

## Mini Project

# ATM

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## **ABSTRACT**

An Automated Teller Machine (ATM) is an electronic device that allows customers of financial institutions to perform various banking transactions, such as withdrawing cash, checking account balances, transferring funds, and paying bills, without the need for a human teller. ATMs have become ubiquitous and convenient for customers, as they are available 24/7 and can be found in a variety of locations, including banks, convenience stores, and malls. The use of ATMs has greatly reduced the need for customers to visit a physical bank branch, saving time and increasing efficiency in banking transactions.

## **Existing System**

### **There are several existing systems for ATM**

1. Diebold Nixdorf: This is one of the leading providers of ATM systems, offering a wide range of machines, including traditional, drive-up, and self-service ATMs. Their systems include advanced security features such as anti-skimming technology, encryption, and biometric authentication.
2. NCR: This company offers a variety of ATM systems, including intelligent deposit ATMs that can accept cash and check deposits, as well as self-service kiosks that allow customers to perform basic transactions like withdrawals and balance inquiries.
3. GRG Banking: GRG Banking is a Chinese company that provides a range of ATM systems, including cash recycling ATMs, drive-through ATMs, and self-service kiosks. They also offer advanced features like facial recognition and fingerprint scanning for authentication.
4. Hyosung: Hyosung is a Korean company that specializes in ATM systems, offering a range of machines from small, compact models to full-service ATMs. Their systems include features like touchscreens, cash recycling, and advanced security measures like encryption and fraud detection.

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# **Advantages of ATM**

## **There are several advantages of using ATM**

1. Convenience: ATMs are available 24/7, making it easy for customers to perform transactions whenever they need to, without needing to visit a physical bank branch.
2. Accessibility: ATMs are located in various locations, including banks, shopping centers, and convenience stores, making them easily accessible to customers.
3. Time-Saving: ATMs allow customers to perform transactions quickly, without the need to wait in long lines at the bank.
4. Security: ATMs are designed with advanced security features such as PINs, encryption, and anti-skimming technology to protect customer information and prevent fraud.
5. Increased Efficiency: ATMs increase the efficiency of banking transactions by reducing the need for bank tellers to perform routine tasks, allowing them to focus on more complex tasks that require personal attention.
6. Cash Availability: ATMs provide customers with quick access to cash, eliminating the need to visit a bank branch during business hours to withdraw money.

# **System Requirement**

## **1. Hardware requirements**

1. Central processing unit (CPU): A high-performance CPU is required to run the operating system and handle the processing of ATM transactions.
2. Memory: Sufficient memory is necessary to ensure that the system can handle multiple transactions simultaneously and maintain the required speed and performance.
3. Storage: Adequate storage is needed to store the ATM software, transaction logs, and other data that the system needs to operate.
4. Input/output devices: An ATM requires various input/output devices, such as a touch screen display, keypad, card reader, receipt printer, cash dispenser, and deposit module.
5. Network connectivity: The ATM must have a reliable and secure network connection to the financial institution's servers and other systems.
6. Security features: The ATM must include advanced security features to protect customer information and prevent fraud, such as encryption, anti-skimming technology, and physical security measures like locks and alarms.

## **2. Software requirements**

- Operating System: An operating system like Windows or Linux is required to run the ATM software and manage the system resources.
- ATM Software: The ATM software is responsible for managing user interactions, processing transactions, and communicating with the financial institution's servers and other systems.
- Security Software: Advanced security software is necessary to protect customer information and prevent fraud, including encryption, anti-skimming technology, and real-time monitoring.
- Network Software: Network software is needed to manage the network connection and facilitate communication between the ATM and the financial institution's servers and other systems.
- Database Software: Database software is required to store and manage transaction data, user profiles, and other critical information.
- Application Programming Interfaces (APIs): APIs are needed to integrate with other banking systems and services, including mobile banking apps and third-party payment processors.

# Code

```
import javax.swing.*;
import java.awt.*;
import java.awt.event.*;

public class LoginScreen extends JFrame implements ActionListener {
    JLabel userLabel = new JLabel("USERNAME");
    JLabel passwordLabel = new JLabel("PASSWORD");
    JTextField userTextField = new JTextField();
    JPasswordField passwordField = new JPasswordField();
    JButton loginButton = new JButton("LOGIN");
    JButton resetButton = new JButton("RESET");
    JButton withdrawButton = new JButton("WITHDRAW");
    JButton depositButton = new JButton("DEPOSIT");
    JButton balanceButton = new JButton("CHECK BALANCE");

    double balance = 10590.0;

    LoginScreen() {
        setTitle("ATM Login");
        setVisible(true);
        setSize(800, 800);
        setLayout(null);
        setDefaultCloseOperation(JFrame.EXIT_ON_CLOSE);

        // Create a Label with the background image
        ImageIcon backgroundImage = new ImageIcon("atm_background.jpg");
        JLabel backgroundLabel = new JLabel(backgroundImage);
        backgroundLabel.setBounds(0, 0, 800, 800);
        add(backgroundLabel);

        userLabel.setBounds(100, 150, 100, 30);
        passwordLabel.setBounds(100, 220, 100, 30);
        userTextField.setBounds(200, 150, 150, 30);
        passwordField.setBounds(200, 220, 150, 30);
        loginButton.setBounds(150, 300, 100, 30);
        resetButton.setBounds(300, 300, 100, 30);

        add(userLabel);
        add(passwordLabel);
        add(userTextField);
        add(passwordField);
        add(loginButton);
        add(resetButton);
    }
}
```

```

loginButton.addActionListener(this);
resetButton.addActionListener(this);

withdrawButton.setBounds(150, 150, 200, 30);
depositButton.setBounds(150, 220, 200, 30);
balanceButton.setBounds(150, 290, 200, 30);

withdrawButton.setVisible(false);
depositButton.setVisible(false);
balanceButton.setVisible(false);

add(withdrawButton);
add(depositButton);
add(balanceButton);

withdrawButton.addActionListener(this);
depositButton.addActionListener(this);
balanceButton.addActionListener(this);
}

public void actionPerformed(ActionEvent e) {
    if (e.getSource() == loginButton) {
        String userText;
        String passwordText;
        userText = userTextField.getText();
        passwordText = passwordField.getText();
        if (userText.equalsIgnoreCase("admin") &&
passwordText.equalsIgnoreCase("admin")) {
            JOptionPane.showMessageDialog(this, "Login Successful");
            userLabel.setVisible(false);
            passwordLabel.setVisible(false);
            userTextField.setVisible(false);
            passwordField.setVisible(false);
            loginButton.setVisible(false);
            resetButton.setVisible(false);
            withdrawButton.setVisible(true);
            depositButton.setVisible(true);
            balanceButton.setVisible(true);
        } else {
            JOptionPane.showMessageDialog(this, "Invalid Username or Password");
        }
    } else if (e.getSource() == resetButton) {
        userTextField.setText("");
        passwordField.setText("");
    } else if (e.getSource() == withdrawButton) {

```

```

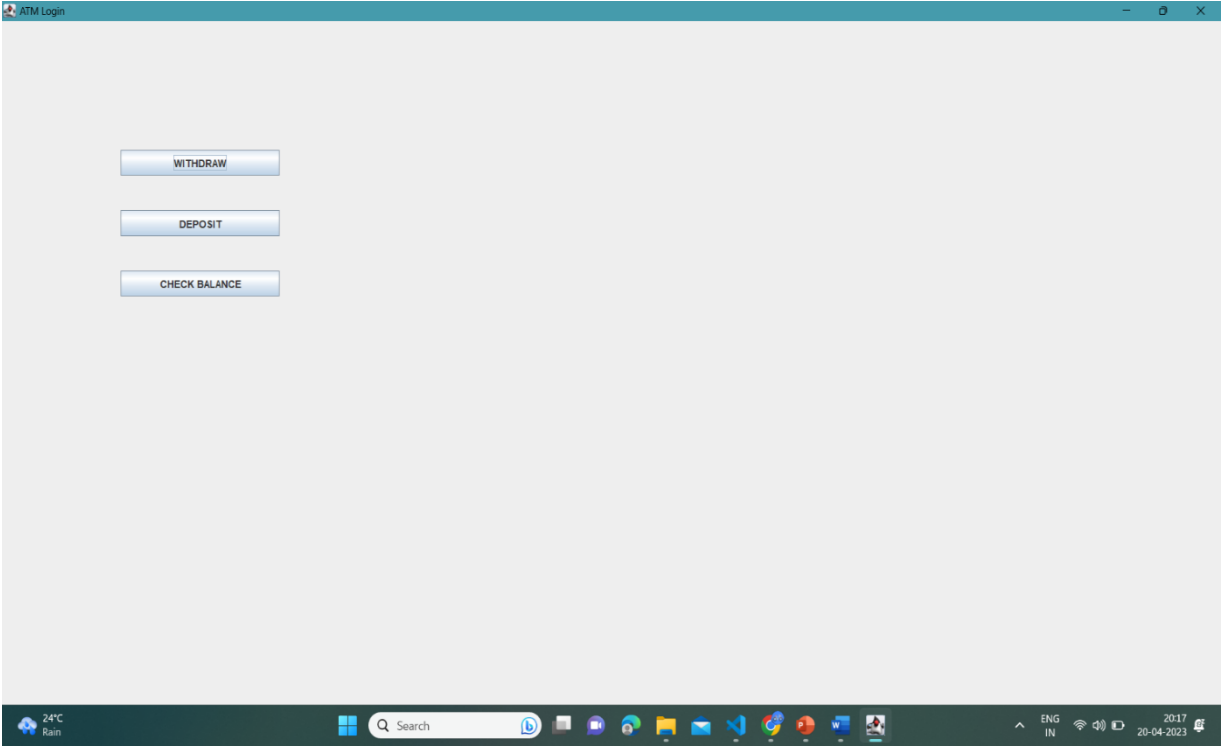
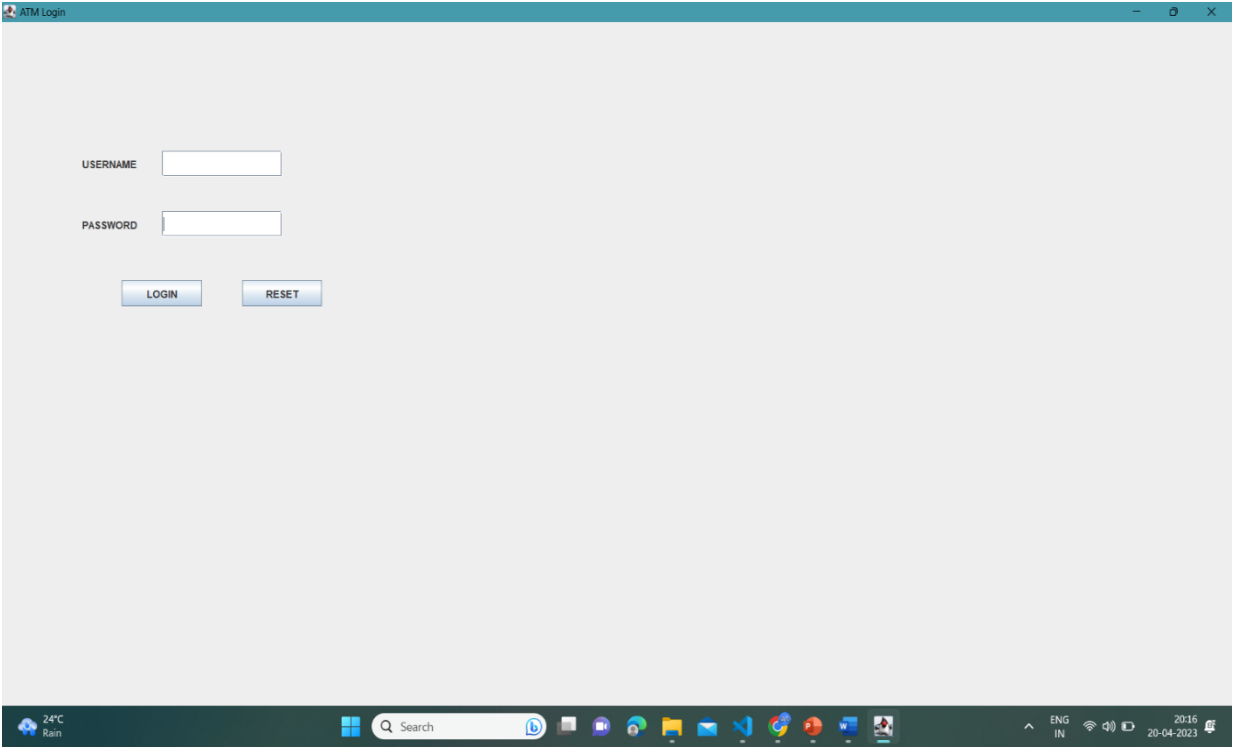
        String amountString = JOptionPane.showInputDialog(this, "Enter amount to
withdraw:");
        if (amountString != null && !amountString.isEmpty()) {
            double amount = Double.parseDouble(amountString);
            if (amount <= balance) {
                balance -= amount;
                JOptionPane.showMessageDialog(this, "Successfully withdrew " +
amount);
            } else {
                JOptionPane.showMessageDialog(this, "Insufficient balance");
            }
        } else {
            JOptionPane.showMessageDialog(this, "Invalid amount");
        }
    } else if (e.getSource() == depositButton) {
        String amountString = JOptionPane.showInputDialog(this, "Enter amount to
deposit:");
        if (amountString != null && !amountString.isEmpty()) {
            double amount = Double.parseDouble(amountString);
            balance += amount;
            JOptionPane.showMessageDialog(this, "Successfully deposited " +
amount);
        } else {
            JOptionPane.showMessageDialog(this, "Invalid amount");
        }
    } else if (e.getSource() == balanceButton) {
        JOptionPane.showMessageDialog(this, "Your account balance is " +
balance);
    }
}

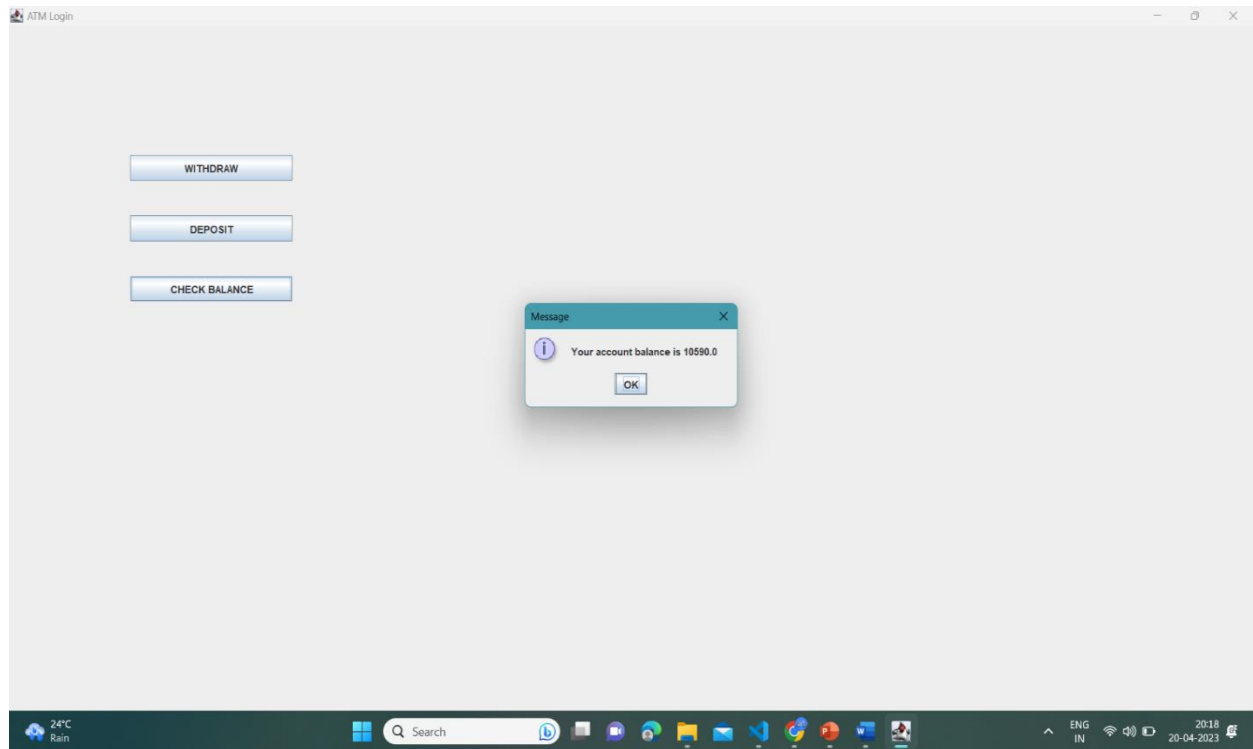
public static void main(String[] args) {
    new LoginScreen();
}
}

```



# Output





## Conclusions

ATMs are an important part of the modern banking system, providing customers with easy and convenient access to financial services. The benefits of ATMs include their availability 24/7, accessibility in various locations, time-saving, increased efficiency, security, and quick access to cash.

The success of ATM systems relies on the integration of advanced hardware and software components, including high-performance CPUs, adequate memory and storage, input/output devices, network connectivity, and security features like encryption and anti-skimming technology. The software requirements for an ATM system include the operating system, ATM software, security software, network software, database software, and APIs.

Overall, ATMs have revolutionized the banking industry, making it easier and more convenient for customers to perform transactions, access their accounts, and manage their finances. As technology continues to advance, we can expect to see further innovations in the ATM industry, providing even more benefits to customers and financial institutions alike.

## **Future Enhancements**

1. **Biometric Authentication:** The addition of biometric authentication technology, such as fingerprint or facial recognition, could help to further increase the security of ATM transactions.
2. **Contactless Transactions:** The implementation of contactless payment methods, such as NFC or QR codes, would allow customers to make transactions without physically touching the ATM, providing a more hygienic and convenient experience.
3. **Integration with Mobile Devices:** Integrating ATMs with mobile devices could enable customers to perform transactions directly from their smartphones or tablets, eliminating the need to physically visit an ATM.
4. **Personalization:** ATMs could be enhanced to provide a more personalized experience for customers, such as displaying account balances, offering customized transaction options, and providing tailored promotions.
5. **Voice Recognition:** The integration of voice recognition technology could enable customers to perform transactions by speaking to the ATM, providing a more accessible and user-friendly experience for those with disabilities or language barriers.
6. **Artificial Intelligence:** The use of artificial intelligence (AI) could enable ATMs to provide personalized recommendations and predictive insights based on a customer's transaction history and behavior.

