

Industrial Internship Report on ATM Banking System by Python

**Prepared by
Shanmugesh D**

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.

TABLE OF CONTENTS

1Preface.....	3
2Introduction.....	4
2.1About UniConverge Technologies Pvt Ltd.....	4
2.2About upskill Campus (USC).....	9
2.3The IoT Academy.....	11
2.4Objectives of this Internship program.....	11
2.5Reference.....	11
2.6Glossary.....	11
3Problem Statement.....	13
4Existing and Proposed solution.....	14
4.1Code submission (Github link).....	14
4.2Report submission (Github link) : first make placeholder, copy the link.....	14
5Proposed Design/ Model.....	15
5.1High Level Diagram (if applicable).....	15
5.2Low Level Diagram (if applicable).....	15
5.3Interfaces (if applicable).....	15
6Performance Test.....	16
6.1Test Plan/ Test Cases.....	16
6.2Test Procedure.....	16
6.3Performance Outcome.....	16
7My learnings.....	17
8Future work scope.....	18

1 Preface

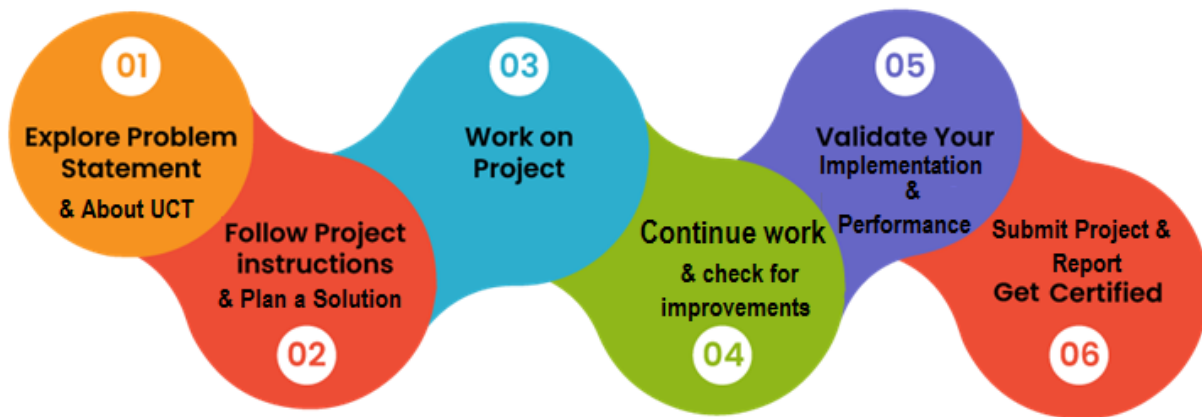
Summary of the whole 6 weeks' work.

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 ()

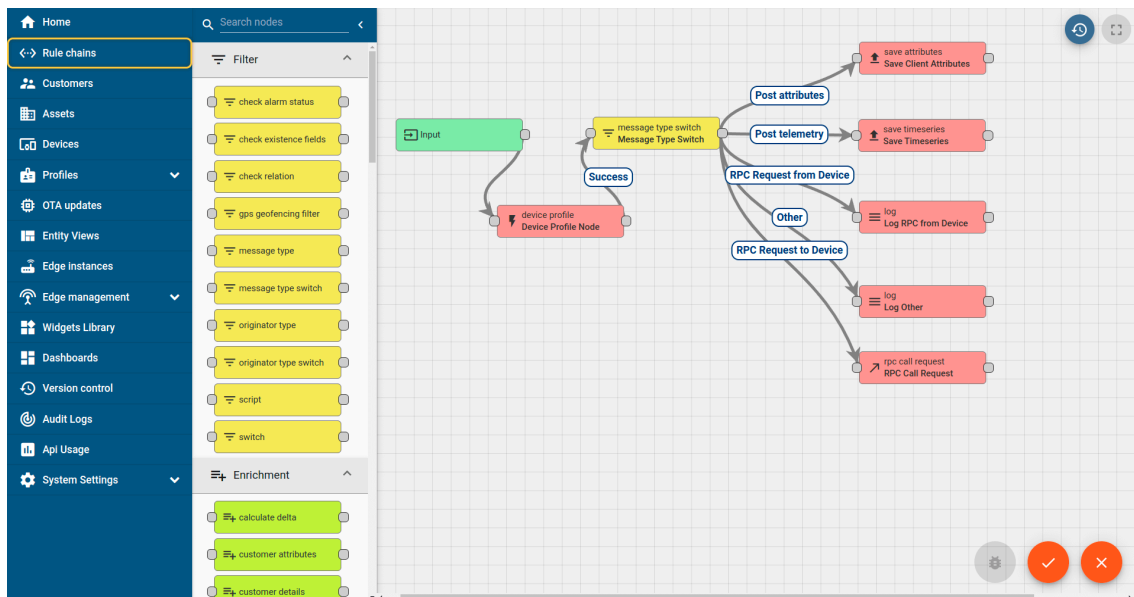
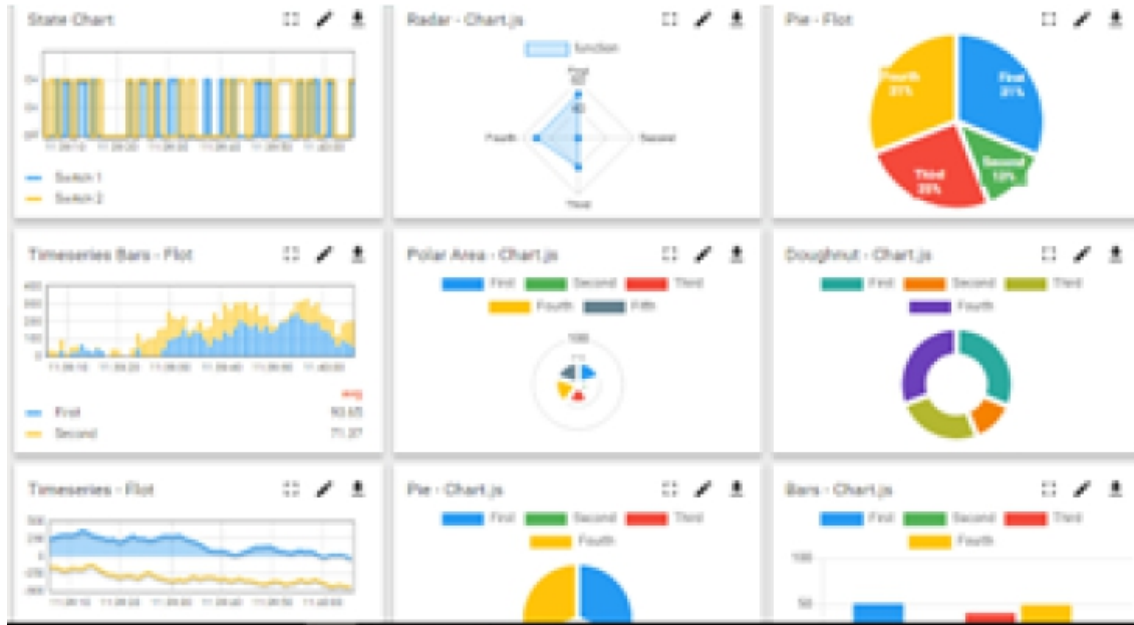
UCT Insight is an IOT platform designed for quick deployment of IOT applications on the same time providing valuable “insight” for your process/business. It has been built in Java for backend and ReactJS for Front end. It has support for MySQL and various NoSql Databases.

- 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 unleashed 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.



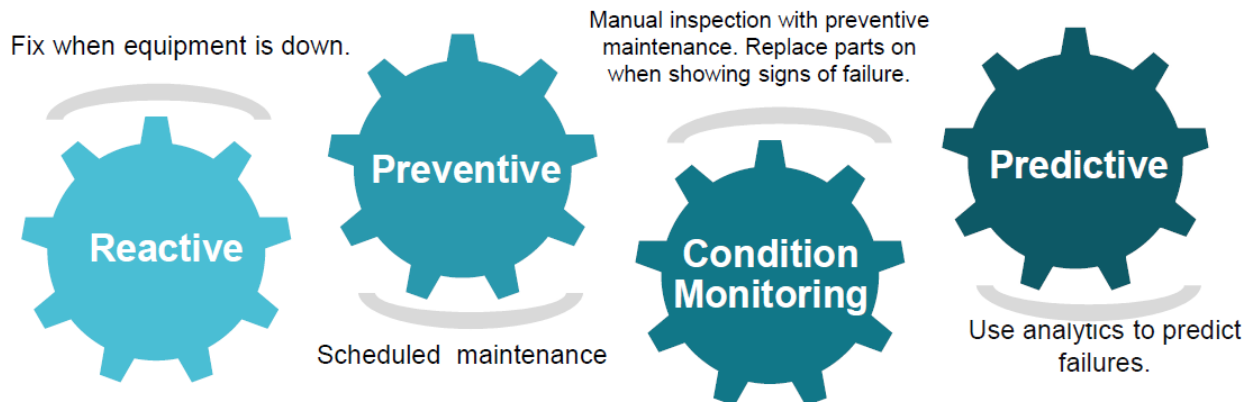


iii. based Solution

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.



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

Banks provide ATMs (Automated Teller Machines) to allow customers to perform basic banking transactions without the need for human assistance. A simple ATM system is required to manage user transactions securely and efficiently. The goal of this project is to develop a basic ATM system that allows users to Authenticate using their PIN, Check their account balance, Withdraw cash (subject to account balance and withdrawal limits), Deposit cash to their account, Exit the system securely. Scope: The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly. The system should display appropriate messages for insufficient balance or incorrect PIN attempts. The application will be implemented using a console-based interface for simplicity. Constraints: The ATM should allow a maximum of three incorrect PIN attempts before locking the account. Withdrawal transactions should be limited by the account balance and ATM cash availability. The system should maintain a transaction log for record-keeping.

4 Existing and Proposed solution

Provide summary of existing solutions provided by others, what are their limitations?

Banks provide ATMs (Automated Teller Machines) to allow customers to perform basic banking transactions without the need for human assistance. A simple ATM system is required to manage user transactions securely and efficiently. The goal of this project is to develop a basic ATM system that allows users to Authenticate using their PIN, Check their account balance, Withdraw cash (subject to account balance and withdrawal limits), Deposit cash to their account, Exit the system securely.

Scope: The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly. The system should display appropriate messages for insufficient balance or incorrect PIN attempts. The application will be implemented using a console-based interface for simplicity. Constraints: The ATM should allow a maximum of three incorrect PIN attempts before locking the account. Withdrawal transactions should be limited by the account balance and ATM cash availability. The system should maintain a transaction log for record-keeping.

What is your proposed solution?

A simple ATM system is required to manage user transactions securely and efficiently. The goal of this project is to develop a basic ATM system that allows users to Authenticate using their PIN, Check their account balance, Withdraw cash (subject to account balance and withdrawal limits), Deposit cash to their account, Exit the system securely. Scope: The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly.

What value addition are you planning?

The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly. The system should display appropriate messages for insufficient balance or incorrect PIN attempts. The application will be implemented using a console-based interface for simplicity.

4.1 Code submission (Github link)

```
class ATM:

    def __init__(self):

        # Sample user data (Account Number: [PIN, Balance])

        self.users = {

            "123456": ["7890", 5000], # Example: Account 123456 with PIN 7890 and balance 5000

            "654321": ["4567", 3000]

        }

        self.current_user = None


    def authenticate(self):

        account = input("Enter your account number: ")

        if account in self.users:

            for attempt in range(3): # Allow 3 attempts

                pin = input("Enter your PIN: ")

                if pin == self.users[account][0]:

                    print("Authentication Successful!\n")

                    self.current_user = account

                    return True

                else:

                    print("Incorrect PIN. Try again.")

            print("Too many incorrect attempts. Exiting.")

        else:
```

```
print("Account not found.")

return False

def check_balance(self):

    print(f"Your current balance is: ₹{self.users[self.current_user][1]}\n")

def deposit(self):

    amount = int(input("Enter deposit amount: ₹"))

    if amount > 0:

        self.users[self.current_user][1] += amount

        print(f"₹{amount} deposited successfully!\nNew balance: ₹{self.users[self.current_user][1]}\n")

    else:

        print("Invalid deposit amount.\n")

def withdraw(self):

    amount = int(input("Enter withdrawal amount: ₹"))

    if 0 < amount <= self.users[self.current_user][1]:

        self.users[self.current_user][1] -= amount

        print(f"₹{amount} withdrawn successfully!\nNew balance: ₹{self.users[self.current_user][1]}\n")

    else:

        print("Insufficient balance or invalid amount.\n")

def run(self):

    if self.authenticate():
```

```
while True:

    print("1. Check Balance\n2. Deposit\n3. Withdraw\n4. Exit")

    choice = input("Select an option: ")

    if choice == "1":

        self.check_balance()

    elif choice == "2":

        self.deposit()

    elif choice == "3":

        self.withdraw()

    elif choice == "4":

        print("Thank you for using the ATM. Goodbye!")

        break

    else:

        print("Invalid choice. Try again.")


# Run the ATM system

atm = ATM()

atm.run()
```

4.2 Report submission (Github link) : [_https://github.com/dashboard](https://github.com/dashboard)

5 Proposed Design/ Model

Given more details about design flow of your solution. This is applicable for all domains. DS/ML Students can cover it after they have their algorithm implementation. There is always a start, intermediate stages and then final outcome.

5.1 High Level Diagram (if applicable)

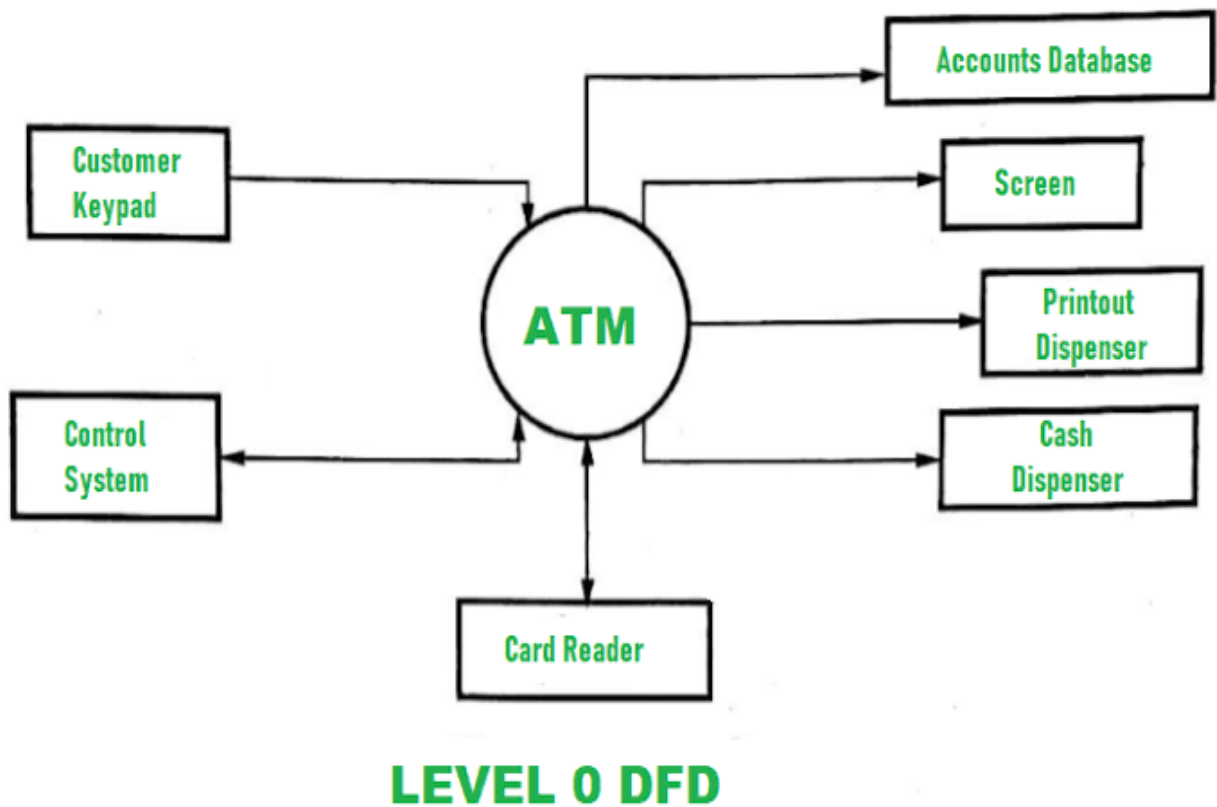
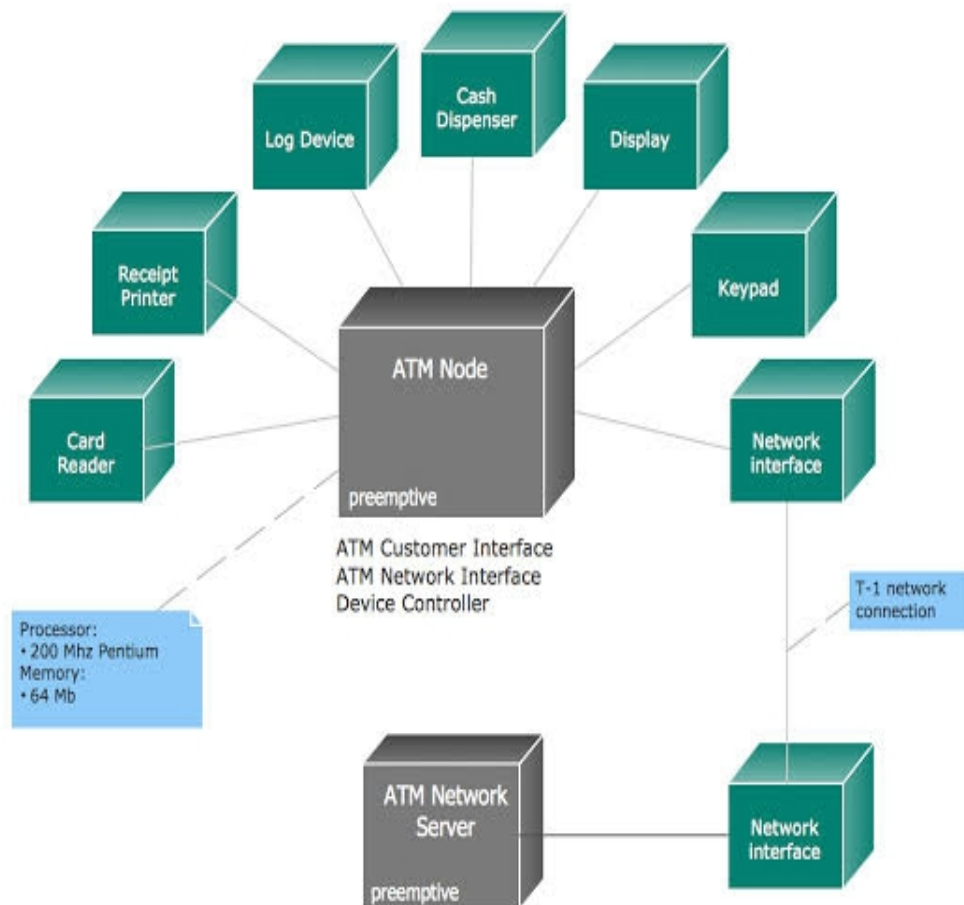


Figure 1: HIGH LEVEL DIAGRAM OF THE SYSTEM

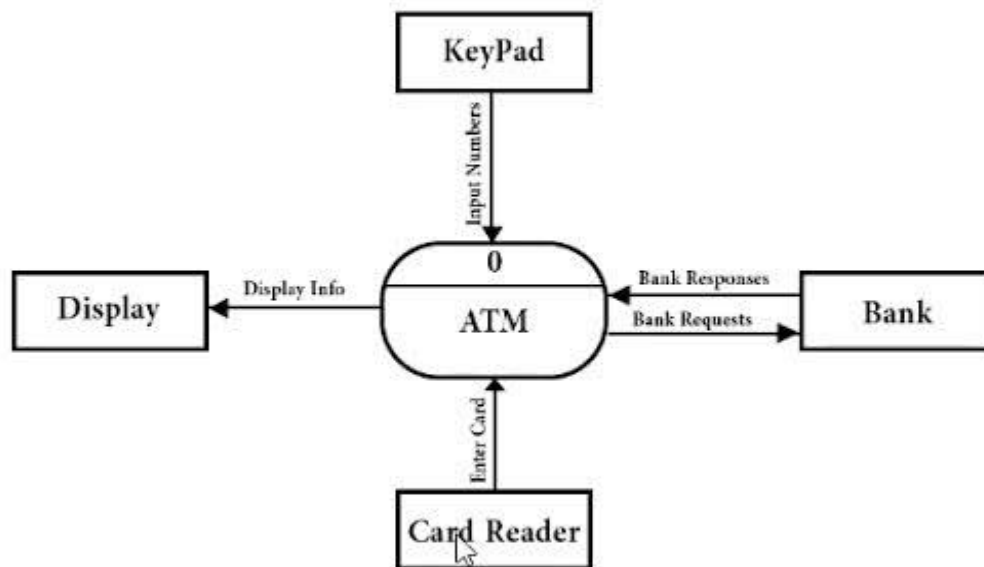
5.2 Low Level Diagram (if applicable)

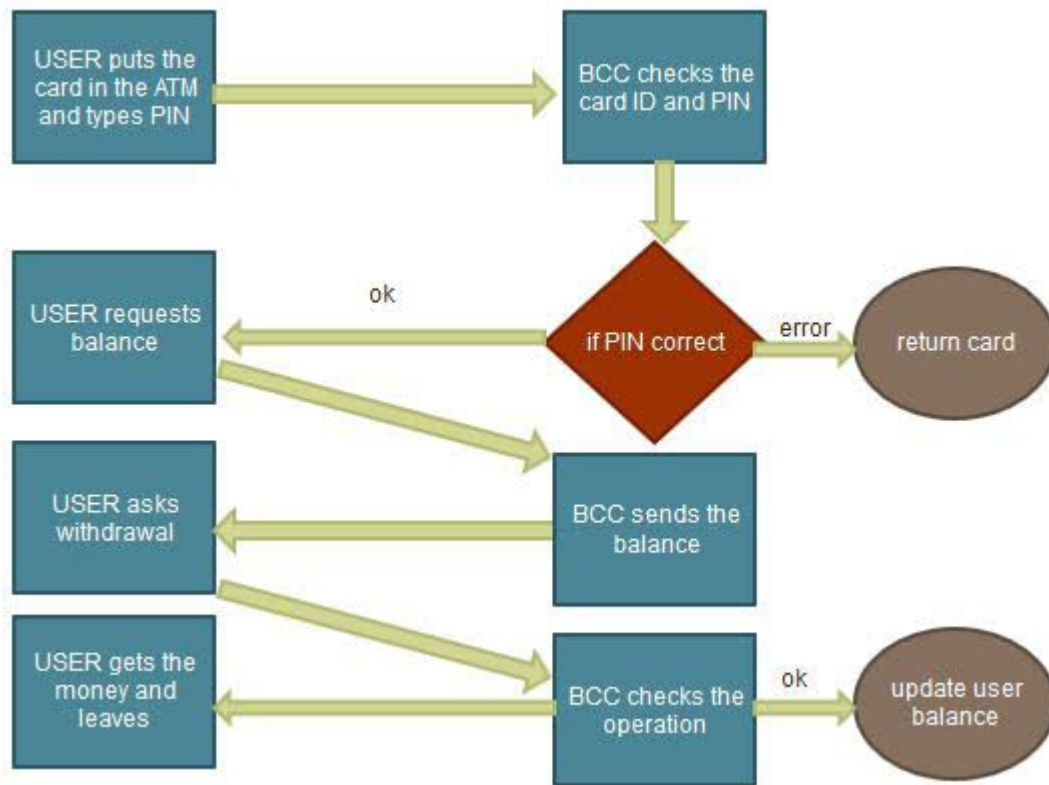


5.3 Interfaces (if applicable)

Update with Block Diagrams, Data flow, protocols, FLOW Charts, State Machines, Memory Buffer Management.

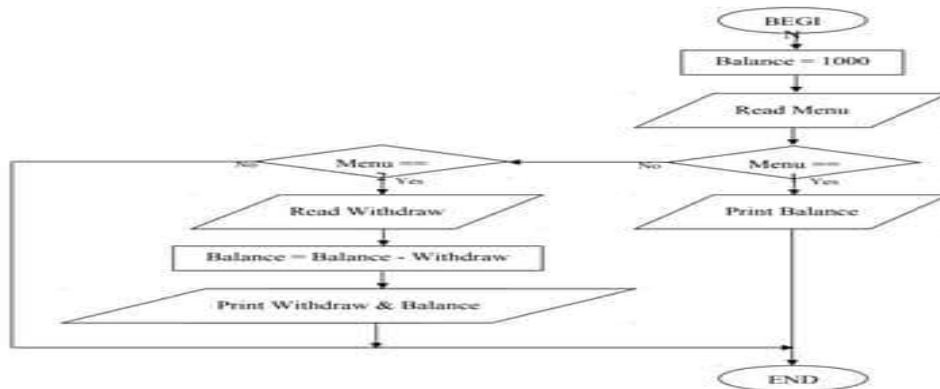
ATM Context Diagram





6 Performance Test

Flowchart of Automatic Teller Machine (ATM) Program



This is very important part and defines why this work is meant of Real industries, instead of being just academic project.

Here we need to first find the constraints.

How those constraints were taken care in your design?

What were test results around those constraints?

Constraints can be e.g. memory, MIPS (speed, operations per second), accuracy, durability, power consumption etc.

In case you could not test them, but still you should mention how identified constraints can impact your design, and what are recommendations to handle them.

6.1 Test Plan/ Test Cases

Deposit cash to their account, Exit the system securely. Scope: The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly. The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

6.2 Test Procedure

Deposit cash to their account, Exit the system securely. Scope: The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly. The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

6.3 Performance Outcome

Deposit cash to their account, Exit the system securely. Scope: The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly. The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

The system will support a single-user login at a time. User authentication will be performed using an account number and PIN. The system will provide options for balance inquiry, cash withdrawal, and deposit. Each transaction should update the account balance accordingly. The system should display appropriate messages for insufficient balance or incorrect PIN attempts. The application will be implemented using a console-based interface for simplicity.

7 My learnings

You should provide summary of your overall learning and how it would help you in your career growth.

The system will support a single-user login at a time.

User authentication will be performed using an account number and PIN.

The system will provide options for balance inquiry, cash withdrawal, and deposit.

Each transaction should update the account balance accordingly.

The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

The application will be implemented using a console-based interface for simplicity.

The system will support a single-user login at a time.

User authentication will be performed using an account number and PIN.

The system will provide options for balance inquiry, cash withdrawal, and deposit.

Each transaction should update the account balance accordingly.

The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

The application will be implemented using a console-based interface for simplicity. The system will support a single-user login at a time.

User authentication will be performed using an account number and PIN.

The system will provide options for balance inquiry, cash withdrawal, and deposit.

Each transaction should update the account balance accordingly.

The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

The application will be implemented using a console-based interface for simplicity.

8 Future work scope

You can put some ideas that you could not work due to time limitation but can be taken in future.

The system will support a single-user login at a time.

User authentication will be performed using an account number and PIN.

The system will provide options for balance inquiry, cash withdrawal, and deposit.

Each transaction should update the account balance accordingly.

The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

The application will be implemented using a console-based interface for simplicity. The system will support a single-user login at a time.

User authentication will be performed using an account number and PIN.

The system will provide options for balance inquiry, cash withdrawal, and deposit.

Each transaction should update the account balance accordingly.

The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

The application will be implemented using a console-based interface for simplicity. The system will support a single-user login at a time.

User authentication will be performed using an account number and PIN.

The system will provide options for balance inquiry, cash withdrawal, and deposit.

Each transaction should update the account balance accordingly.

The system should display appropriate messages for insufficient balance or incorrect PIN attempts.

The application will be implemented using a console-based interface for simplicity.

