Smart Transportation Management System

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Abstract: *The purpose of this project is to solve the problem of the college transport department and drivers regarding the various aspects ranging from fuel filling to maintenance of various parts of transportation vehicles. The major problem faced by the transportation department is to maintain stock piles of papers, maintaining them for receipts and verification for financing. The proposed idea is to issue token for all the aspects ranging from maintenance, repairs of vehicles and filling of fuel, every time the driver needs to fill fuel from the nearest petrol station or visit the nearest garage for the repairs then a token will be issued for all these purposes and this token generated will be stored in the database along with the receipt number and driver credentials ,then on this token should be given to the garage or petrol station with whom the college has the MOU ,this token will be collected by them for end of the year payment policy. This way the usage of papers will be reduced, proper financial track will be done. Two holders for issuing token will be administered along with one main admin to see the smooth functioning of the system. We implement the concepts of HTML,CSS, Php, JavaScript, MySQL, MongoDb and other related software's for enhancements of the interface.*

Keywords: HTML, CSS, Php, JavaScript, MySQL, MongoDb

I. INTRODUCTION

Managing transportation in a University is a major thing that influences the processes of the university. Every day, a considerable amount of vehicle check-ins and check-outs are done by the security section at the university gate. It is essential for lecturers and the administrative staff to go out of the University for important purposes. Managing various visits of the staff members and lecturers of the university undergoes a considerable process. The person who handles the assigning of vehicles and drivers for the incoming requests does the main part of the system along with the persons who permits the visits. It is not an easy task to assign vehicles and drivers to incoming requests. As a lot of visits happen. The existing Transformation Management System of the University is completely manual. The system is based on paper works and communications between the users of the system. After a person makes a request, the clerk of the particular faculty does the driver assigning and the vehicle assigning for a particular request after the head of the department has given the approval for the request. After assigning a vehicle and a driver, the clerk has to communicate with the driver after getting the approval for the request. The persons that give the approvals for the requests are, Vice chancellor, Dean, Assistant Registrar and the Department Head. The approvals are given according to the destination of the request. The person who approve depends on the destination. The clerk has to communicate with the driver and the persons which gives the approvals. The clerk also has to inform the user that the request is accepted.

The security personnel also play a role in the existing system. They do the recording of meter readings of the vehicles and times every time a vehicle goes out and comes into the University. They take the responsibility of verifying whether the request is approved by the suitable person. There are many identified problems to be discussed in the existing system of the University for managing the transformation. By identifying those weaknesses, a web based Transformation Management System is proposed to the Faculty of Science by us. It does the management of the vehicles in the University in an efficient way, consuming less time. Its purpose is to provide a system for doing this vehicle management more efficiently and accurately.

Transportation Management System for Faculty of Science (SciTMS) The system is web based and it also consists of an Android application for the driver and the person who wants to request a vehicle, let's say the requester. The requester has the ability to request a vehicle using his/her android application and see from time to time whether the

request is approved or not. The web based system is basically for the clerk of the Faculty of Science and the persons who gives the approvals for the visit. The driver can see for what visits that he has been scheduled using his android application. The security officer at the gate gets their part of the system too, they can use the web based system to update the meter readings and times that a vehicle goes out and comes in.

1.1 Problem Statement
The purpose of this project is to solve the problem of the college transport department & drivers regarding the various aspects ranging from fuel filling to maintenance of various parts of transportation vehicles. The major problem faced by the transportation department is to maintain stock piles of papers, maintaining them for receipts and verification for financing. This way the usage of papers will be reduced, proper financial track will be done.

1.2 Motivation and Objective of the Project
The purpose of this project is to provide a friendly environment to maintain the details of bus details and drivers details. This project is to maintain easy monitoring system of transportation using computers and to provide different reports like indent and fuel bill generation. The main purpose of this application is to automate and computerize existing systems that manually manage transportation records.

1.3 Existing System and Drawbacks
In the existing system Colleges have to manually maintain information regarding busses and driver details. Need for System Provide a simpler method to store and access information related to buses and drivers details. Provide a simple interface which will be easily used without much training. Reduce paperwork and make all related information accessible easily.

Disadvantages:
- In our existing system all the data recorded is stored manually, so taking more time for transactions like borrowing a book or returning a book and also for searching for books.
- Another major disadvantage is that preparing the manual report will take more time, currently it is done as a day process for verifying all records.
- Manual systems are unable to store large amounts of data efficiently.
- Manually difficult to find and Existing system is time consuming.

1.4 Proposed System and Advantages
The Transportation Management System is a desktop system aimed at the management team, to maintain bus facilities. The system generates exhaustive reports related to the Bus details i.e. dues, route no. & fuel indent, servicing indent. The system overall keeps approach in highlighting key features of the fuel indent by giving token, servicing indent, reporting generating, bus details and driver details.
- Transportation management system is a project which aims in developing a computerized system to maintain all the daily work of transportation.
- The "Transportation Management System" mainly focuses on basic operations in transportation like adding diver details, bus details, and updating new information, generating the reports.
- This project has many features which are generally not available in normal transportation management systems like the facility of generating the indent report.
- The user is able to generate different kinds of reports like indent report, fuel bills, and bus maintenance report.
- It is used by collage to manage the records in a computerized manner.
- It also has a facility of admin login through which the admin can monitor the whole system

Advantages:

- The main advantage of this transportation management system is reduced paperwork.
- Easy to monitor the entire system.
- Easy to store a large amount of data.

II. REQUIREMENT SPECIFICATION

The System Requirement Specification (SRS) is a document, which describes completely the external behavior of the software as well as the behavior of the hardware. The first and foremost work of a developer is to study the system to be developed and specify the user requirements before going for the designing phase. The document shows how the system behaves and responds. The basic goal of the requirements phase is to produce the software requirements specification, which describes the complete external behavior of the proposed system. The complete description of the behavior of a system developed is explained below. It includes the functional requirements of the system. In addition to the functional requirements the non-functional requirements and user interface requirements are also explained. Requirement analysis is done in order to understand the problem of human errors to solve. The problem could be eliminating an existing manual process, developing a new system, or a combination of two. For the larger system that has many features, and that needs to perform many different tasks, understanding the requirements of a system is a major task. The software should be simple and easy to understand with an interactive interface. Standard compliances specify the requirements for the standards that the system must follow.

To specify requirements completely, requirement specification documents should specify the certain properties of the software. Some of them are:

- The SRS should specify all the functions the software is to support.
- The SRS should have performance requirements.
- The SRS should specify the design constraints.

2.1 Functional Requirements

The system that is being made requires prerequisite data. They are bus data, drivers data and subjects of all Transportation details. These data are required at the beginning of the system creation as every other module will require them.

A. Admin

- REQ-1: The system shall authenticate before accessing the system. REQ-2: The system shall allow the user to create a user.
- REQ-3: The system shall allow admin to edit the data.
- REQ-4: The system should allow admin to view or monitor the entire process.
- REQ-5: The admin can resolve the problems which are done by the users.

B. User

- REQ-1: The system shall authenticate before accessing the system.
- REQ-2: The system shall allow users to add the details of transportation.
- REQ-3: The system shall allow users to generate the report like indent, fuel bill, etc.
- REQ-4: The system shall user can view the details of divers and buses.
- REQ-5: The system shall also allow the user to modify the details .

2.2 Non-Functional Requirements

Non-functional requirements or system qualities capture required properties of the system, such as performance, security, maintainability, etc. in other words, how well some behavioral or structural aspect of the system should be accomplished. The non-functional requirements of the system are described as follows:

C. Security

Security requirements are very important including privacy. The administrator should provide a high security interface for users and protect their personal data.

- The external security should be provided by given the login authentication.
- There should be proper security regarding the accessing of data by unauthorized users.

D. Performance

- The system shall minimize errors and clear error messages should be displayed that guide users to handle it.
- The performance of the functions and every module should be good.
- Improve performance by using computers or laptops that have high processor speed and RAM and a better cloud platform.

E. Usability

- By training users to become familiar with the system and by designing a user-friendly interface, the end users are able to place an order within a few response times.

F. Availability

- The system will be available to its users with internet connection because users can have access to it using the local intranet from within the campus.

G. Correctness

- The results of the function should be pure and accurate by validating or testing the system.

H. Reliability

- Increasing the performance of the system will improve the reliability of the system.
- Storing backup data can increase reliability of the system.

I. Reusability

- The data and records that are saved shall be reused if needed that's stored in backup.

J. Documentation

- Documentation will help the project team to make knowledge management. Therefore, it is a necessary requirement. The documentation includes proposals, project reports, and so on.

K. Quality Control

- The system quality control is also an important requirement. The system should be fast and efficient service to all users. Adaptability, availability, flexibility, and reliability are the key issues of this requirement. Using suitable software and hardware to develop the system will enable us to achieve this requirement.

III. SYSTEM ANALYSIS AND DESIGN

3.1 System Analysis

The main objective of system analysis is to capture a complete, unambiguous and consistent picture of the requirements of the system and what the system must do to satisfy the user's requirements and needs. The system accomplished by

constructing several models of the system that concentrate on describing what the system from the way that behavior is implemented requires viewing the system from the perspective of the user.

Analysis is a process of transforming a problem definition from a fuzzy set of facts and myths into coherent statements of a system requirement. Analysis involves a great deal of interaction with the people who will be affected by the system, including the actual user and anyone else on which its creation will have an impact. System analysis is the study of systems sets of interacting entities, including computer systems.

3.2 System Design

System design is the process or art of defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. One could see it as the application of systems theory to product development. There is some overlap with the disciplines of system analysis, systems architecture and systems engineering.

In systems design, focus is on deciding which modules are needed for the system. The specifications of the module should be interconnected is called system design. System design is also called top level design. Consider a system to be a set of components with clearly defined behavior that interacts with each other in a fixed manner to produce some behavior. In a system design, the design consists of module definitions, with each module supporting a functional abstract.

The main purpose of the project is to provide a centralized platform, which connects all faculties and students. Students will be able to view, borrow, and return books before the due date. Faculties will be able to view, borrow, and return books after the end of semester.

3.2.1 Architectural Design

The architectural design gives the description of how the overall architecture is designed. There is no unique design for any software system. Studies of different options may be necessary. The choice depends on the type of the system. The architectural design is specified by identifying the components, defining the control and data flow and stating for each of them the functions to be performed, data input, data output and resource utilization.
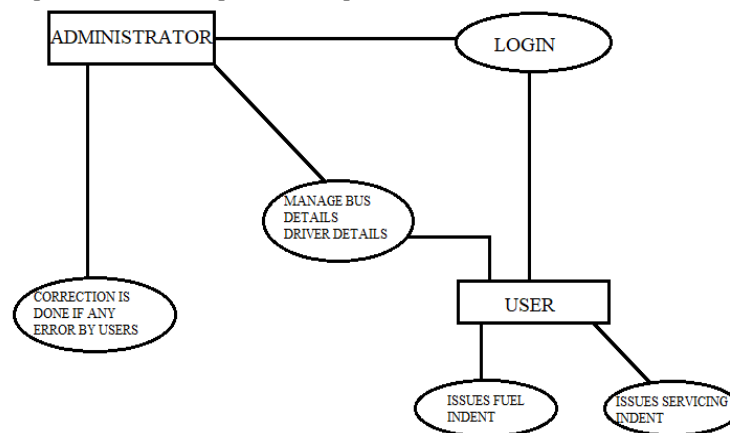

Fig 3.2.1 Architecture Diagram
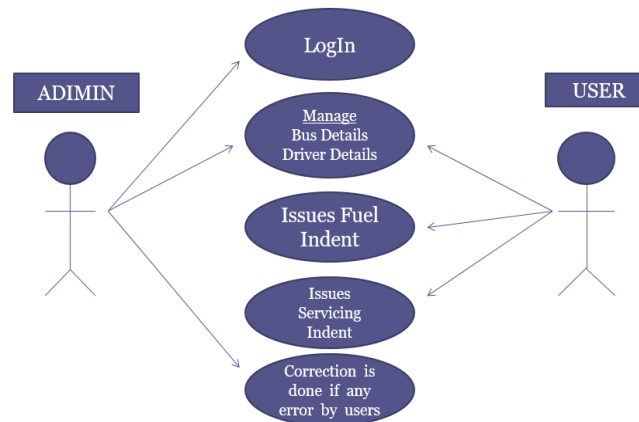
3.2.2 Use Case Diagram

Fig 3.2.2: Use case diagram of Transport management system

The use case diagram is a graphical description of the administrator and user being the users which interacts with the system. In the Transport management system, the admin will login through credentials and can access all the pages and the user can login through the credentials . User can monitor the details and issue the reports.

IV. CONCLUSION

The conclusion reached on the basis of evidence is that tracking of the Details related to the transportation. we don't need any costly equipment and do not require any data centre. The Interface is user friendly and can be used very easily using a simple website in a very affordable manner which is beneficial for both user and admin. In our project we have focused on various aspects ranging from management of Bus details, Drives details and overall expanse of fuels and servicing cost of everyday. Which will be helpful to management of particular financial year expanses digitally. Here Admin doesn't need to worry about paperwork which is really not a very easy task to maintain the piles of paper in traditional ways. Which means it reduces the paperwork and everything can be done digitally.

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