Ghulam Ishaq Khan Institute of Engineering Sciences and Technology

Faculty of Computer Sciences and Engineering

GIKI Entrance Management System

Database Project Proposal

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Abstract

The GIKI Entrance Management System (GEMS) represents a groundbreaking initiative to modernize the entrance procedures at the Ghulam Ishaq Khan Institute of Engineering Sciences and Technology (GIKI). By transitioning from manual, paper-based processes to a streamlined, efficient, and secure digital solution, GEMS aims to revolutionize the traditional entrance process.

Introduction

Real-time Entrance and Exit Logging: GEMS will enable instant and accurate recording of student entrance and exit activities, eliminating the need for manual paper logs.

Centralized Database: Utilizing SQL, GEMS will maintain a centralized database to store and manage entrance-related information securely.

User-Friendly Interface: The system will feature an intuitive and easy-to-use interface for efficient data entry, retrieval, and management, ensuring a seamless experience for users.

Access Control: GEMS will implement access controls to ensure that only authorized personnel can view and manage entrance data, enhancing security.

Reporting and Analytics: The system will provide robust reporting and analytics functionalities, allowing administrators to gain valuable insights into entrance patterns and trends.

GEMS is a compelling project as it not only addresses the current inefficiencies in the entrance process but also aligns with the broader trend of digitization and automation in educational institutions. By replacing the outdated paper-based system with a database-driven solution, GEMS will significantly improve the accuracy, efficiency, and overall management of student entrance activities at GIKI.

As we embark on the development of GEMS, we are committed to adhering to best practices in database management and ensuring a smooth transition from the paper-based system to the digital platform. With a focus on data security, user experience, and system reliability, GEMS aims to set a new standard for entrance management systems in educational institutions.

Technologies Used

The project employs the PERN stack, with **PostgreSQL** serving as the database management system. **ExpressJS** facilitates the connection between the frontend and backend, while **ReactJS** is employed for frontend development, and **NodeJS** is utilized for backend development.

Possible Entity Relationship Model

In this section, we will outline the potential entity relationship model for our project, defining the key entities, their relationships, and attributes to ensure effective data organization and integrity.

Student

- Attributes: RegNo (Primary Key), Name, FatherName, In/Out, Timestamp

Visitor

- Attributes: CNIC (Primary Key), Name, StudentRegNo (Foreign Key)

Vehicle

- Attributes: ID (Primary Key), OwnerRegNo (Foreign Key)

Appended to this proposal is our entity-relationship model, providing a visual representation that illustrates the connections between attributes and entities.

Vision

In articulating the vision for our project, we will address the following questions:

What is your product, on a high level?

Our product, the GIKI Entrance Management System (GEMS), is a comprehensive digital solution designed to replace the outdated paper-based entrance process at the Ghulam Ishaq Khan Institute of Engineering Sciences and Technology (GIKI). It leverages modern technologies to automate and streamline the entrance management system.

Whom is it for?

GEMS is designed for both students and administrative staff at GIKI. It aims to provide a user-friendly experience for students while offering efficiency and improved data management capabilities for the administrative personnel involved in entrance-related activities.

What problem does it solve?

GEMS addresses the challenges associated with the traditional paper-based entrance process, including inefficiencies, inaccuracies, and delays. By automating entrance and exit recording through a centralized database, it eliminates manual errors and enhances the overall efficiency of the entrance management system.

What alternatives are available?

The existing alternative is the manual paper-based entrance system. GEMS seeks to replace this with a digital solution that not only eliminates the drawbacks of the current process but also aligns with the broader trend of digitization in educational institutions.

Why is this project compelling and worth developing?

GEMS is compelling because it not only solves immediate issues in the entrance process but also contributes to the ongoing digital transformation in educational institutions. It enhances accuracy, efficiency, and data accessibility, making it a valuable investment for GIKI.

Describe the top-level objectives, differentiators, target customers, and scope of your product.

Top-level Objectives: Automate entrance and exit recording, eliminate paper-based processes, enhance data accuracy, and provide a user-friendly experience.

Differentiators: Real-time logging, centralized database, user-friendly interface, access control, reporting, and analytics.

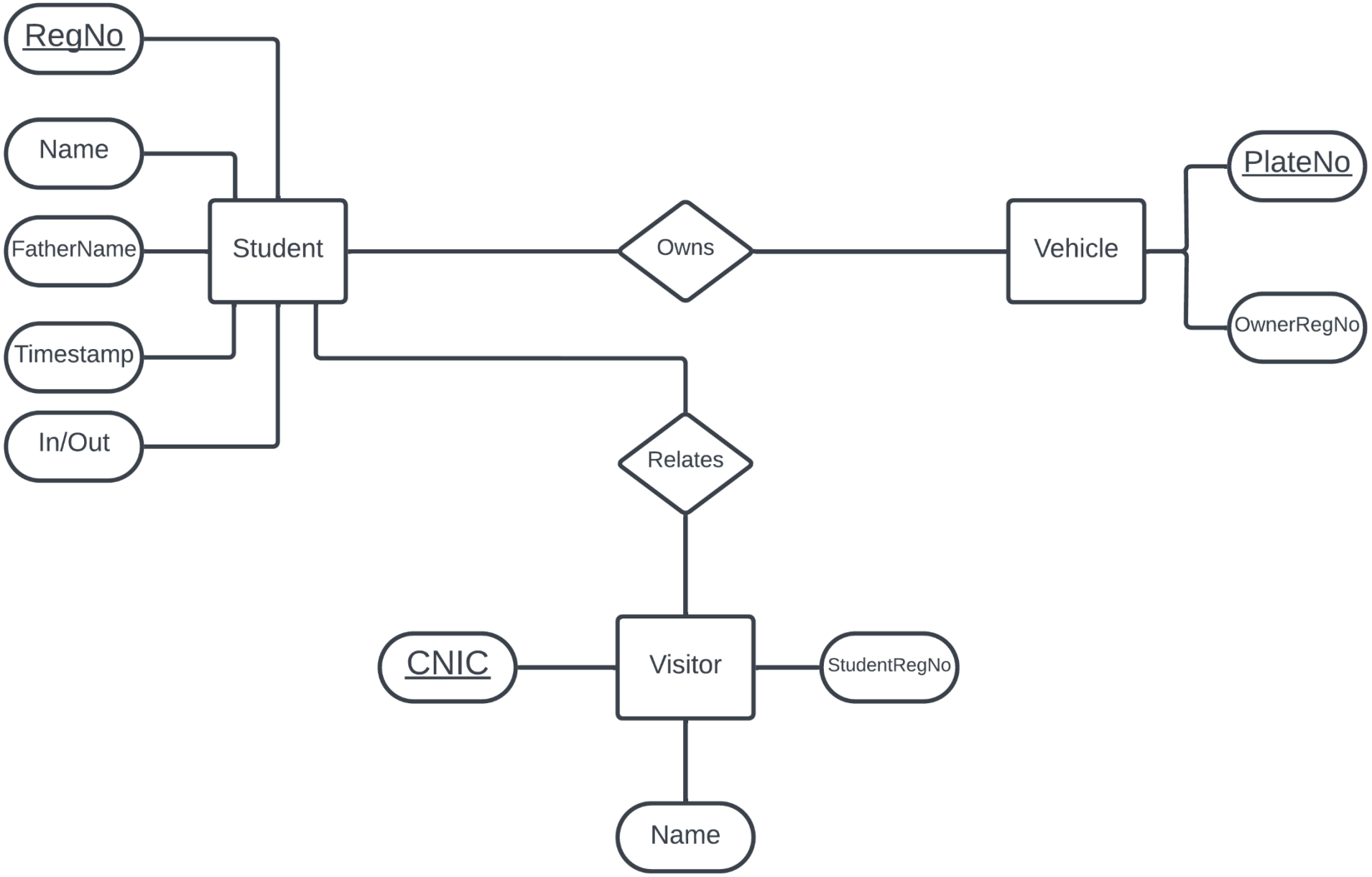
Target Customers: Students applying to GIKI and administrative staff involved in entrance management.

Scope: Comprehensive coverage of the entrance workflow, from real-time logging to reporting.

What are the competitors, and what is novel in your approach?

Competitors: Other educational institutions with existing entrance systems.

Novel Approach: GEMS distinguishes itself through real-time logging, a centralized database, and a user-friendly interface, offering a more efficient and modern solution compared to traditional methods.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