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CHILD SAFETY MADE EASY WITH PARENT HOOK WRISTBAND

Kurapati Srujana[*1], DS Ramkiran[*2], Koppisetti Gowthami[*3], Maroju Deepika[*4]

[*1]Post Graduate Student, Department Of Artificial Intelligence Kakinada Institute Of Engineering & Technology (Approved By AICTE & Affiliated To JNT University Kakinada) Yanam Road, Korangi-533461, E.G. Dist. (A.P), India.

[*2]Professor, Department Of Artificial Intelligence Kakinada Institute Of Engineering & Technology (Approved By AICTE & Affiliated To JNT University Kakinada) Yanam Road, Korangi-533461, E.G. Dist. (A.P), India.

[*3,4]Assistant Professor, Department Of ECE, Kakinada Institute Of Engineering & Technology (Approved By AICTE & Affiliated To JNT University Kakinada) Yanam Road, Korangi-533461, E.G. Dist. (A.P), India.

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ABSTRACT

Parent-Hook is a child safety wristband designed to help track and protect children if they get lost. Made from soft cotton webbing, this comfortable and durable wristband features a QR code, a Cloud URL, and parent contact information. It is sensor-free and chip-free, ensuring it is safe for daily wear. If a child goes missing, authorities can quickly access crucial information through the QR code and Cloud URL, while parents receive real-time updates and alerts. Parent-Hook provides peace of mind for parents, making it easier to keep children safe in public places. Its ease of use and robust security features have been positively received by both parents and authorities, making it a valuable tool for child safety worldwide.

Keywords: Child Safety, Parent-Hook Wristband, QR Code, Real-Time Updates, Child Tracking, Parent Contact Information.

I. INTRODUCTION

Child safety is a pressing concern in India, where the high population and increasing crimes against children necessitate a reliable child tracking system to alleviate fears of kidnapping and missing children, especially as many parents work outside the home. Public security agencies must enhance their systems with modern technologies to address these issues. The smart cities paradigm aims to create a favorable environment for children to live and learn but faces challenges due to complex urban environments, such as construction sites and crowded areas, which lack adequate safety conditions. Children's curiosity and lack of awareness about dangers make them vulnerable to various threats, but mobile technology can play a crucial role in ensuring their safety by enabling quick communication and access to emergency services.

The security of children is a significant concern for public security agencies, which need to improve their systems with modern technologies. To address parents' concerns about their child's safety, technology can be effectively blended into everyday life. The smart cities paradigm aims to provide a favorable environment for children to live and learn but faces challenges due to complex urban environments like construction sites and crowded areas, which lack adequate safety conditions. Children, being curious and unaware of surrounding dangers, are particularly vulnerable. Mobile technology can play a vital role in ensuring their safety by enabling quick communication and access to emergency services. This project introduces Parent-Hook, a child-tracking system that uses smartphones to create a safe environment for children. The system includes a wearable device for children, a smartphone app for parents, and a web portal for authorities. The wearable device features a GPS tracker, a panic button, and a QR code containing the child's information. In an emergency, the child can press the panic button to send an alert to the parent's smartphone app, which provides real-time location tracking. Authorities can scan the QR code on the wearable device to access the child's information, enhancing overall child safety.

The Parent-Hook system's architecture is designed to be scalable and flexible, facilitating seamless integration of future enhancements and additional features. This modular approach allows the system to evolve and adapt to changing requirements and technological advancements, ensuring long-term sustainability and effectiveness.

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Adhering to industry best practices and academic standards, the development team employed a systematic and iterative approach to create a reliable and efficient system that addresses the complex issue of child safety. The Parent-Hook system includes features such as real-time location tracking, location history, and alerts for suspicious activity, and is designed to be user-friendly and accessible, providing parents with peace of mind regarding their child's safety. The system architecture consists of a frontend for user interaction, a backend for data processing, and a database for storing the child's information and location data. The development methodology involved a thorough analysis of requirements, design, development, testing, and deployment, ensuring the creation of a high-quality system that meets the needs of its users and stakeholders.

II. LITERATURE SURVEY

[1] Sidramappa, Nataraj M C explained that Millions of children commute between home and school daily, and ensuring their safe transportation is a critical issue. Problems such as children getting locked in school buses, missing the bus, or riding the wrong bus highlight the need for a reliable tracking system. This project proposes a bus safety system that uses RFID (Radio Frequency Identification) and GSM technologies to control the entry and exit of students from school buses. The system tracks students as they enter and leave the bus, without requiring additional actions from students or drivers. Upon a successful journey, the system sends an SMS notification to the management to confirm the bus's departure and arrival, ensuring a safer commute for school children.

[2] Khaled Shaaban, Abdelmoula Bekkali, Elyes Ben Hamida, and Abdullah Kadri studied Millions of children who commute between home and school daily, making safe transportation a critical concern for parents. This research tested the use of radio frequency identification (RFID) technology to track and monitor children during their school bus trips. The child safety system developed utilizes passive RFID technology for its efficient tracking, low cost, and easy maintenance. Lab and public tests confirmed the effectiveness and stability of RFID tags for this purpose. A questionnaire revealed that over 95% of parents felt this solution would alleviate their anxiety and provide a reliable tool to track their children during their commute.

[3] Leonardo D'Errico, Fabio Franchi, Fabio Graziosi, Claudia Rinaldi, and Francesco Tarquini proposed a system to enhance children's safety during their daily commute to and from school using school buses. The solution leverages the IoT paradigm along with RFID and GPS localization techniques to ensure children follow the main steps of their journey, such as boarding the school bus and entering or leaving school. The applicability of RFID technology for efficient tracking and monitoring of children during their bus trips is tested. The paper discusses the technologies and architecture of the proposed solution and presents the prototype. A test phase is planned to verify the system's correct operation.

[4] Priti Jadhav, Kajal Ingale, ShifaAsari, and KalidasBhawale explained how Women have historically faced significant challenges and inequality compared to men, enduring harsh treatment such as heavy workloads, dowry demands, and even infanticide. While progress has been made in reducing these issues in the present century, crimes against women, including abduction, murder, rape, and harassment, continue to rise. This assessment focuses on a women's tracking system aimed at enhancing their safety and security. Despite numerous tracking devices available, crime rates persist in increasing. There is a pressing need to effectively reduce these crimes through the implementation of a versatile tracking system that integrates various technologies into a unified solution.

[5] Ghaith Bader Al-Suwaidi, and Mohamed Jamal Zemerly, introduced a mobile application focused on Location-Based Services (LBS) utilizing GPS as the primary location provider. The application's main goal is to allow users to locate their family members and receive alerts when friends are nearby. Implemented in J2ME, the application combines recent and older APIs to ensure compatibility across various mobile devices. The server-side implementation utilizes PHP for reliability and to prevent server overload, with MySQL as the database backend. The application achieves an average location accuracy of a few meters, enhancing its usability and effectiveness in providing location-based functionalities.

[6] Loganathan, Aswathi Dileep, and Kamatchi introduced an outdoor IoT tracking system aimed at addressing the increasing crime against children worldwide. The system consists of a child module and a parent module: the child module monitors real-time location and sends data to a cloud-based database, which is then relayed to a mobile application on the parent's device. The mobile app displays the child's location on Google Maps and

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includes additional functionalities. The system utilizes a Raspberry Pi Zero Wireless with a GSM/GPS module for mobile communication, internet access, and location determination. Implementation results demonstrate that when the child moves outside a predefined safe zone, the parent receives a warning message on their mobile device and can view a map displaying the path from their location to the child's current location.

[7] Aditi Gupta and VibhorHarit addressed the growing concern of child security by leveraging rapidly advancing technology. The proposed model aims to alleviate parental worries by offering maximum security and real-time tracking capabilities for children. It introduces a system based on smartphones that allows parents to track their children's locations continuously. In emergencies, children can send a quick message along with their current location via Short Message Services (SMS). The system's effectiveness is validated through testing on the Android platform, ensuring reliability and functionality in safeguarding children.

[8] M Nandini Priyanka, S Murugan, K N H Srinivas, T D S Sarveswararao, and E Kusuma Kumari discussed how Child safety and tracking have become increasingly critical due to rising reports of crimes against children. To address this concern, a smart IoT device has been developed to assist parents in locating and monitoring their children. This system utilizes the LinkIt ONE board programmed in embedded C, incorporating sensors for temperature, heartbeat, and touch, along with modules for GPS, GSM, and a digital camera. The system's novelty lies in its ability to automatically alert parents or caretakers via SMS in emergencies, based on parameters such as touch, temperature, and heartbeat. Parametric analysis of these data points is conducted, and results are graphically presented. Overall, this system ensures enhanced safety and tracking capabilities for children, providing peace of mind to parents and caregivers.

III. SYSTEM ANALYSIS

3.1 EXISTING SYSTEM:

Several researchers have developed innovative systems to prevent student kidnapping using advanced technologies such as GSM, GPS, and IoT. Priti et al. proposed a system that leverages these technologies for real-time location tracking and emergency alerts. Bader et al. developed a J2ME application providing Location-Based Services (LBS) on mobile devices, enabling parents to track their children's location and receive proximity alerts. Loganathan et al. designed a comprehensive system with geo-fencing, child, and parent modules, which includes sensors to detect emotions and cries, and allows parents to receive alerts and track locations. Gupta et al. proposed a child safety model validated on the Android platform, enabling children to send quick messages and share their location via SMS. Nandini et al. developed a smart IoT device for real-time tracking and monitoring, automatically alerting parents via SMS in emergencies using touch, temperature, and heartbeat parameters. These systems showcase the potential of integrating advanced technologies to prevent child kidnapping and ensure safety through real-time tracking, alerts, and monitoring.

3.2 PROPOSED SYSTEM:

Most child tracking systems use GPS and microcontroller chips, which can raise concerns about radiation exposure and privacy. In contrast, the Parent-Hook system offers a safer and more innovative solution by using QR code technology. The QR code is embedded in a wristband worn by the child, allowing parents to access their child's location information through a secure platform. When the child boards or exits the bus, the bus unit team scans the QR code with a dedicated scanner, updating parents in real time about their child's status. Additionally, integrated GPS modules continuously track the child's location, providing precise and up-to-date information. This allows parents to monitor their child's journey and receive alerts if there are any deviations from the expected route. The Parent-Hook system addresses safety, security, and privacy concerns by combining QR code technology with GPS, offering a reliable and efficient way to ensure children's safety and well-being.

IV. SYSTEM DESIGN

4.1 SYSTEM ARCHITECTURE:

The diagram below depicts the entire system architecture for analyzing the most trending articles each year using NLP techniques.

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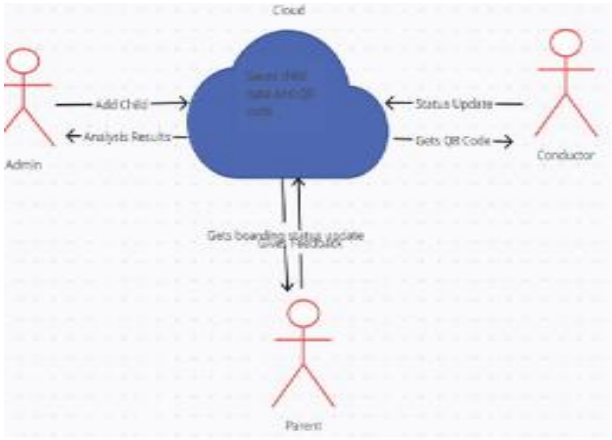

Figure 1: System Architecture

4.2 UML REPRESENTATION:

UML representation can be taken as follows:

4.2.1 Use Case Diagram: The use diagram illustrates the behavior of the framework, subsystem, or class, enabling users to understand how to utilize these components and help developers implement them effectively. Below is the representation of the project on which the system is developed.

Fig 2: Use Representation Case

4.2.2 Sequence Diagram: A sequence diagram is a type of interaction diagram that illustrates the interactions between processes or objects over time. It is derived from the Message Sequence Chart (MSC) and is used to visualize the dynamic behavior of a system.

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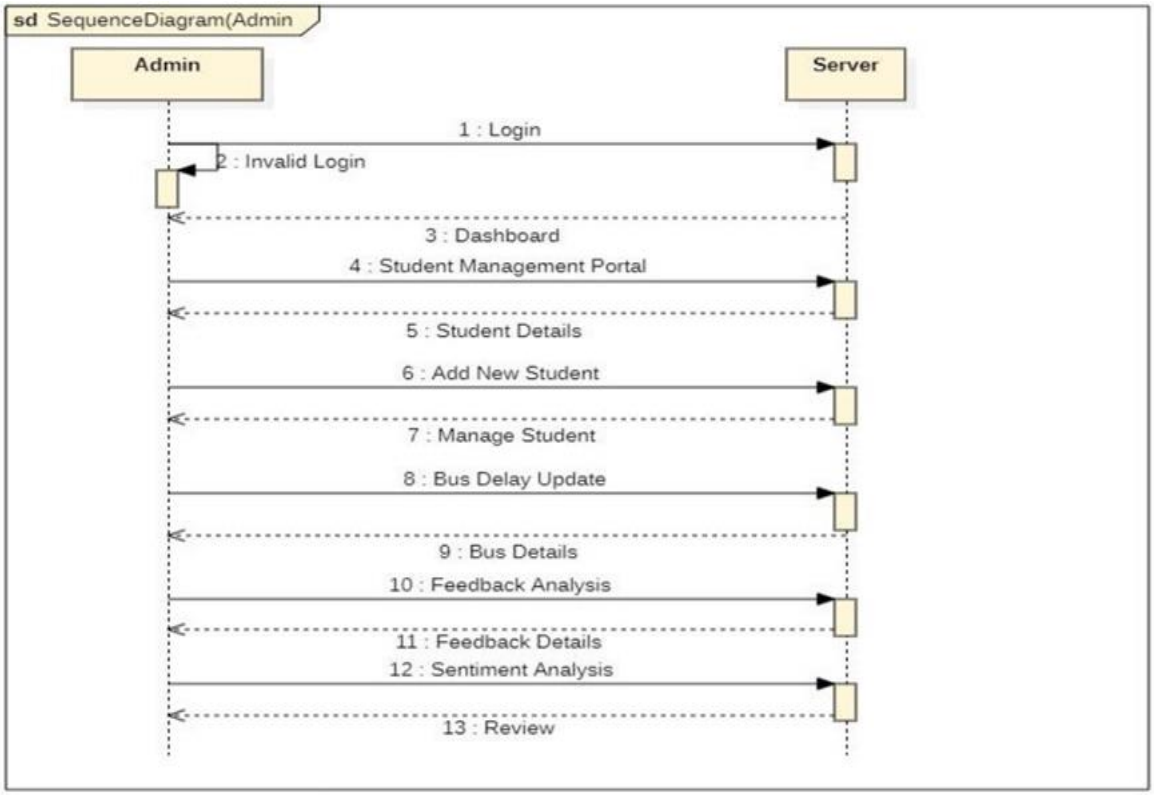

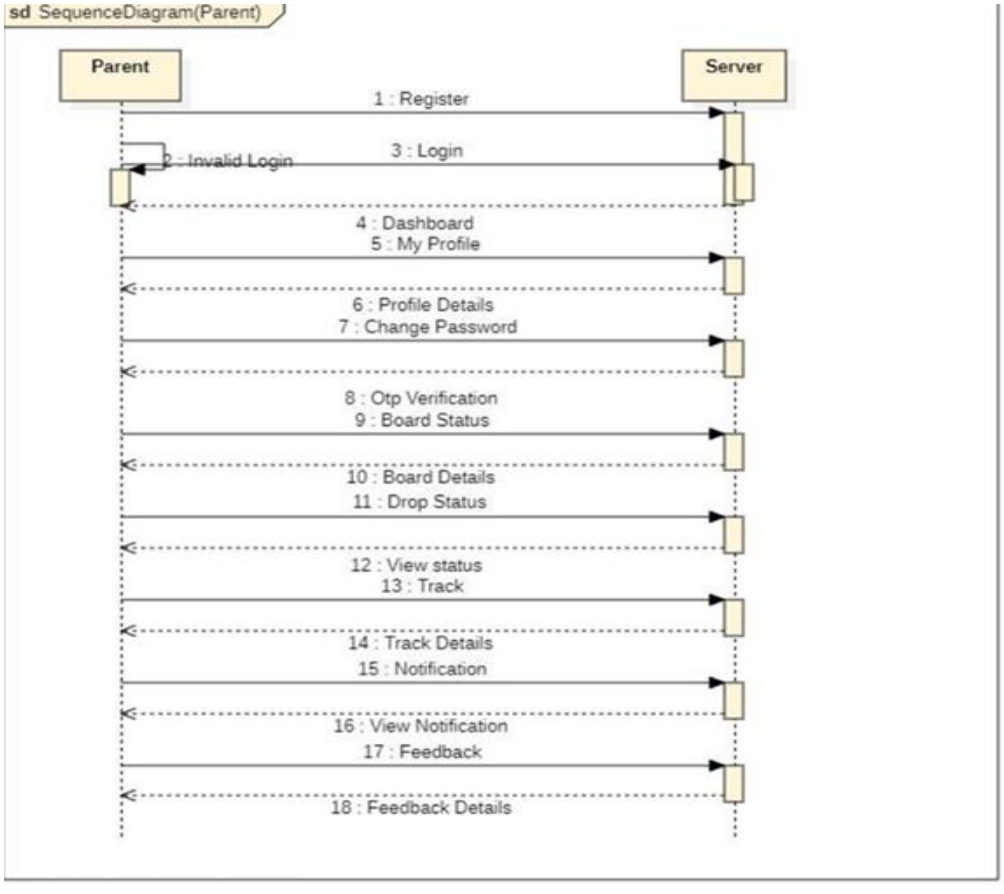

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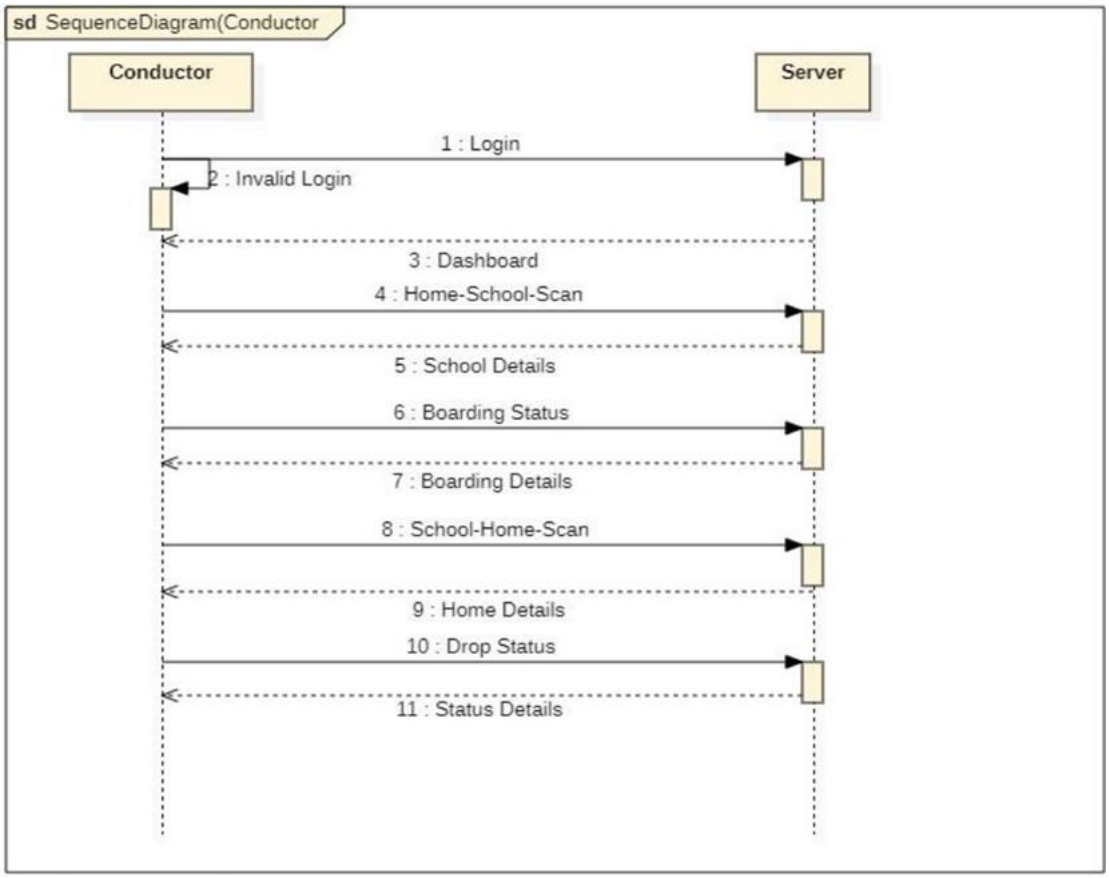
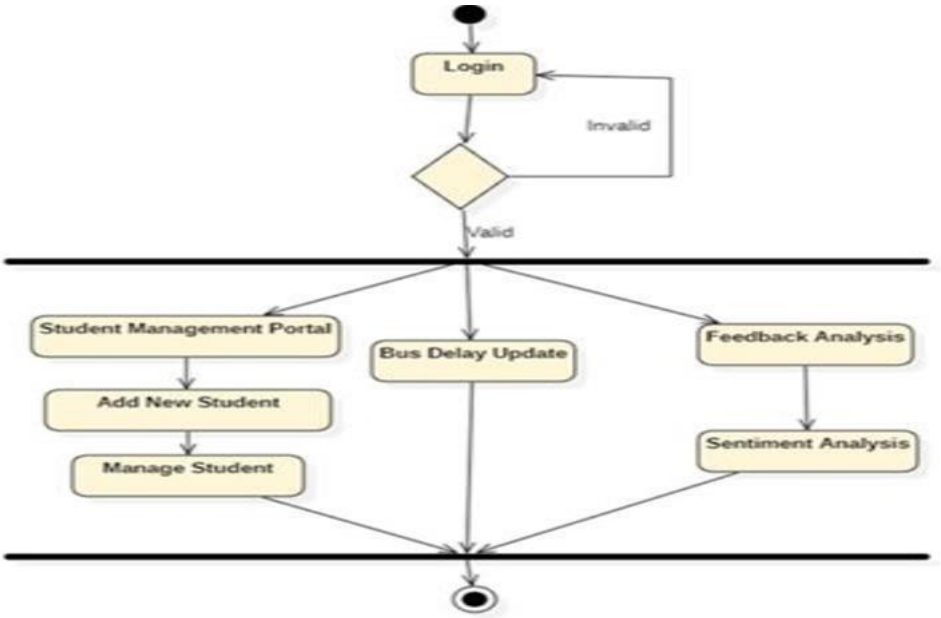


Fig.3 Sequence Diagram

4.2.3 Activity Diagram: An Activity Diagram graphically represents a workflow, detailing step-by-step tasks, decision points, iterations, and parallel processes to describe the business and operational functions of system components.



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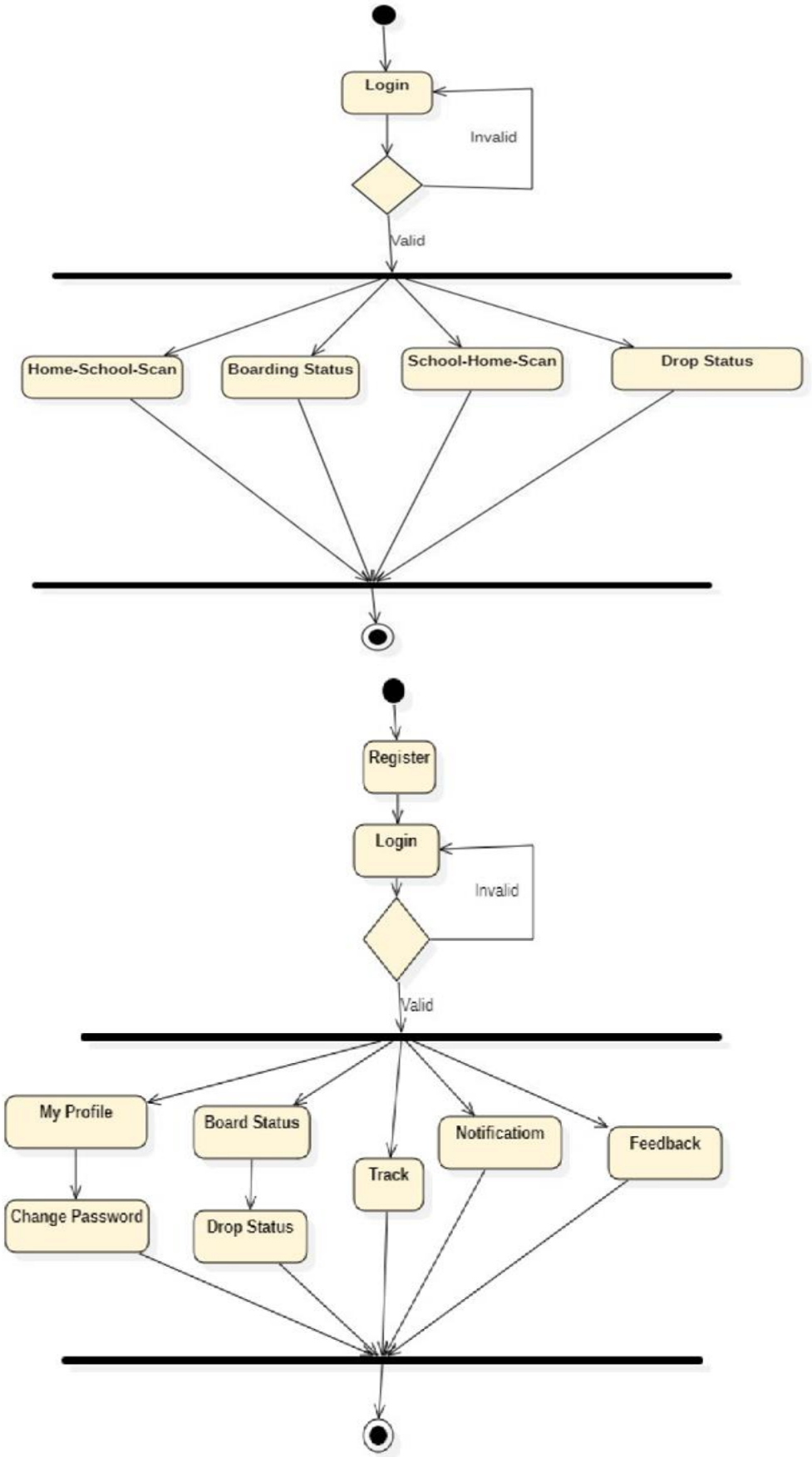

Fig.4. Activity diagram

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4.2.4 Class Diagram: A Class Diagram is a UML (Unified Modeling Language) static structure diagram that illustrates the relationships and interactions between classes, interfaces, and collaborations, providing a graphical representation of classes, their attributes, methods, and relationships.

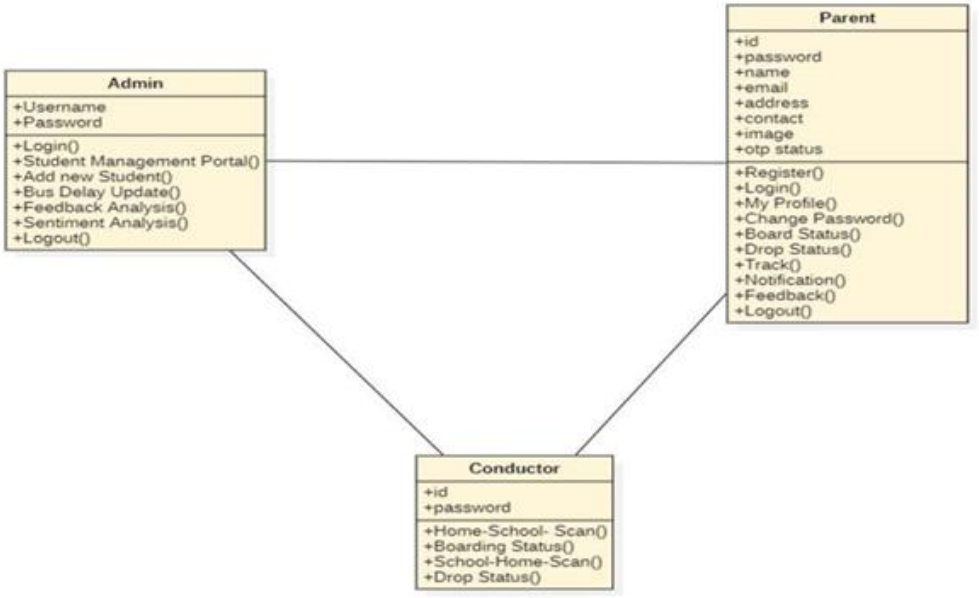

Fig.5 Class Diagram

4.2.5 Deployment Diagram: A Deployment Diagram is a UML (Unified Modeling Language) diagram that illustrates the physical layout and configuration of a system's runtime environment, depicting hardware nodes like servers, devices, and networks, as well as the software components deployed on them.

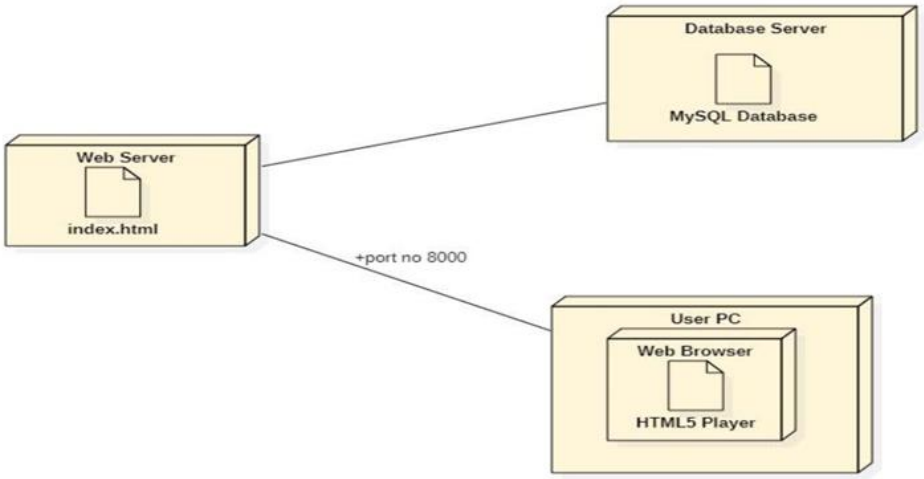

Fig.6. Deployment Diagram

4.2.6 ER Diagram: An ER Diagram (Entity-Relationship Diagram) is a visual representation of the ER Model, a high-level data model used to define the data elements and relationships within a specific system.

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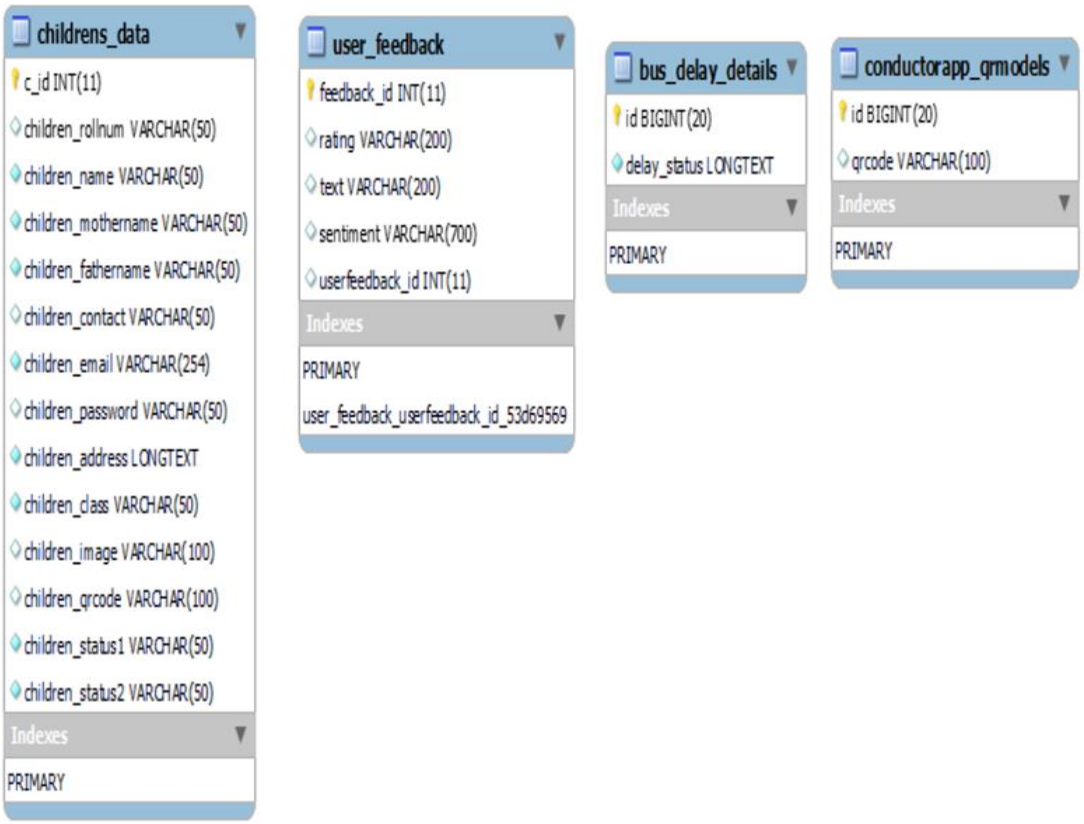

Fig. 7 ER Diagram

V. SYSTEM IMPLEMENTATION

5.1 MODULES:

The system is divided into three modules: Admin, Conductor, and Parent. Admins can log in to manage students by adding new entries or updating existing ones, handle bus delays, and analyze feedback and sentiments. Conductors access the system to log attendance at home and school, update boarding and drop-off statuses, and then log out. Parents use the system to view profiles, change passwords, track boarding and drop-off statuses, monitor their child's location, receive notifications, provide feedback, and securely log out after use.

5.2 SYSTEM REQUIREMENTS:

The system requires a minimum setup of a Pentium IV processor running at 2.2 GHz, with at least 20GB of hard disk space and 1GB of RAM for basic operation. For development purposes, it's recommended to have an i3 5th Gen processor, 500GB of hard disk space, and 4GB of RAM. The software setup includes Windows 10 or 11 as the operating system, Python 3.10 for machine learning tasks, and Visual Studio Code as the primary development environment. Web development utilizes HTML5, CSS3, JavaScript, and Django framework, with MySQL as the database backend. Either WAMP or XAMPP can be used as the application web server, and Rational Rose serves for software design and modeling in the Machine Learning domain.

5.3 SOFTWARE ENVIRONMENT:

The Django Admin automatically generates the administrative interface for your models by using introspection, eliminating the need to write additional code. You can customize the behavior and appearance of the Django Admin by defining admin models, which allow you to specify options such as which fields to display, how to display them, and what actions to allow.

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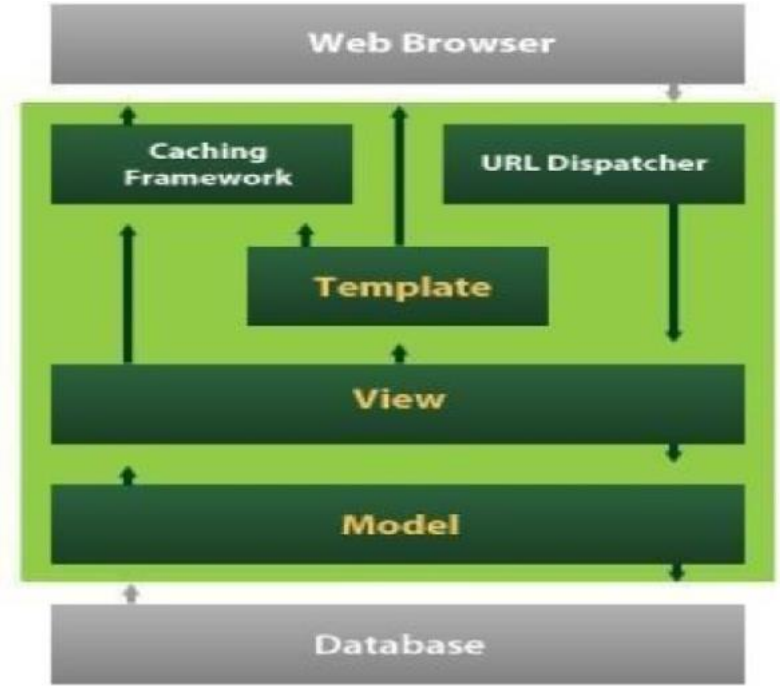

Fig. 8 This figure shows the Django Environment

VI. TESTING

Testing in software development is crucial for uncovering errors, flaws, and weaknesses within a system, ensuring it aligns with specified requirements and user expectations. Different types of tests serve distinct purposes: unit testing validates individual code units, integration testing checks component interactions, system testing evaluates overall system functionality, and acceptance testing ensures user needs are met. Regression testing prevents new issues from arising, performance testing assesses scalability and reliability, security testing finds vulnerabilities, and usability testing confirms user-friendliness. These tests collectively ensure software reliability, stability, and user satisfaction.

6.1 TYPES OF TESTS:

6.1.1 Unit Testing: Testing is a crucial aspect of software development, aimed at uncovering errors, flaws, and weaknesses in a system. Its primary goal is to verify that the software meets specified requirements and user expectations, ensuring it functions without unacceptable failures. Different types of tests serve distinct purposes: unit testing checks individual code units for correctness, integration testing examines how components collaborate, system testing assesses overall compliance with requirements, and acceptance testing confirms user satisfaction. Regression testing prevents new errors post-changes, performance testing evaluates scalability and reliability, security testing ensures protection and usability testing guarantees user-friendliness. Together, these tests ensure software reliability, stability, and alignment with user needs.

6.1.2 Integration Testing: Integration testing plays a crucial role in software development by verifying the seamless interaction of integrated components within a unified program. Unlike unit testing, which focuses on individual component functionality, integration tests are event-driven and assess the overall performance of screens and fields. By building upon successful unit tests, integration testing ensures that combined components operate correctly, consistently, and as intended. Its primary aim is to uncover issues stemming from component interactions that might go unnoticed in isolation, thereby ensuring the software system functions accurately, reliably, and consistently across its integrated parts.

6.1.3 Functional Testing: Functional testing serves as a systematic validation that tested functions are available and align with the outlined business and technical requirements, system documentation, and user manuals. It focuses on several critical aspects: ensuring acceptance of valid input classes, rejection of invalid inputs, exercising identified functions and output classes, and invoking interfacing systems or procedures. The preparation and organization of functional tests are meticulously structured around requirements, key

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functions, and specific test cases, aiming for comprehensive coverage of business process flows, data fields, predefined processes, and successive operations. By identifying additional tests and evaluating current ones, functional testing ensures the system meets specified functional requirements, instilling confidence in its operational capabilities.

6.1.4 System Testing: System testing is a pivotal phase in software testing aimed at validating the entire integrated system against specified requirements. It assesses the system as a whole by simulating real-world scenarios to confirm consistent and predictable outcomes. Unlike unit or integration testing, system testing focuses on overall system functionality rather than individual components. Key aspects include verifying system configuration compliance with requirements, ensuring seamless integration with other systems or components, emphasizing process links and integration points based on defined flows, testing critical workflows and scenarios, and validating system behavior across diverse environments and conditions. Examples include configuration system integration testing, end-to-end system testing, and system acceptance testing. Through systematic system testing, developers ensure that the software system operates correctly, meets user expectations, and is prepared for deployment.

6.1.5 White Box Testing: White Box Testing, also known as Clear Box or Glass Box Testing, involves testers with in-depth knowledge of the internal workings, structure, and coding of the software. Unlike Black Box Testing, which focuses on external functionality without delving into code specifics, White Box Testing aims to uncover issues that might not be reachable through external testing alone. Testers can inspect code logic, syntax, internal program structures, and specific paths such as branches and loops. They also evaluate data flow and variable values to identify potential errors and vulnerabilities. This method requires programming expertise and is typically carried out by developers or experienced testers familiar with the software's internal mechanics. By combining White Box Testing with Black Box Testing, software teams achieve a more thorough testing approach, ensuring both external functionality and internal integrity are rigorously evaluated.

6.1.6 Black Box Testing: Black Box Testing is a software testing approach where testers are unaware of the internal workings, structure, or programming language of the module being tested. Instead, they focus solely on the external behavior of the software. This method involves providing inputs and observing outputs based on specifications, requirements, or user stories, treating the software as a "black box" where internal mechanisms are opaque to the tester. Testing is conducted from a user's perspective, emphasizing functionality, performance, and usability without considering internal implementation details. Black Box Testing is valuable for verifying functionality independently of internal specifics, identifying defects in external behavior, ensuring adherence to specifications, and simulating real-world user interactions. By adopting this approach, testers provide an unbiased assessment of the software's behavior, ensuring it aligns with user expectations and requirements effectively.

6.1.7 Integration Testing: Integration testing is a crucial phase in software development where two or more components or applications are incrementally combined on a single platform to detect interface defects and ensure seamless interaction. Its primary goal is to verify that these integrated components or applications function correctly without errors, facilitating smooth communication between different parts of a software system or across company-level applications. Successful integration testing, as indicated by passing all test cases without encountering defects or errors, confirms that the integrated components operate as intended and their interfaces are free from defects, thereby ensuring reliable and error-free interactions.

6.1.8 Acceptance Testing: User Acceptance Testing (UAT) is a critical project phase involving substantial end-user participation to confirm that the system meets functional requirements and user expectations before deployment. It focuses on testing the system in real-world scenarios and simulating actual usage to ensure it performs as anticipated. The success of UAT is determined by passing all test cases without encountering defects or errors, affirming that the system aligns with user needs and operates flawlessly before release. This phase is pivotal for validating system readiness and ensuring user satisfaction.

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6.2 System and approach:

S. No	Test case ID	Testcase scenario	Test Input	Excepted Output	Actual Output	Result
1	T_001	Admin Login	Credentials	Login Successfully	Login Successfully	Pass
2	T_002	Conductor Login	Credentials	Login Successfully	Login Successfully	Pass
3	T_003	Parent Login	Credentials	Login Successfully	Login Successfully	Pass
4	T_004	Adding Student	Student Information	Student record added	Added student record successfully	Pass
5	T_005	Scanning QR code	QR Code	Scanned successfully	Scanning QR code failed	Fail
6	T_006	Scanning QR code	QR Code	Scanned successfully	Scanned QR successfully	Pass
7	T_007	Status updating	QR Code	Updated boarding and dropping status	Boarding status and Dropping status updated successfully	Pass

VII. RESULTS

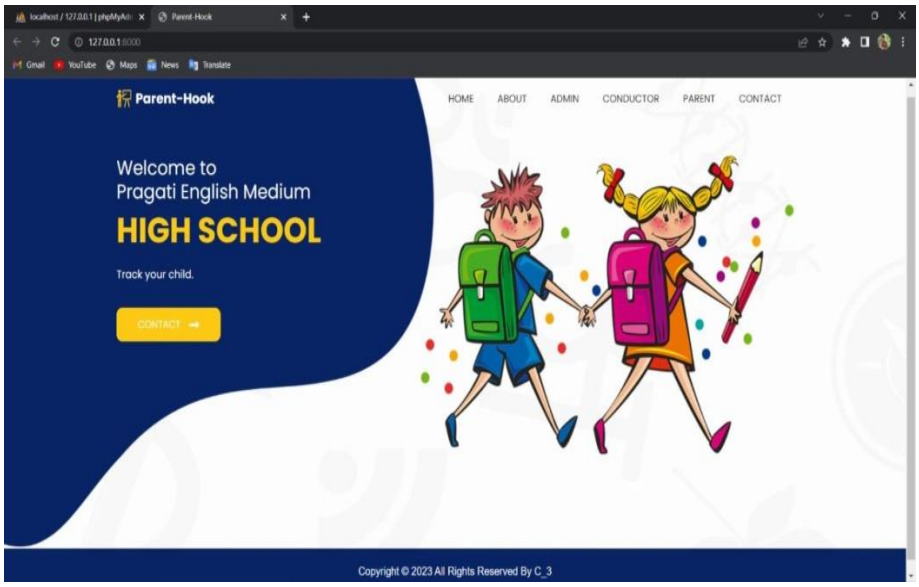

Fig.9 Showing the home page of the Parent-Hook system

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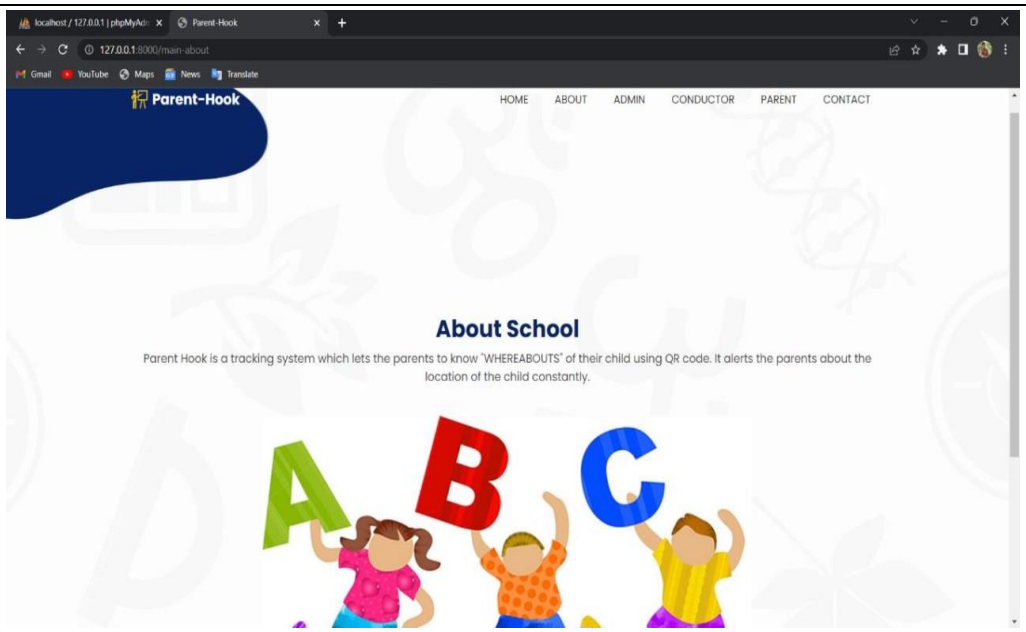

Fig 10 Figure showing About Page of Parent-Hook System

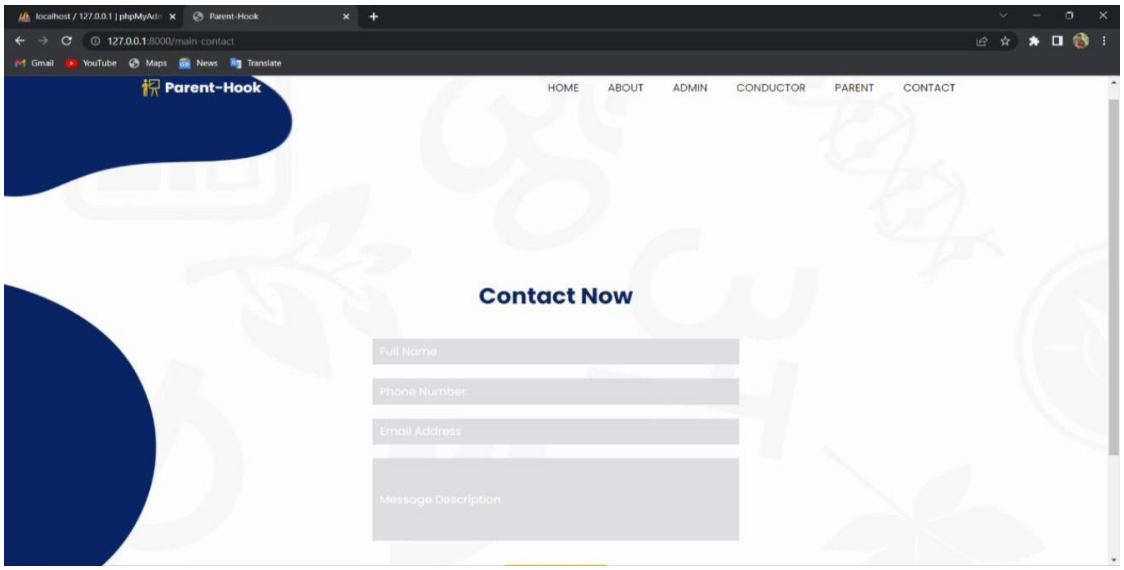

Fig. 11 Figure showing the Contact page of the Parent-Hook System

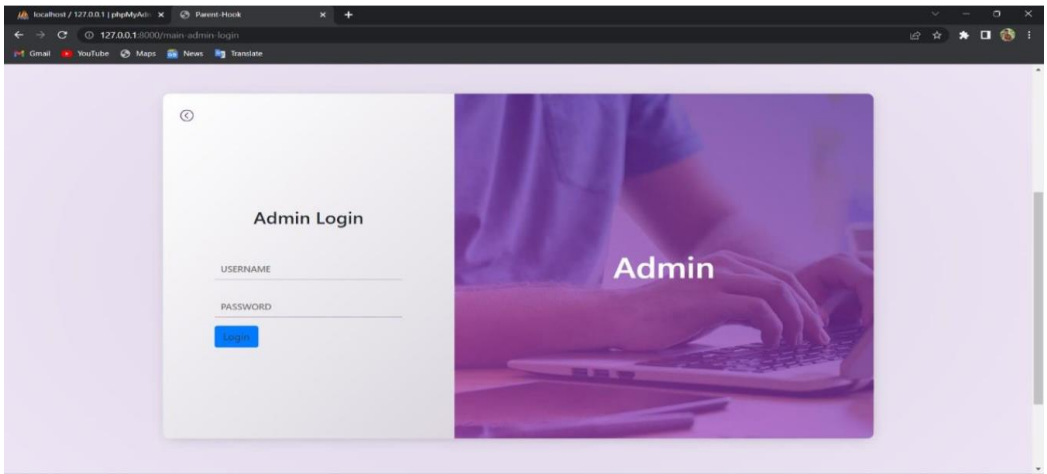

Fig. 12 Figure showing the Admin login page

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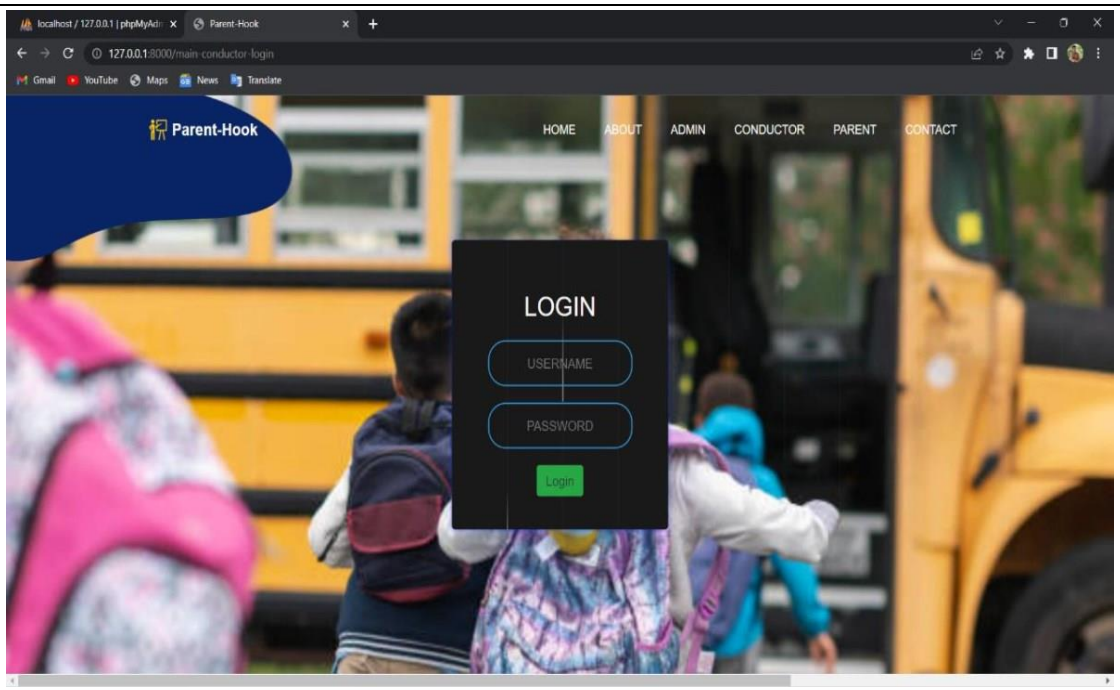

Fig. 13 Figure showing the Conductor login page

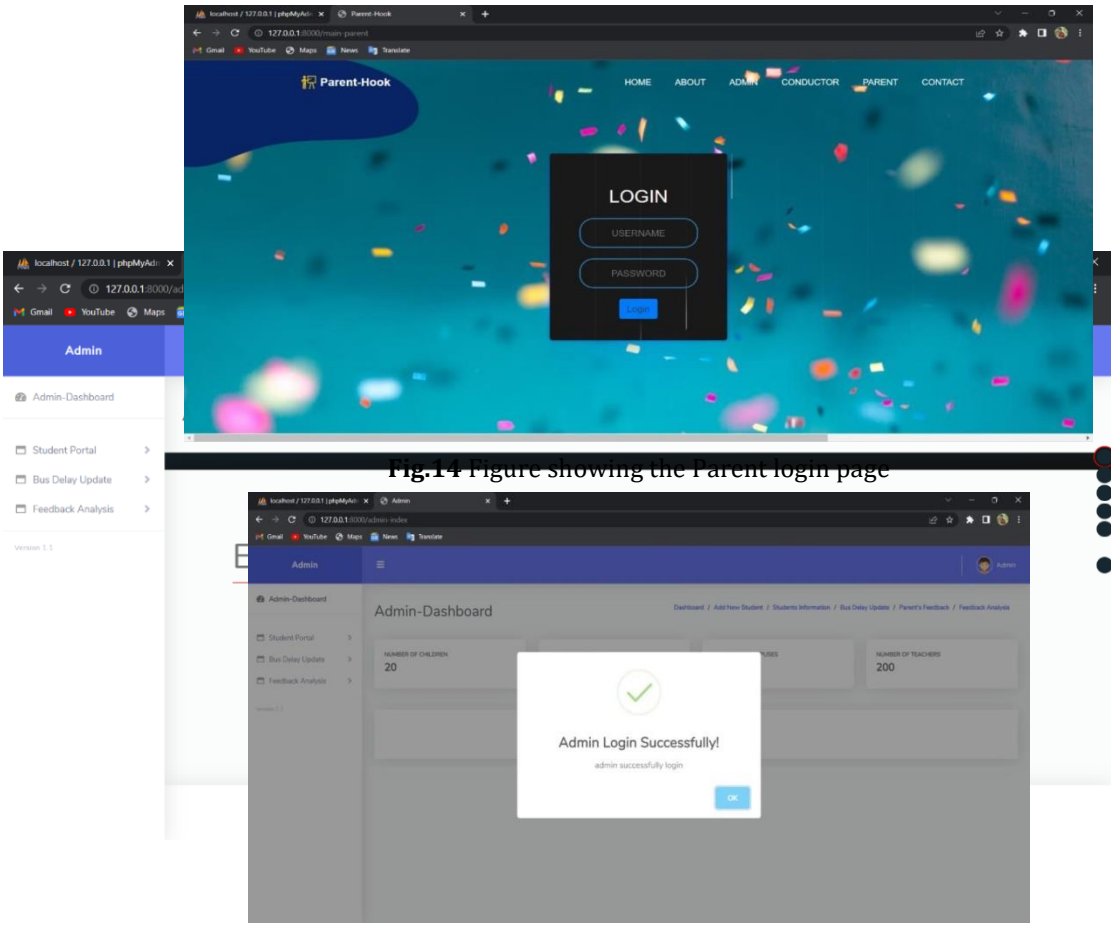

Fig.14 Figure showing the Parent login page

Fig. 15 Figure showing Admin home page

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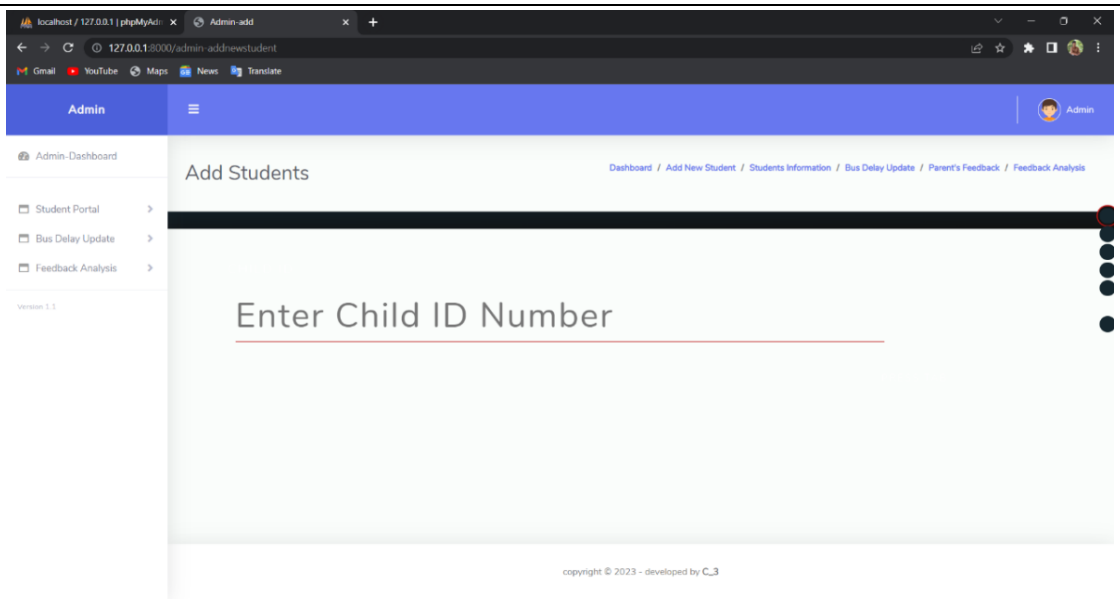

Fig. 16 Figure showing adding students to the database

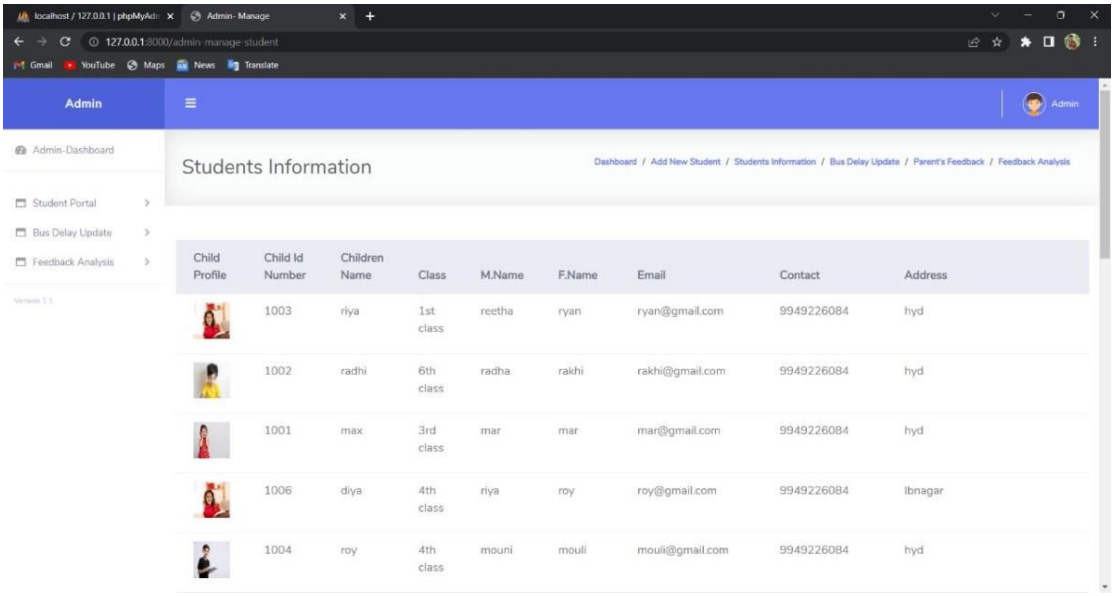

Fig. 17 Figure showing student's information

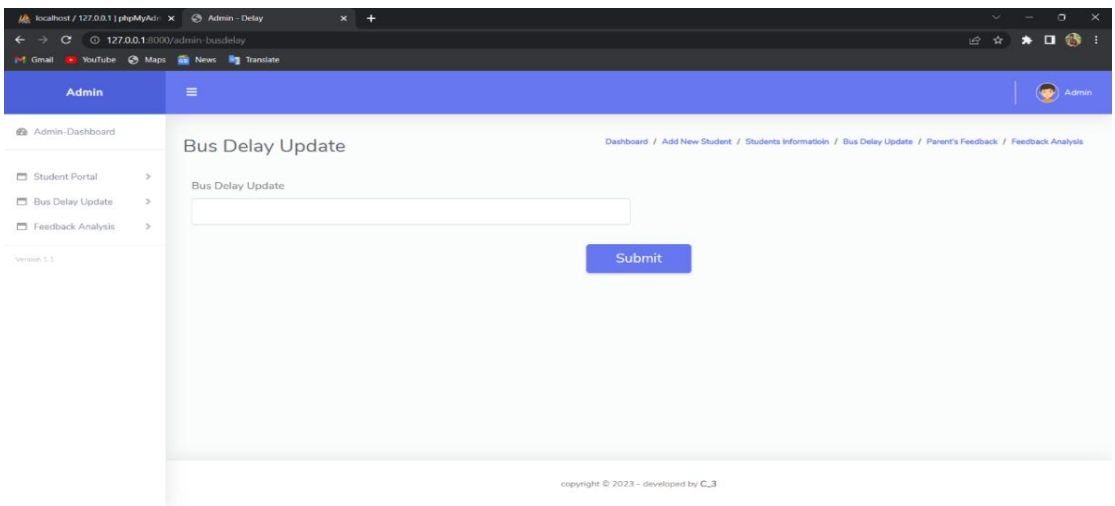

Fig. 18 Figure showing admin updating the bus delay

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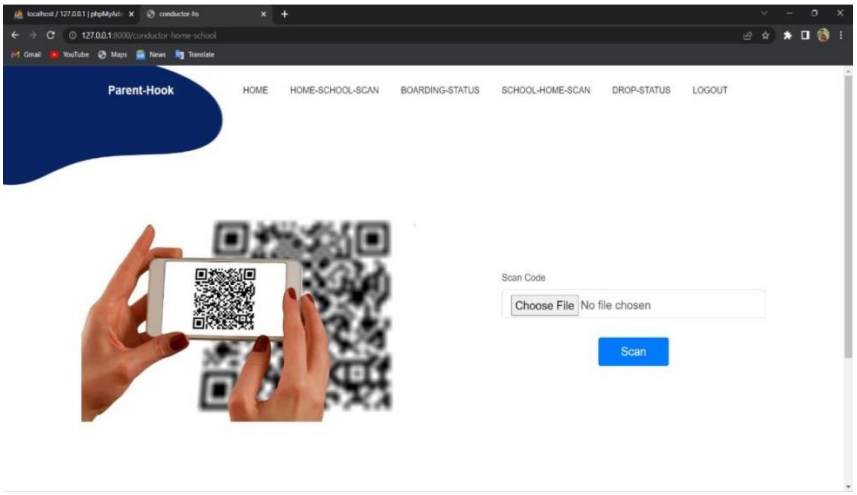
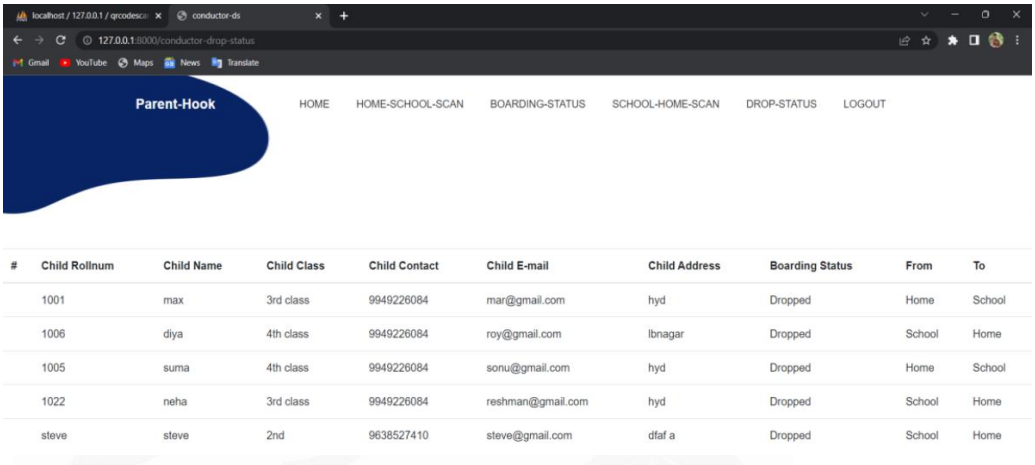


Fig. 19 Figure showing the scanning of the QR Code



#	Child Rollnum	Child Name	Child Class	Child Contact	Child E-mail	Child Address	Boarding Status	From	To
	1001	max	3rd class	9949226084	mar@gmail.com	hyd	Dropped	Home	School
	1006	diya	4th class	9949226084	roy@gmail.com	lbnagar	Dropped	School	Home
	1005	suma	4th class	9949226084	sonu@gmail.com	hyd	Dropped	Home	School
	1022	neha	3rd class	9949226084	reshman@gmail.com	hyd	Dropped	School	Home
	steve	steve	2nd	9638527410	steve@gmail.com	dfaf a	Dropped	School	Home

Fig. 20 Figure showing the details of Boarding status of the students

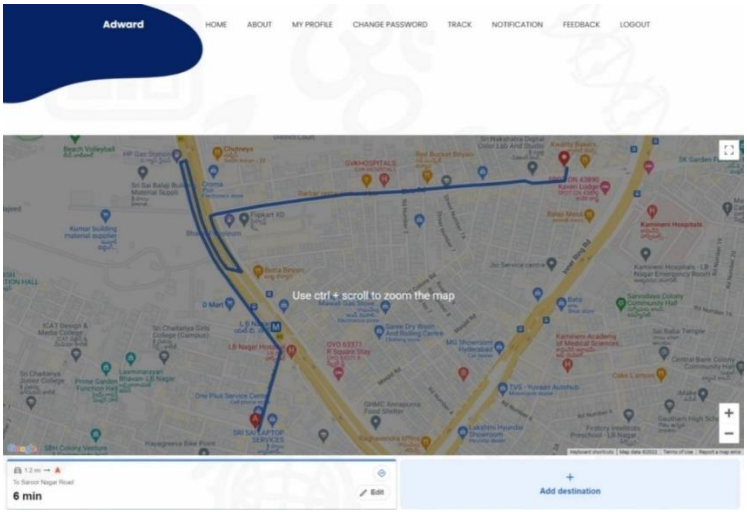


Fig. 21 Figure showing tracking of a child through maps

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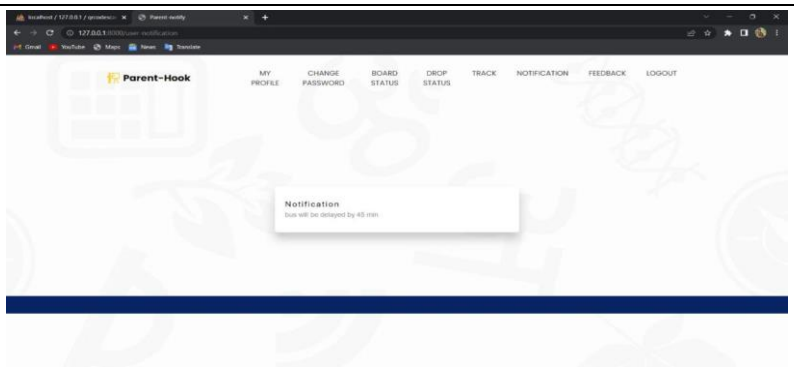

Fig. 22 Figure showing parent getting notification of bus delay

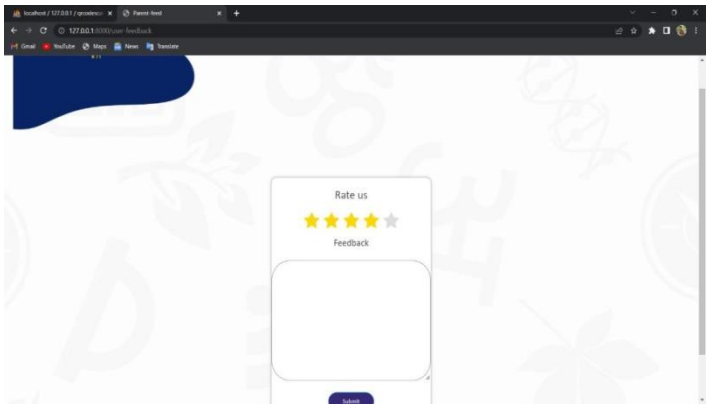

Fig. 23 Figure showing parents giving feedback

VIII. CONCLUSION

Addressing the urgent issue of child disappearances, this project develops a state-of-the-art lost child information system utilizing JSON files and advanced data encryption/tagging techniques to ensure seamless interoperability with other platforms, facilitating the rapid and secure exchange of vital information. By providing timely alerts and precise data matching, this innovative system aims to significantly reduce the time and resources needed to reunite families with their missing loved ones. Beyond its technical advancements, the project tackles a critical social concern affecting countless families globally, offering a robust and reliable tool to manage and match data related to missing children. This system has the potential to alleviate the distress and uncertainty faced by families during such crises, showcasing the profound impact technology can have in driving meaningful social change and improving the lives of individuals and communities affected by this issue.

IX. FUTURE WORK

Planned advancements for the lost child information system aim to enhance and expand its capabilities significantly. These include an auto-calling feature that alerts responsible persons automatically when a child is detected as lost, and integration with wearable technology to utilize sensors that detect physical symptoms in lost children and those around them, thereby enhancing the "Parent-Hook" product. Additionally, advanced data analytics incorporating machine learning algorithms will improve matching accuracy and predict potential threats. The system will also incorporate expanded user roles, such as law enforcement, to boost its effectiveness. Furthermore, enhanced security measures will be implemented, continuously updating encryption methods and access controls to ensure data privacy and security.

X. REFERENCES

[1] India Population: (https://www.worldometers.info/world- population/India population), Accessed July 2020

[2] Unprecedented rise in cases of sexual abuse of school children: (http://indianexpress.com/article/cities/pune/unprecedented-rise-in-cases-of-sexualabuse-of-schoolchildren, AccessedJuly2020), Accessed July 2020

[3] Maryam Said Al-Ismaili, Ali Al-Mahruqi, and Jayavrinda Vrindavanam, "Bus Safety System for School Children Using RFID and SIM900A GSM MODEM", International Journal of Latest Trends in Engineering and Technology (IJLTET).

[4] Khaled Shaaban, Abdelmoula Bekkali, Elyes Ben Hamida, and Abdullah Kadri, "Smart Tracking System for School Buses Using Passive RFID Technology to Enhance Child Safety", Journal of Traffic and Logistics Engineering, Vol. 1, No. 2, pp. 191-196, December 2013. doi: 10.12720/jtle.1.2.191-196

[5] Leonardo D'Errico, Fabio Franchi, Fabio Graziosi, Claudia Rinaldi, and Francesco Tarquini, "Design and implementation of a children safety system based on IoT technologies", 2nd IEEE International Multidisciplinary Conference on Computer and Energy Science, 12-14 July 2017

[6] Priti Jadhav, Kajal Ingale, Shifa Asari, and Prof. Kalidas Bhawale, "Student Tracking System Using GSM and GPS Technology", International Journal of Innovative Research in Computer and Communication Engineering, Vol. 5, Issue 3, March 2017

[7] Ghaith Bader Al-Suwaidi and Mohamed Jamal Zemerly, "Locating Friends and Family Using Mobile Phones With Global Positioning System (GPS)", IEEE Explore, 2009

[8] M. Loganathan, Aswathi Dileep, and K. Kamatchi, "Child Tracking System Based on GSM", International Journal of Innovative Research in Science, Engineering and Technology, Volume 4, Special Issue 4, April 2015

[9] Aditi Gupta and Vibhor Harit, "Child Safety & Tracking Management System By using GPS, Geo-Fencing & Android Application: An Analysis", IEEE Second International Conference on Computational Intelligence & Communication Technology, 2016

[10] M. Nandini Priyanka, S Murugan, K N H Srinivas, T D S Sarveswararao, and E Kusuma Kumari, "Smart IOT Device for Child Safety and Tracking", International Journal of Innovative Technology and Exploring Engineering (IJITEE) ISSN: 2278-3075, Volume-8 Issue-8, June 2019

[11] Ninad Tanksale, Ajay Vedpathak, and Amey Panse, "Cloud Based Child Tracking System Using Raspberrypi", International Journal of Science and Research (IJSR), 2015, ISSN (Online): 2319-7064

[12] S. Shruthi, K. Srimathi, T. Rashmi, and A. Saravanan, "Detection and prevention of child abuse using IOT - A Survey", International Journal of Computer Science and Mobile Applications, Vol. 6 Issue. 2, February- 2018, pg. 139-144

[13] Maghade Satish, Chavhan Nandlal, and Gore Sandip, "Child Tracking System using Android phones", International Journal of Advanced Research in Computer Engineering & Technology (IJARCET) Volume 4 Issue 4, April 2015

[14] A. Al-Mazloum, E. Omer, and M. F. A. Abdullah, "GPS and SMS-Based Child Tracking System Using Smart Phone", World Academy of Science, Engineering and Technology International Journal of Electrical, Computer, Energetic, Electronic and Communication Engineering Vol: 7, No. 2, 2013

[15] Dalip Vijay Kumar, "GPS and GSM based Passenger Tracking System", International Journal of Computer Applications (0975 – 8887) Volume 100– No. 2, August 2014