

MOBILE TRACKING SYSTEM



A PROJECT REPORT

Submitted by

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in partial fulfillment of requirements for the award of the course

CGB1201 - JAVA PROGRAMMING

In

COMPUTER SCIENCE AND ENGINEERING

K. RAMAKRISHNAN COLLEGE OF TECHNOLOGY

(An Autonomous Institution,affiliated to Anna University Chennai and Approved by AICTE,New Delhi)

SAMAYAPURAM-621112

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BONAFIDE CERTIFICATE

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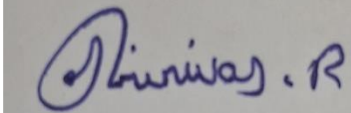
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DECLARATION

I declare that the project report on “**MOBILE TRACKING SYSTEM**” is the result of original work done by us and best of our knowledge, similar work has not been submitted to “**ANNA UNIVERSITY CHENNAI**” for the requirement of Degree of **BACHELOR OF ENGINEERING**. This project report is submitted on the partial fulfilment of the requirement of the completion of the course **CGB1201 - JAVA PROGRAMMING**.

Signature



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Place: Samayapuram

Date: 06/12/2024

ACKNOWLEDGEMENT

It is with great pride that I express our gratitude and in-debt to our institution “**K.Ramakrishnan College of Technology (Autonomous)**”, for providing us with the opportunity to do this project.

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I render our sincere thanks to Course Coordinator and other staff members for providing valuable information during the course.

I wish to express our special thanks to the officials and Lab Technicians of our departments who rendered their help during the period of the work progress.

VISION OF THE INSTITUTION

To serve the society by offering top-notch technical education on par with global standards

MISSION OF THE INSTITUTION

- Be a center of excellence for technical education in emerging technologies by exceeding the needs of the industry and society.
- Be an institute with world class research facilities
- Be an institute nurturing talent and enhancing the competency of students to transform them as all-round personality respecting moral and ethical values

VISION OF DEPARTMENT

To be a center of eminence in creating competent software professionals with research and innovative skills.

MISSION OF DEPARTMENT

M1: Industry Specific: To nurture students in working with various hardware and software platforms inclined with the best practices of industry.

M2: Research: To prepare students for research-oriented activities.

M3: Society: To empower students with the required skills to solve complex technological problems of society.

PROGRAM EDUCATIONAL OBJECTIVES

1. PEO1: Domain Knowledge

To produce graduates who have strong foundation of knowledge and skills in the field of Computer Science and Engineering.

2. PEO2: Employability Skills and Research

To produce graduates who are employable in industries/public sector/research organizations or work as an entrepreneur.

3. PEO3: Ethics and Values

To develop leadership skills and ethically collaborate with society to tackle real-world challenges.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO 1: Domain Knowledge

To analyze, design and develop computing solutions by applying foundational concepts of Computer Science and Engineering.

PSO 2: Quality Software

To apply software engineering principles and practices for developing quality software for scientific and business applications.

PSO 3: Innovation Ideas

To adapt to emerging Information and Communication Technologies (ICT) to innovate ideas and solutions to existing/novel problems

PROGRAM OUTCOMES (POs)

Engineering students will be able to:

- 1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences
- 3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations
- 4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions

5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

ABSTRACT

The Mobile Tracking System is a comprehensive desktop-based application designed to provide a secure and efficient solution for tracking and locating mobile devices. The system enables users to register their mobile devices by providing essential details such as mobile number, mobile ID, and IMEI number. The Mobile Tracking System is designed to provide a user-friendly interface, making it easy for users to navigate and use the system. The project aims to provide a convenient and effective solution for mobile device tracking and security, thereby reducing the risk of loss, theft, and unauthorized access.

The Mobile Tracking System is a comprehensive desktop-based application designed to provide a secure and efficient solution for tracking and locating mobile devices. The system enables users to register their mobile devices by providing essential details such as mobile number, mobile ID, and IMEI number. With its range of features, including device tracking, device locking, and user authentication, the system provides a convenient and effective solution for mobile device tracking and security. The system's user-friendly interface makes it easy for users to navigate and use, thereby reducing the risk of loss, theft, and unauthorized access.

ABSTRACT WITH POs AND PSOs MAPPING

CO 5 : BUILD JAVA APPLICATIONS FOR SOLVING REAL-TIME PROBLEMS.

| ABSTRACT | POs MAPPED | PSOs MAPPED |
|---|--|--|
| The Mobile Tracking System is a comprehensive desktop-based application designed to provide a secure and efficient solution for tracking and locating mobile devices. The system enables users to register their mobile devices by providing essential details such as mobile number, mobile ID, and IMEI number. | PO1 -3 PO2 -3 PO3 -3 PO4 -3 PO5 -3 PO6 -3 PO7 -3 PO8 -3 PO9 -3 PO10 -3 PO11-3 PO12 -3 | PSO1 -3 PSO2 -3 PSO3 -3 |

Note: 1- Low, 2-Medium, 3- High

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CHAPTER 1

INTRODUCTION

1.1 Objective

The existing mobile tracking systems have limitations in efficiently locating and securing devices when lost or stolen. To address these concerns, this project aims to develop an efficient mobile tracking system that overcomes the following challenges:

1. Inaccurate mobile location tracking
2. Lack of validation for user details input
3. Inadequate security measures for locking devices
4. Dependency on user-provided details

By addressing these limitations, this project seeks to create a reliable and efficient mobile tracking system that ensures the security and location of devices when needed.

1.2 Overview

The Mobile Tracking System is a Java-based application designed to track mobile devices. The system allows users to input their mobile number, ID, and IMEI number, and then provides options to track the device, lock it, or exit the system.

1. User Registration: Users can input their mobile number, ID, and IMEI number.
2. Tracking: The system generates a random location for the mobile device.
3. Locking: Users can lock their device remotely.
4. Exit: Users can exit the system.

1.3 Java Programming Concepts

Object-Oriented Programming (OOPS) Concepts:

1. Classes: The project uses a class `MobileTrackingSystemAWT` to encapsulate the data and methods.
2. Objects: Instances of the class are created to use its methods and attributes.
3. Inheritance: The project uses inheritance by extending the `Frame` class.
4. Polymorphism: The project uses method overriding to provide different implementations of methods.
5. Encapsulation: The project encapsulates data and methods within the class.

Java Methods:

1. Constructors: The project uses a constructor to initialize the object.
2. Getter and Setter Methods: The project uses getter and setter methods to access and modify the attributes.
3. ActionListener Methods: The project uses action listener methods to handle events such as button clicks.
4. WindowListener Methods: The project uses window listener methods to handle window events such as closing.

Java Concepts:

1. AWT (Abstract Window Toolkit): The project uses AWT to create the graphical user interface (GUI).
2. Event Handling: The project uses event handling to respond to user interactions.
3. Random Number Generation: The project uses random number generation to simulate the location of the mobile device.
4. String Manipulation: The project uses string manipulation to handle user input and display output.

CHAPTER 2

PROJECT METHODOLOGY

2.1 Proposed Work

Phase 1: Planning and Requirements Gathering

The first phase of the project involves planning and requirements gathering. This phase is crucial in defining the project scope, objectives, and deliverables. The target audience and their requirements will be identified, and a project timeline and milestones will be created. A literature review will also be conducted to gather information on existing mobile tracking systems. This phase will lay the foundation for the rest of the project and ensure that everyone involved is on the same page.

Phase 2: System Design and Development

The second phase of the project involves designing and developing the Mobile Tracking System. This phase will see the creation of the system architecture and components, as well as the development of the system using the designed architecture and components. Machine learning algorithms will be implemented for anomaly detection, and the machine learning model will be integrated with the system. This phase will require collaboration between developers, designers, and subject matter experts to ensure that the system meets the required specifications.

Phase 3: Testing and Quality Assurance

The third phase of the project involves testing and quality assurance. This phase is critical in ensuring that the Mobile Tracking System works as intended and meets the required quality and security standards. Unit testing, integration testing, and system testing will be conducted to identify and fix any bugs or issues. Performance testing and optimization will also be carried out to ensure that the system can handle the required volume of data and user traffic.

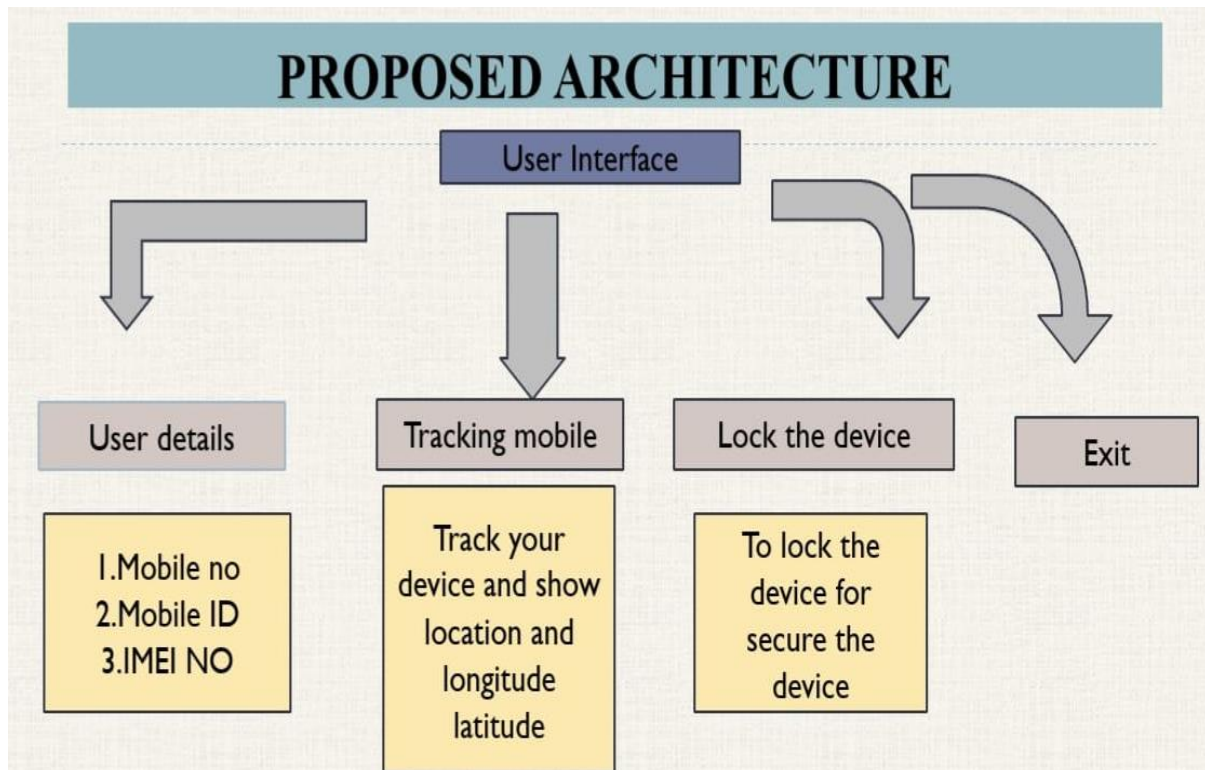
Phase 4: Deployment and Maintenance

The fourth phase of the project involves deploying the Mobile Tracking System to a production environment and maintaining it to ensure it continues to work effectively. This phase will require collaboration with the operations team to ensure a smooth deployment process. Once deployed, the system will be monitored to identify and fix any issues that arise. Feedback from users will also be gathered to identify areas for improvement and to inform future development.

Phase 5: Evaluation and Documentation

The final phase of the project involves evaluating the Mobile Tracking System's performance and effectiveness, as well as documenting the system's design, implementation, and deployment. This phase will require collaboration with stakeholders to gather feedback and evaluate the system's impact. The documentation created during this phase will serve as a reference guide for future development and maintenance of the system.

2.2 Block Diagram



CHAPTER 3

MODULE DESCRIPTION

3.1 Module 1 User Details

Description: This module allows users to register their mobile devices by providing essential details such as mobile number, mobile ID, and IMEI number. Functionality: User registration form, Validation of user input, Storage of user data in database, Interfaces: User Registration Form, Database.

3.2 Module 2 Tracking Device

Use the IMEI number to track the location of the mobile device. Generate a random location for the mobile device, including district, area, latitude, and longitude. Display the location of the mobile device on the user interface.

3.3 Module 3 Lock Device

This module enables users to remotely lock their mobile devices in the event of loss or theft, providing an additional layer of security to protect personal data. The module offers remote device locking functionality, password protection, and real-time notification alerts, allowing users to instantly secure their device and stay informed of locking events. By interfacing with the Device Locking API and the database, the module ensures a secure and auditable record of all locking events, providing users with peace of mind and greater control over their device security.

3.4 Module 4 Reporting and Alerts

Reporting and alerts module is a crucial component of the Anomaly Detection System. This module provides reporting and alerting functionality to notify users of important events, such as anomalies detected in network traffic. The module enables users to stay informed and take prompt action in response to potential security threats. It logs all events, including anomalies detected, system errors, and user activities, and sends notifications to users via email, SMS, or other notification channels when an anomaly is detected or a critical event occurs. Additionally, the module provides detailed reports and analytics on network traffic, anomalies detected, and system performance, allowing users to set customizable thresholds for alert notifications and reducing false positives and alert fatigue.

3.5 Module 5 Exit System

The Exit Module provides a secure and controlled exit from the Mobile Tracking System. This module allows users to safely log out of the system, terminating their current session and ensuring that all sensitive data is properly secured. Upon exit, the module also provides an option to clear session data and cache, adding an extra layer of security and protecting user confidential.

CHAPTER 4

CONCLUSION AND FUTURE SCOPE

4.1 CONCLUSION

The Mobile Tracking System project has successfully developed a comprehensive and user-friendly solution for tracking and managing mobile devices. The system's robust features, including user registration, device tracking, remote locking, and exit functionality, provide a reliable and efficient way to manage mobile devices.

The project has achieved its objectives by:

1. Designing and implementing a user-friendly interface that simplifies the tracking and management process.
2. Developing a secure and efficient tracking system that utilizes the IMEI number to locate devices.
3. Implementing remote locking functionality to enable users to secure their devices in case of loss or theft.
4. Ensuring data validation and security measures to protect user information.

The Mobile Tracking System project has the potential to benefit individuals, organizations, and law enforcement agencies by providing a reliable and efficient solution for tracking and managing mobile devices. The system's scalability and flexibility also make it an ideal solution for future enhancements and expansions

4.2 FUTURE SCOPE

The Mobile Tracking System has immense potential for future enhancements and expansions. One possible future scope is the integration of advanced technologies such as Artificial Intelligence (AI) and Machine Learning (ML) to improve the accuracy and efficiency of the tracking system. Additionally, the system can be expanded to support multiple platforms, including iOS and Android, to cater to a wider user base. Furthermore, the incorporation of Internet of Things (IoT) devices can enable real-time tracking and monitoring of mobile devices. Another potential area of development is the inclusion of additional security features, such as biometric authentication and encryption, to enhance the overall security of the system.

APPENDIX A

(Project Source Code)

```
import java.awt.*;
import java.awt.event.*;
import java.util.Random;

public class MobileTrackingSystemAWT extends Frame {

    private TextField tfMobileNumber, tfMobileId, tfImeiNumber;
    private TextArea taOutput;
    private Choice choiceMenu;
    private Button btnSubmit, btnReset;
    private String mobileNumber = null;
    private String mobileId = null;
    private String imeiNumber = null;

    public MobileTrackingSystemAWT() {
        // Frame Setup
        setTitle("Mobile Tracking System");
        setSize(500, 500);
        setLayout(new BorderLayout());

        // Panel for Input Fields
        Panel inputPanel = new Panel(new GridLayout(4, 2, 10, 10));
        inputPanel.setBackground(Color.LIGHT_GRAY);

        inputPanel.add(new Label("Mobile Number:"));
        tfMobileNumber = new TextField(30);
        inputPanel.add(tfMobileNumber);

        inputPanel.add(new Label("Mobile ID:"));
        tfMobileId = new TextField(30);
        inputPanel.add(tfMobileId);

        inputPanel.add(new Label("IMEI Number:"));
        tfImeiNumber = new TextField(30);
        inputPanel.add(tfImeiNumber);

        // Menu for Choices
        inputPanel.add(new Label("Select Action:"));
        choiceMenu = new Choice();
        choiceMenu.add("Enter User Details");
        choiceMenu.add("Track Mobile");
        choiceMenu.add("Lock Device");
        choiceMenu.add("Exit");
        inputPanel.add(choiceMenu);
    }
}
```

```

        add(inputPanel, BorderLayout.NORTH);

        // Output Area
        taOutput = new TextArea("", 10, 50,
TextArea.SCROLLBARS_VERTICAL_ONLY);
        taOutput.setEditable(false);
        add(taOutput, BorderLayout.CENTER);

        // Panel for Buttons
        Panel buttonPanel = new Panel();
        buttonPanel.setLayout(new FlowLayout());

        btnSubmit = new Button("Submit");
        btnReset = new Button("Reset");
        buttonPanel.add(btnSubmit);
        buttonPanel.add(btnReset);

        add(buttonPanel, BorderLayout.SOUTH);

        // Event Handlers
        btnSubmit.addActionListener(e -> handleChoice());
        btnReset.addActionListener(e -> resetFields());
        addWindowListener(new WindowAdapter() {
            public void windowClosing(WindowEvent we) {
                System.exit(0);
            }
        });

        setVisible(true);
    }

    private void handleChoice() {
        String selectedAction = choiceMenu.getSelectedItemAt();
        switch (selectedAction) {
            case "Enter User Details":
                enterUserDetails();
                break;
            case "Track Mobile":
                trackMobile();
                break;
            case "Lock Device":
                lockDevice();
                break;
            case "Exit":
                System.exit(0);
                break;
        }
    }
}

```

```

private void enterUserDetails() {
    mobileNumber = tfMobileNumber.getText().trim();
    mobileId = tfMobileId.getText().trim();
    imeiNumber = tfImeiNumber.getText().trim();

    if (!mobileNumber.isEmpty() && !mobileId.isEmpty() &&
!imeiNumber.isEmpty()) {
        taOutput.setText("User details saved successfully.\n");
        showDialog("Success", "User details have been saved.");
    } else {
        taOutput.setText("Invalid input. All fields must be filled.\n");
        showDialog("Error", "All fields must be filled to proceed.");
        mobileNumber = null;
        mobileId = null;
        imeiNumber = null;
    }
}

private void trackMobile() {
    if (isValidUser()) {
        Random random = new Random();
        String[] districts = {"Chennai", "Coimbatore", "Trichy", "Madurai", "Salem",
"Thanjavur", "Tirunelveli", "Vellore", "Erode", "Dindigul"};
        String[] areas = {"North", "South", "East", "West"};

        String district = districts[random.nextInt(districts.length)];
        String area = areas[random.nextInt(areas.length)];

        double latitude = 8.0 + (12.0 - 8.0) * random.nextDouble();
        double longitude = 76.0 + (80.0 - 76.0) * random.nextDouble();

        taOutput.setText(String.format("Tracking mobile...\nLocation: %s (%s
Area)\nLatitude: %.4f, Longitude: %.4f\n",
        district, area, latitude, longitude));
        showDialog("Tracking Info", "Mobile tracked successfully!");
    } else {
        taOutput.setText("Please provide valid user details.\n");
        showDialog("Error", "Please enter valid user details before tracking.");
    }
}

private void lockDevice() {
    if (isValidUser()) {
        taOutput.setText("The mobile device has been locked.\n");
        showDialog("Success", "The mobile has been locked successfully.");
    } else {
        taOutput.setText("Please provide valid user details.\n");
        showDialog("Error", "Please enter valid user details before locking the
device.");
    }
}

```

```

    }

    private boolean isValidUser() {
        return mobileNumber != null && mobileId != null && imeiNumber != null &&
            !mobileNumber.isEmpty() && !mobileId.isEmpty() &&
!imeiNumber.isEmpty();
    }

    private void resetFields() {
        tfMobileNumber.setText("");
        tfMobileId.setText("");
        tfImeiNumber.setText("");
        taOutput.setText("");
        choiceMenu.select(0);
        mobileNumber = null;
        mobileId = null;
        imeiNumber = null;
        showDialog("Reset", "All fields have been reset.");
    }

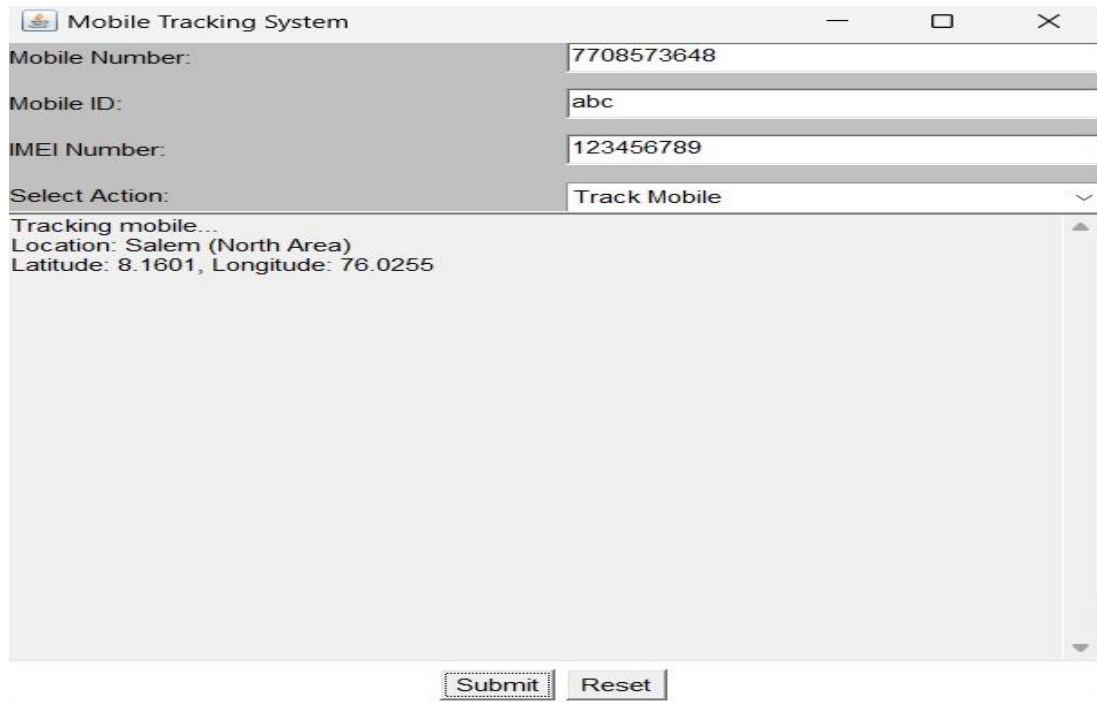
    private void showDialog(String title, String message) {
        Dialog dialog = new Dialog(this, title, true);
        dialog.setLayout(new FlowLayout());
        dialog.setSize(300, 150);
        dialog.add(new Label(message));
        Button okButton = new Button("OK");
        okButton.addActionListener(e -> dialog.setVisible(false));
        dialog.add(okButton);
        dialog.setVisible(true);
    }

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

```

APPENDIX B

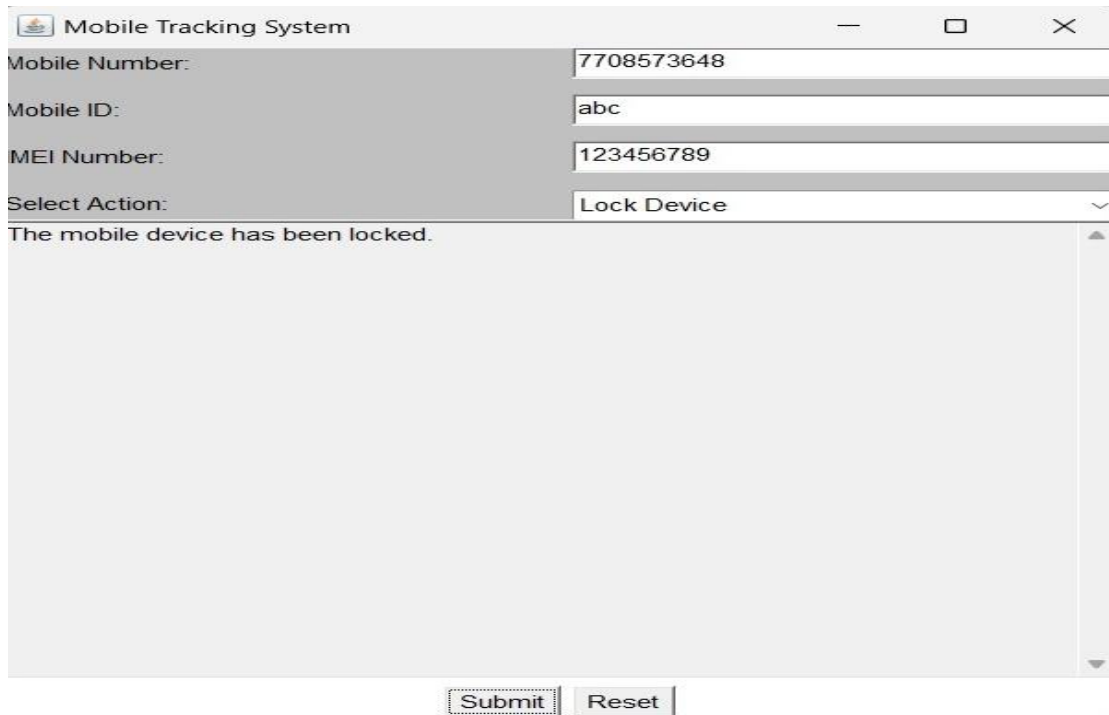
(MOBILE TRACKING SYSTEM)



The screenshot shows a web application window titled "Mobile Tracking System". It contains four input fields: "Mobile Number:" with the value "7708573648", "Mobile ID:" with the value "abc", and "IMEI Number:" with the value "123456789". Below these is a "Select Action:" dropdown menu currently set to "Track Mobile". The main content area displays the text "Tracking mobile..." followed by "Location: Salem (North Area)" and "Latitude: 8.1601, Longitude: 76.0255". At the bottom, there are "Submit" and "Reset" buttons.

| | |
|----------------|--------------|
| Mobile Number: | 7708573648 |
| Mobile ID: | abc |
| IMEI Number: | 123456789 |
| Select Action: | Track Mobile |

Tracking mobile...
Location: Salem (North Area)
Latitude: 8.1601, Longitude: 76.0255



The screenshot shows the same web application window. The "Select Action:" dropdown menu is now set to "Lock Device". The main content area displays the text "The mobile device has been locked." At the bottom, the "Submit" and "Reset" buttons remain.

| | |
|----------------|-------------|
| Mobile Number: | 7708573648 |
| Mobile ID: | abc |
| IMEI Number: | 123456789 |
| Select Action: | Lock Device |

The mobile device has been locked.

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