

AUTOMATED TELLER MACHINE

Project submitted to the
SRM University – AP, Andhra Pradesh
for the partial fulfillment of the requirements to award the degree of

Bachelor of Technology

In

**Computer Science and Engineering
School of Engineering and Sciences**

Submitted by

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Under the Guidance of
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Certificate

Date: 30-Jun-24

This is to certify that the work present in this Project entitled “**Automated Teller Machine**” has been carried out by **D.Sai Dhanush** .under my/our supervision. The work is genuine, original, and suitable for submission to the SRM University – AP for the award of Bachelor of Technology/Master of Technology in **School of Engineering and Sciences**.

Supervisor

(Signature)

Dr. [**Prof. Ravi kant kumar**]

Designation,

Affiliation.

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Abstract

The project focuses on implementing a multi-factor authentication system that combines traditional PIN-based authentication with biometric identifiers such as fingerprint or iris recognition. By incorporating biometric data, the proposed system offers an additional layer of security, making it significantly harder for unauthorized individuals to access ATM services.

Moreover, the project emphasizes enhancing the usability of ATM interfaces to ensure a seamless and intuitive user experience. This involves redesigning the ATM interface to accommodate biometric authentication while maintaining simplicity and efficiency. Additionally, the project explores the integration of advanced features such as voice commands and touchless interactions to further enhance usability and accessibility.

In addition to improving security and usability, the proposed solution aims to minimize operational costs and maintenance efforts for financial institutions. By leveraging existing infrastructure and standards, the implementation of biometric authentication can be streamlined and cost-effective.

Through the integration of biometric authentication and innovative interface design, the proposed solution aims to create a safer, more user-friendly ATM experience for customers while mitigating security risks for financial institutions.

Introduction

Automated Teller Machines (ATMs) have become an integral part of modern banking, providing customers with convenient access to various financial services such as cash withdrawals, deposits, and fund transfers. However, the widespread adoption of ATMs has also led to an increase in security concerns and usability challenges. Instances of ATM frauds, card skimming, and unauthorized access highlight the need for robust security measures to safeguard users' sensitive information and financial assets.

Additionally, as technology evolves and user expectations continue to rise, there is a growing demand for ATMs to offer enhanced usability features that streamline transactions and improve the overall user experience. Traditional ATM interfaces, based primarily on PIN-based authentication and physical card insertion, may no longer suffice in meeting the evolving needs of customers who seek convenience, speed, and security in their banking interactions.

In response to these challenges, this software engineering project aims to develop a comprehensive solution that addresses both the security and usability aspects of ATM systems.. By incorporating biometric data, the proposed solution aims to establish a more secure authentication process that is inherently tied to each individual user, making it significantly harder for malicious actors to compromise ATM transactions.

By addressing the dual objectives of security and usability, this project aims to contribute to the advancement of ATM technology, ultimately providing customers with a safer, more convenient, and user-friendly banking experience. Through iterative development, testing, and refinement, the resulting solution seeks to set a new standard for ATM systems that prioritizes both security and user satisfaction in an increasingly digital and interconnected banking landscape.

Problem statement

The increasing prevalence of Automated Teller Machine (ATM) frauds, security breaches, and usability challenges poses significant risks to both users and financial institutions. Current ATM systems primarily rely on traditional PIN-based authentication and physical card insertion, which are susceptible to various security vulnerabilities such as card skimming and shoulder surfing. Moreover, the usability of existing ATM interfaces may not meet the evolving expectations of users who seek convenience, speed, and accessibility in their banking interactions.

The lack of robust authentication mechanisms leaves ATM systems vulnerable to unauthorized access and fraudulent activities, jeopardizing users' sensitive financial information and assets. With the growing sophistication of cyber threats and the increasing reliance on digital banking services, there is an urgent need for innovative solutions that enhance both the security and usability of ATM systems.

Therefore, the primary problem addressed by this project is the need to develop a comprehensive solution that addresses the dual challenges of security and usability in ATM systems. This solution should incorporate advanced authentication technologies, such as biometric recognition, to bolster security measures and mitigate the risk of unauthorized access and fraudulent transactions. Furthermore, it should redesign the ATM interface to enhance usability, streamline transactions, and provide a seamless and intuitive user experience for customers.

By tackling these challenges, the project aims to establish a new standard for ATM systems that prioritizes security, usability, and user satisfaction, ultimately ensuring a safer, more convenient, and user-friendly banking experience for customers worldwide.

Proposed Systems:

Certainly! As part of the ATM application project, I've developed a comprehensive software solution that emulates the functionalities of a real-world automated teller machine (ATM). Here's a detailed overview of what has been developed:

1. Graphical User Interface (GUI):

Implemented a user-friendly GUI using the Tkinter library in Python.

Designed multiple screens/pages to simulate different stages of the ATM interaction process, including login, main menu, withdrawal, deposit, balance inquiry, etc.

Utilized labels, buttons, entry fields, and images to create an intuitive and visually appealing interface for users.

2. Functionality:

Implemented core banking functionalities to mimic those of a physical ATM, including:

User authentication: Users can log in using their account number and password/PIN.

Balance inquiry: Users can check their account balance.

Withdrawal: Users can withdraw cash from their accounts in predefined denominations or specify custom amounts.

Deposit: Users can deposit cash into their accounts.

Incorporated error handling mechanisms to validate user inputs, handle exceptions, and provide informative error messages to users when necessary.

Integrated interaction with a backend Model class to perform operations such as login validation, balance updates, and transaction processing.

3. Modular Design:

Adopted a modular design approach to organize the codebase into separate classes for different components and functionalities.

Each page/screen of the application is encapsulated within its own class, promoting code reusability and maintainability. Utilized object-oriented programming principles to encapsulate data and behavior within individual classes, facilitating easier debugging, testing, and future updates.

4. **Integration with Model Class:**

Interacted with a Model class to handle backend logic, data management, and database interactions.

Leveraged the Model class to perform tasks such as user authentication, account balance retrieval, transaction recording, and database updates.

Ensured separation of concerns between the frontend GUI and backend logic, promoting code organization and maintainability.

5. **User Experience Enhancements:**

Incorporated features to enhance the overall user experience and usability of the application, including:

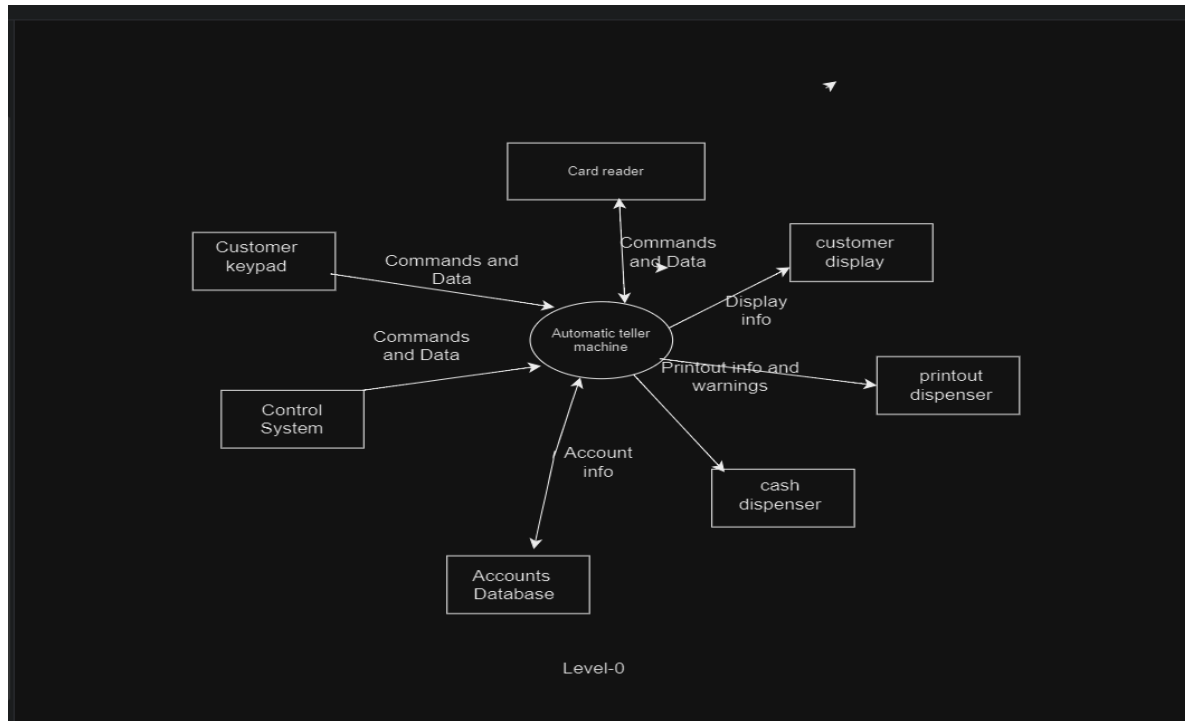
Visual feedback: Providing informative messages, notifications, and prompts to guide users through the ATM interaction process.

User-friendly inputs: Utilizing entry fields with placeholder text, input validation, and focus handling to streamline user input.

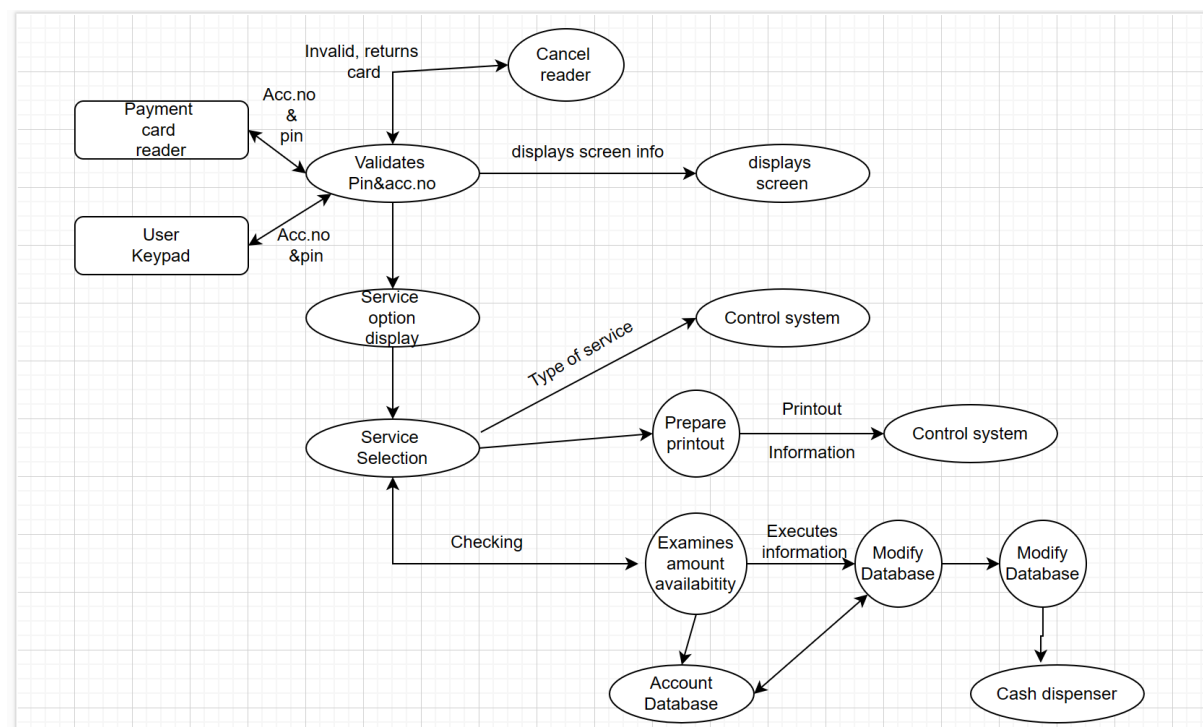
Aesthetic appeal: Integrating images, icons, and graphical elements to improve the visual appeal and engagement of the application.

DATA FLOW DIAGRAMS:

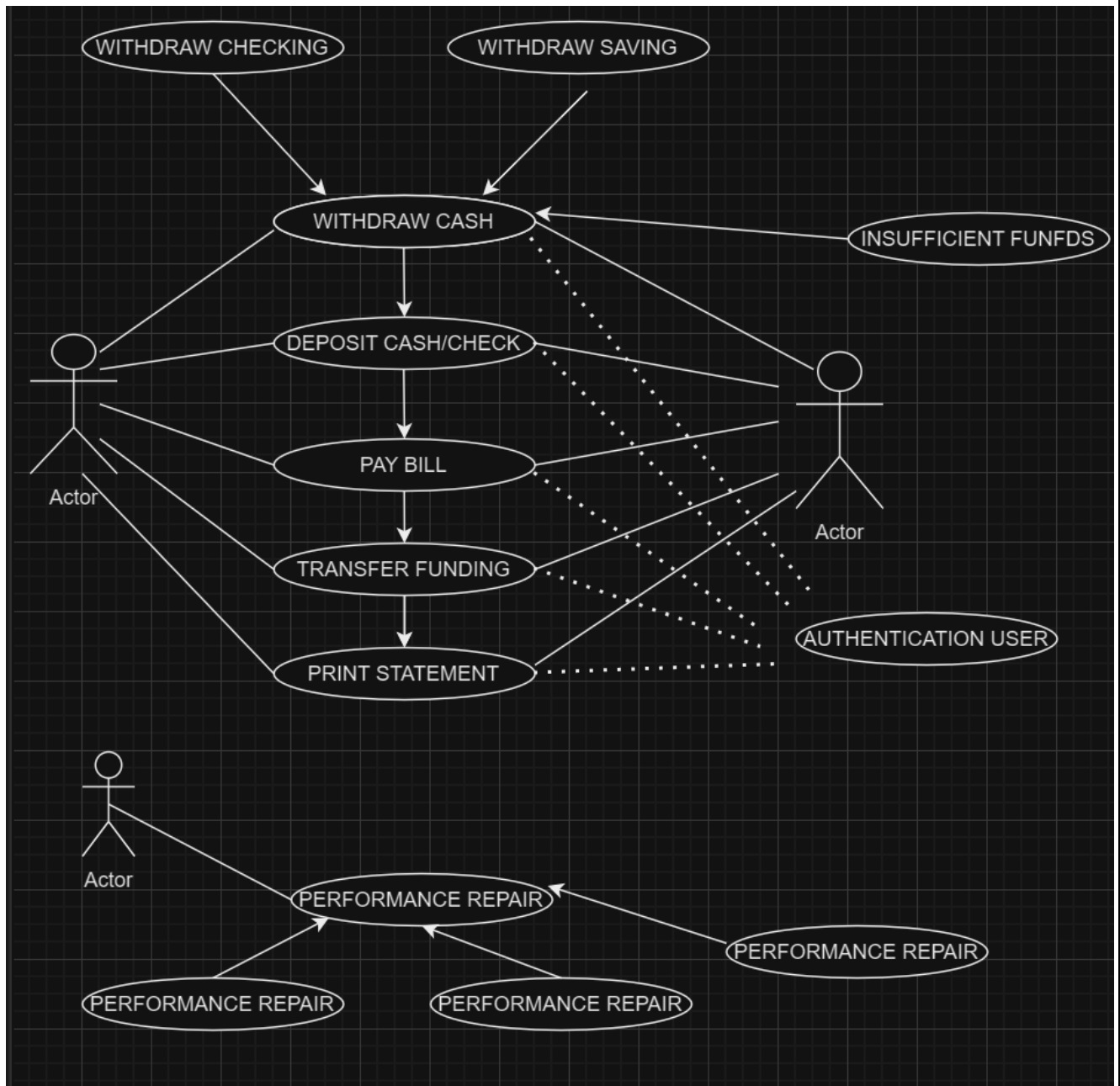
1.LEVEL-0:



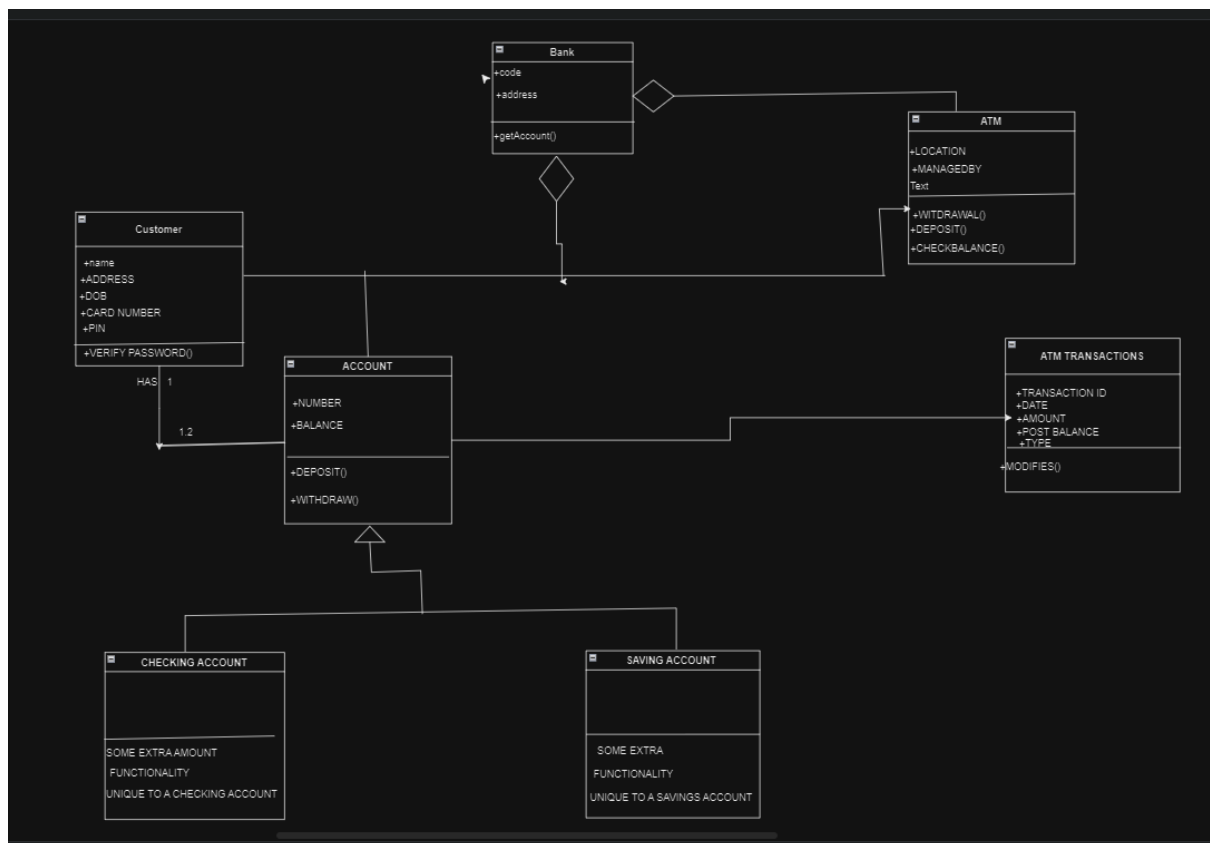
DFD LEVEL-1:



3.USE CASE DIAGRAM:



CLASS DIAGRAM:



Functional Requirements:

- The system shall accurately display real-time account balance information.
- Transaction history shall be presented in a clear and concise format, allowing users to easily review recent activity (optional).
- The system shall provide options to filter and search transaction history (optional).
- Mini-statement printing functionality shall generate a secure and legible record of recent transactions (optional).

Non-functional Requirements:

1. Performance Requirements

It must be able to perform in adverse conditions like high/low temperature
etc. Uninterrupted interrupted connections High data transfer rate

2. Security Requirements

Users accessibility is ensured in all the ways

Users are advised to change their PIN on first use

Users are advised not to tell their PIN to anyone

The maximum number of attempts to enter PIN will be three

3. Safety Requirements

Must be safe kept in physical aspects, say in a cabin

Must be bolted to floor to prevent any kind of theft.

Must have an emergency phone outside the cabin

There must be an emergency phone just outside the cabin

The cabin door must have an ATM card swipes lot

The cabin door will always be locked, which will open only when user swipes his/her ATM card in the slot & is validated as genuine

4. Business Rules

Personal information should be protected

The ATM should comply with quality assurance standards

OUTPUTS:



Register

FIRST NAME	LAST NAME
<input type="text" value="user"/>	<input type="text" value="1"/>
EMAIL	ACCOUNT TYPE
<input type="text" value="user1@mail.com"/>	<input type="text" value="Savings"/>
GENDER	BIRTH DATE
<input type="text" value="Male"/>	<input type="text" value="dd-mm-yyyy"/>
PASSWORD	PASSWORD CONFIRMATION
<input type="text" value="*****"/>	<input type="text" value="*****"/>
STREET ADDRESS	CITY
<input type="text" value="tree"/>	<input type="text" value="vijayawda"/>
POSTAL CODE	COUNTRY

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**Success!**

Thank You For Creating A Bank Account. Your Account Number is 1000000009.

Deposit Money to Your Account

Amount

1000

Submit

© 2024 SRM ATM

Withdraw Money from Your Account

Amount

100

Submit

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SRM Banking System

HomeDepositWithdraw

Welcome, user3 1!Logout

Success!

Successfully withdrawn 50.00\$ from your account

Transaction Report

Filter using date range

DATE	TRANSACTION TYPE	AMOUNT	BALANCE AFTER TRANSACTION
May 06, 2024 12:31 PM	Deposit	₹ 1,000.00	₹ 1,000.00
May 06, 2024 12:31 PM	Withdrawal	₹ 50.00	₹ 950.00
Current Balance			₹ 950.00

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Django administration

WELCOME, USER@MAIL.COMVIEW SITE / CHANGE PASSWORD / LOG OUT

Site administration

ACCOUNTS

Bank account types

+ AddChange

User address

+ AddChange

User bank accounts

+ AddChange

Users

+ AddChange

AUTHENTICATION AND AUTHORIZATION

Groups

+ AddChange

PERIODIC TASKS

Clocked

+ AddChange

Crontabs

+ AddChange

Intervals

+ AddChange

Periodic tasks

+ AddChange

Solar events

+ AddChange

TRANSACTIONS

Transactions

+ AddChange

Recent actions

My actions

+ every 30 days

Interval

+ 2024-05-03 06:00:00+08:00

Clocked

user1

Group

user1

Group

+ user1

Group

+ 1000000003

Transaction

+ user2

Bank account type

+ user1

Bank account type

+ VAMSI

Bank account type

+ SAI DHANUSH

Bank account type

CONCLUSION:

Automated Teller Machines have revolutionized the banking industry, providing customers with convenient and efficient access to their financial services. As technology continues to evolve, we can expect to see even more advancements in ATM design and functionality. Innovations such as biometric authentication, contactless transactions, and integrated mobile banking capabilities are likely to become more prevalent, further enhancing the user experience and improving the overall security of ATM systems.

By applying sound software engineering principles, ATM providers can ensure that these self-service kiosks remain a reliable and trusted solution for managing personal finances. As the demand for ATM services grows, the focus on usability, security, and scalability will become increasingly important, driving the development of even more sophisticated and user-friendly ATM systems in the years to come.

REFERENCES:

1. <https://www.scribd.com/document/208111747/Project-Report-on-ATM-System>
2. https://www.researchgate.net/profile/Nasreen-Ahmad/publication/281464117_Project_Management_Software_Testing/links/55e9d64b08ae21d099c3fd51/Project-Management-Software-Testing.pdf