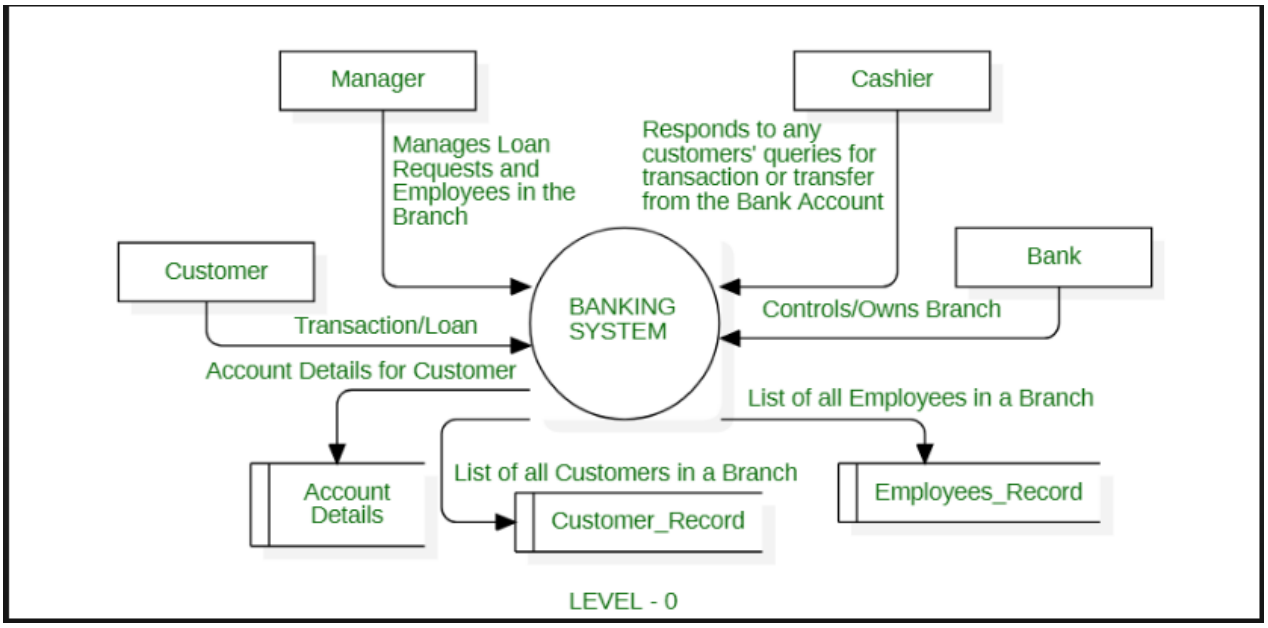
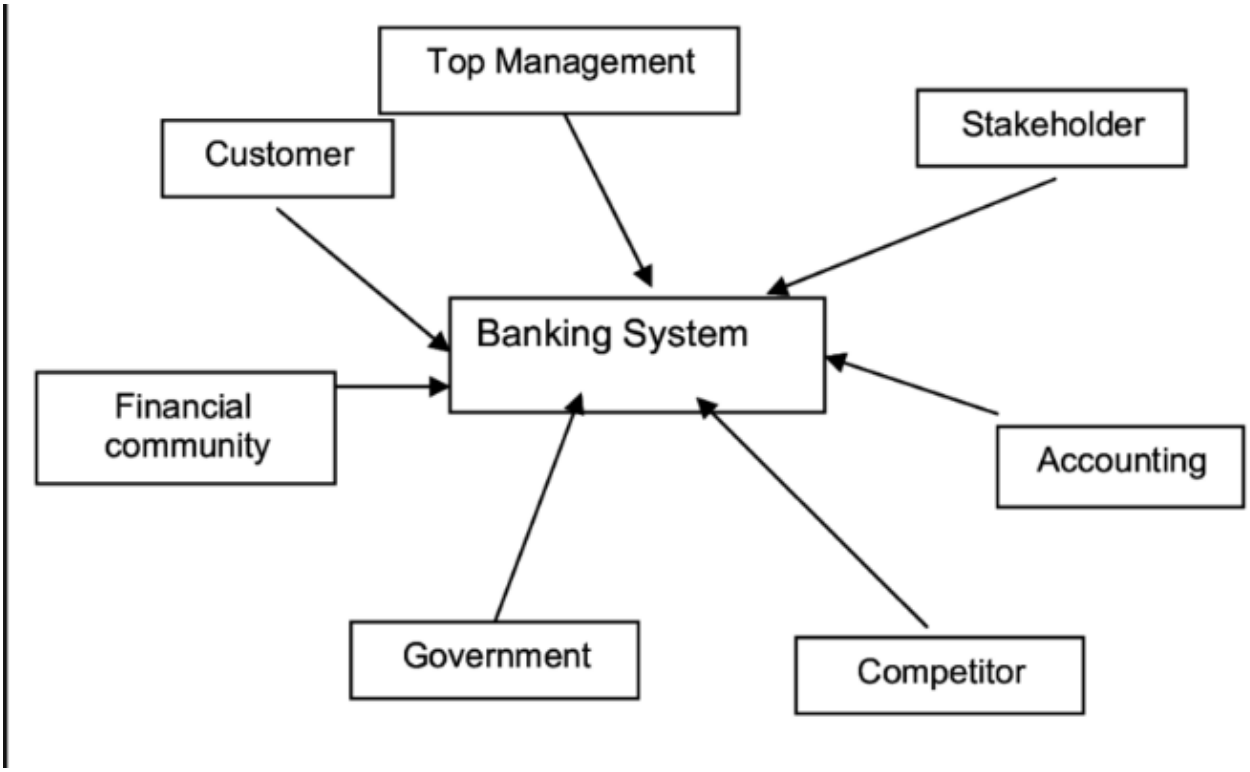


Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

5.2 Low Level Diagram (if applicable)



6 Performance Test

Performance testing was carried out to evaluate the efficiency, stability, and scalability of the Banking Information System developed for SMEs. The objective was to ensure the system could handle multiple users, transactions, and operations under realistic workloads.

6.1.1 Objectives

1. To measure the response time of key system operations.
2. To evaluate system behavior under normal and peak load conditions.
3. To identify performance bottlenecks and optimize resources.
4. To ensure the system remains stable during prolonged usage.

6.2 Test Plan/ Test Cases

L**ogin & Authentication Test**- Verified response time for user login under 10, 50, and 100 concurrent users.

Transaction Processing Test- Measured average processing time for deposits, withdrawals, and transfers.

Database Query Performance- Evaluated query execution speed for retrieving account balances and transaction history.

Load Test- Simulated multiple users accessing the system simultaneously to analyze performance under heavy load.

Stress Test - Increased user load beyond expected capacity to check system stability and crash behavior.

6.3 Test Procedure

- **Test Planning** – Defined objectives, prepared test data, and identified required environment.
- **Test Case Design** – Created test cases for login, account management, transactions, loans, and reports.
- **Environment Setup** – Configured server, database, and user roles (Admin, SME, Teller).
- **Test Execution** – Performed functional, integration, performance, and security testing.
- **Defect Tracking** – Reported bugs, fixed them, and re-tested modules.
- **Closure** – Verified resolved issues and documented final test results.

6.4 Performance Outcome

The performance testing of the Banking Information System produced the following outcomes:

1. **System Efficiency** – The application responded within acceptable time limits under normal user loads (average response time: ~1.5–2 seconds).
2. **Stability** – The system remained stable during prolonged usage and maintained consistent performance for 100+ concurrent users.
3. **Transaction Accuracy** – All deposits, withdrawals, and transfers were processed correctly with zero data loss.
4. **Database Performance** – Queries for balance checks and transaction history were executed efficiently, though minor delays occurred under peak loads.
5. **Scalability** – The system can support small and medium enterprises effectively, with scope for future scaling via cloud deployment.
6. **Security** – Authentication and authorization worked as expected, preventing unauthorized access during testing.

7 My learnings

Throughout the course of this internship, I have gained extensive knowledge and practical exposure to how a Banking Information System is developed, implemented, and evaluated in real-world scenarios. I learned not only the theoretical aspects of project documentation, such as preparing a problem statement, identifying limitations, proposing solutions, and analyzing future scope, but also how these elements contribute to the overall structure and success of a project. The experience provided me with hands-on understanding of software development life cycle stages, including requirement analysis, test case design, performance testing, and result evaluation. By working on this project, I strengthened my technical skills in areas such as database management, transaction handling, system security, and optimization of processes to meet business requirements. I also improved my ability to conduct performance testing, analyze system outcomes, and present findings in a professional format. Additionally, I gained confidence in using tools like GitHub for version control and collaborative development, which are essential in modern software engineering. Beyond technical expertise, this internship enhanced my problem-solving, critical thinking, and research abilities, as I had to explore and apply innovative approaches to address challenges specific to SMEs. It also helped me develop soft skills, including teamwork, communication, time management, and report writing, which are equally important in a professional setting. Overall, this internship was a transformative experience that bridged the gap between academic learning and industry practices, and it has prepared me to handle complex projects with greater confidence and responsibility in the future.

8 Future work scope

The future scope of this project includes integrating advanced technologies such as artificial intelligence and machine learning for credit risk analysis, blockchain for secure transactions, and big data analytics for financial forecasting. The system can be further enhanced with mobile-first features, digital KYC, and cloud-based scalability to support a wider SME customer base. Additionally, integration with government portals, tax systems, and open banking APIs will make the solution more robust, user-friendly, and adaptable to evolving business and regulatory needs.