Project Proposals
CSE432: Software Engineering and Design Patterns Lab
Registration No(s): 2018331003, 2018331027, 2018331057, 2018331089, 2018331109

Vehicle Theft Prevention

Description:

The project aims to design and implement a robust fingerprint authentication system to enhance vehicle security by ensuring that only authorized drivers can start the engine. This system requires registered drivers to authenticate their fingerprints before the engine can be initiated, and periodic re-authentication is mandatory to prevent unauthorized driver swapping.

Key points:

- **Fingerprint-Based Engine Start:** The core feature of the system is the requirement for the registered driver to authenticate their fingerprint to start the vehicle's engine, providing an additional layer of security.
- **Registration Process:** Vehicles, vehicle owners, and authorized drivers are registered with a centralized controlling body responsible for managing access and authentication.
- **Multiple Driver Support:** The system allows for multiple drivers to be assigned to a single vehicle, ensuring flexibility and convenience for vehicle owners and operators.
- **Periodic Re-Authentication:** To prevent unauthorized driver swapping while the vehicle is in use, the system mandates periodic re-authentication from the registered driver.
- **Engine Safety:** Authentication failures do not stop a running engine, ensuring that a sudden failure to authenticate doesn't compromise vehicle safety while in motion.

Semester Management System

Description:

The Semester Management System will be a web-based platform designed to streamline academic operations within a department. It empowers teachers to efficiently update course details, exam schedules, resources, and also results while students can access their personalized profiles to view course information and important updates for a productive and organized semester.

Key points:

- **Streamlined Information Management:** The existing methods for managing course information within academic departments often involve manual processes, leading to inefficiencies, delays, and potential errors.
  It aims to automate and streamline these processes, making information readily accessible.
- **Enhanced Communication:** Effective communication between students and teachers is essential for a productive learning environment.
- **Transparency and Accountability:** 'SMS' promotes transparency by allowing students to view their course details, schedules, and progress. Teachers can maintain a transparent record of course-related activities, including exams, assignments, and results, fostering accountability.
- **Time and Resource Optimization:** The platform helps save time and resources by reducing administrative overhead. Teachers can efficiently manage multiple courses, while students can easily access essential course materials and announcements.
- **Scalability and Future-Proofing:** As educational institutions grow and evolve, the need for scalable solutions becomes apparent. 'SMS' will be designed with scalability in mind, allowing for future expansion and adaptation to changing departmental requirements.

Lab Health Status

Description:

The objective of this project is to develop a real-time monitoring system for a computer lab that tracks the status of individual computers, identifies issues, and enables efficient maintenance. It aims to ensure that all computers in the lab are fully functional during critical periods such as lab classes, exams, technical events and so on. It will keep status as **'green'** for no issues and **'red'** for any issues.

Key points:

- **Exams and events Integrity:** It will ensure fair and reliable exams by minimizing disruptions caused by computer malfunctions, maintaining a smooth examination process. Besides, it will work efficiently during any technical events.
- **Proactive Problem Resolution:** Identify and address computer issues in real time, reducing downtime, and enhancing lab usability through proactive maintenance.
- **Resource Optimization:** Efficiently allocate IT staff and resources by prioritizing and scheduling maintenance tasks based on real-time needs, improving resource utilization.

- **User Empowerment:** Empower lab users, including students and staff, to actively participate in maintaining a collaborative lab environment by reporting computer issues and contributing to problem-solving.
- **Enhanced Productivity:** Promote an environment where computers are consistently available and reliable, increasing overall productivity and satisfaction among lab users.

Academic Room Reservation

Description:

The objective of this project is to develop a user-friendly platform that allows teachers and class representatives to manage and book classrooms and labs in advance. The system aims to reduce scheduling conflicts, improve resource allocation, and enhance the overall efficiency of room utilization. It will enable teachers and students to see the status of reservation.

Key points:

- **Conflict Elimination:** Minimize scheduling conflicts by offering a central booking platform, ensuring academic activities run smoothly and without interruptions.
- **Resource Optimization:** Improve the efficient allocation of classrooms and labs by enabling '*teachers*' and '*class representatives*' to reserve and release rooms as per their specific needs, preventing underutilization or overbooking.
- **Real-time Transparency:** Provide up-to-the-minute room availability information, enabling users to make well-informed booking decisions, reducing uncertainty and last-minute disruptions.
- **User Autonomy:** Empower '*teachers*' and '*class representatives*' to manage their own scheduling requirements, fostering a sense of ownership and responsibility in the resource allocation process.
- **Efficiency Enhancement:** Enhance overall resource management efficiency by creating a collaborative environment where users actively contribute to better resource utilization, ultimately benefiting the entire academic community.

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THANK YOU