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Web Based Leave Management System for University College of Jaffna

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Abstract: In the existing Leave Management System, University College follows paper-based procedure to maintain leave of employee and administration department record those leave information in a record book. At the end of each month, the administration department calculates the leaves of every employee, which is a time-consuming process, and there are chances of losing data. The Web-based Leave Management System is an intranet-based application that can be accessed throughout the college. At anytime and anywhere, an employee can apply for their leave efficiently using this application. There is no necessity for manual filling of leave forms and wait to get higher authorities' approval. The Admin is responsible for creating, updating and deleting the details of the user and creating department and leave types. Also, Admin can generate leave reports of all employees. In the employee role, the employee can apply for leave and view the previous leave applied. Head of Department (HOD) can accept /reject leave applications of their department employees through this system and can view leave details of every member of their department. The Chief Executive Officer (CEO) is a higher authority person in the college. The CEO can view all employee leave details, accept/reject leave applications of HODs, and generate leave reports. Thus, this system can be used to automate the workflow of leave request and their approval process. Web-based Leave Management System will reduce manual work, and it helps to maintain leave-records efficiently.

Keywords: Admin, Employee, Leave Management System, University College

1 INTRODUCTION

Leave management keeps all the records of leave taken by an employee according to the organizational leave policy. Nowadays, most of the higher educational institutes in Sri Lanka maintain their leave records manually, which means written format. In that way, the University College of Jaffna also keeps the leave records manually. So to reduce that paperwork and overcome the problem of time management, I decided to develop a web-based leave management system. I have taken the initiative to create such a system that will allow college employees with an online platform to apply for leave and view their leave history and generate leave reports [1].

University College of Jaffna is one of the higher educational institutes in Sri Lanka that offers National Diploma (NVQ Level 5) and Higher National Diploma (NVQ Level 6) courses leading to a bachelor degree conducted by the University of Vocational Technology. Currently, the college has 8 academic departments and other sections such as Finance and Administration. The college consists of employees such as Lecturer, Demonstrator, Assistant Bursar, Assistant Registrar, Assistant Librarian, Lab Assistant, Management Assistant and Drivers.

The objective of the current research is;

- To eliminate paperwork and reduce the process time for leave request.
- To provide convenient, simple and user friendly environment.
- To increase the efficiency of college, leave record management.

2 SYSTEM ANALYSIS

2.1 Study of Existing System

The existing Leave Management System of the college is manual. It is a lengthy process, and these processes are not optimized. In the current system, employees fill a leave request form manually and submit it to their supervisor for approval [2]. After the supervisor's consent, the leave form is submitted to the administration department. At the end of each month, the administration department calculates the leaves of every employee, which is a time-consuming process, and there are chances of losing data or errors in the records. This increases the manual work, and handling records becomes more challenging and also it is a time-consuming process. The forms cannot be maintained systematically and efficiently.

2.2 Proposed System

Shetty K et al. [3] emphasize that the Web-based Leave Management System is an online application and approval mechanism, which is the easiest way to request a leave and keep track of leave status in the College. All the employees of the College can access it. This application can be used to maintain leave applications and their approvals easily. It also reduces the chances of data loss [4]. This system minimizes the overwork and time duration. It provides a comfortable, maintained and systematic environment for the higher authorities (Head of Department – HOD / Chief Executive Officer - CEO) to approve leave. HOD will have permission to look after the leave details of every member of their department. HOD can approve the leave through this system and view every individual's leave information in their department. This system will reduce paperwork and maintain the record more efficiently and systematically [5]. This system will be designed in a hierarchical form and will have different user roles like Admin (Super User), Employee, HOD and CEO.

Admin - Admin can create user and department, leave type and maintain all the details related to employee leave.

Employee - Employee can use to apply leave and keep track of their leaves, status of the applications for leave.

HOD - All head of departments can view all the request of to leave which is submitted by their department staff member and then take required action such as approve or reject.

CEO - CEO is the higher authority person to approve the leave of HODs. Also CEO can view all employee leave status by generating leave report.

2.3 Overview of the system

The overview of the system is given in Fig. 1.

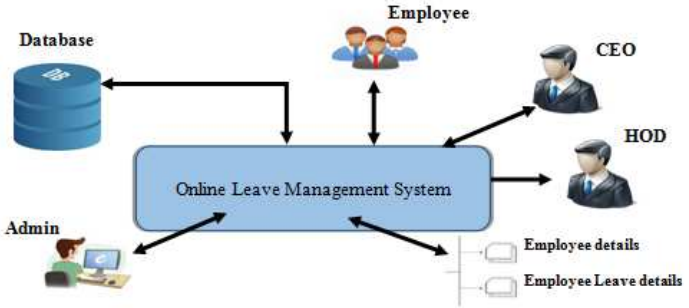

Fig. 1.Overview of the System

3. REQUIREMENT ANALYSIS

The software requirements are an explanation of the functionalities of the target system. It can be obvious or hidden, known or unknown, expected or unexpected. Software requirements are usually expressed as a statement.

3.1 Functional Requirements

Functional requirements of a system specify what the system must do. Functional requirements are deal with function and features of software such as calculations, technical function, manipulate data and processing [6].

3.1.1 Authentication

- **Login**- The user can login to the Leave Management System with his/her username and password.
- **Logout**- The user can log out from the Leave Management System.
- **Login failure**- The use cannot login if the username and password does not exist in the database.

3.1.2 Authorization

User role check- User interface will show up after check the user role from database.

3.1.3 Leave Application/Approval

- **Leave application** - all user can be able to fill in leave application form in the relevant fields.
- **Leave approval**- CEO and HOD can be able to approve leave applications of employee who are under their department based on the reasons stated, length of leave.

3.1.4 Functions

- **Add new user** - admin can add a new user to the database. The new user will have all the required personal information related to him/her. The new created user will have a unique ID.
- **Add a new user role** - Admin will assign a new role such as Employee, HOD and CEO to the new created user.
- **Leave report generation** - Admin, HOD and CEO shall be able to generate a leave report in pdf format for each employee based on the information in the database.

3.2 Non-Functional Requirements

Non-functional requirements will explain systematically and in detail how a system should function. It is generally postulated the system's attributes and characteristics. A non-functional requirement is essential to confirm the usability and effectiveness of the entire system [7]. The output of the system may not satisfy user needs if failing to meet non- functional requirements.

4. SYSTEM DESIGN

Systems design is defining the architecture, components, modules, interfaces, and data for a system to satisfy specified requirements. It is a systematic and rigorous approach to design a system that fulfils all the practical aspects, including flexibility, efficiency and security.

4.1 Use Case Diagram

A use case diagram shows the user interaction with the system. Also, it shows the relationship between user involvement and different cases [8]. A use case diagram consists of different types of users and different actions. Thus a use case scenario is a description that illustrates, step by step, how a user is intending to use

a system, essentially capturing the system behaviour from the user's point of view. The following characters have been identified to create relevant use cases for the system, and the diagram is denoted in Fig.2 [9].

- Employee (all staff member)
- Head of Department (HOD)
- Chief Executive Officer (CEO)
- Admin (Super User)

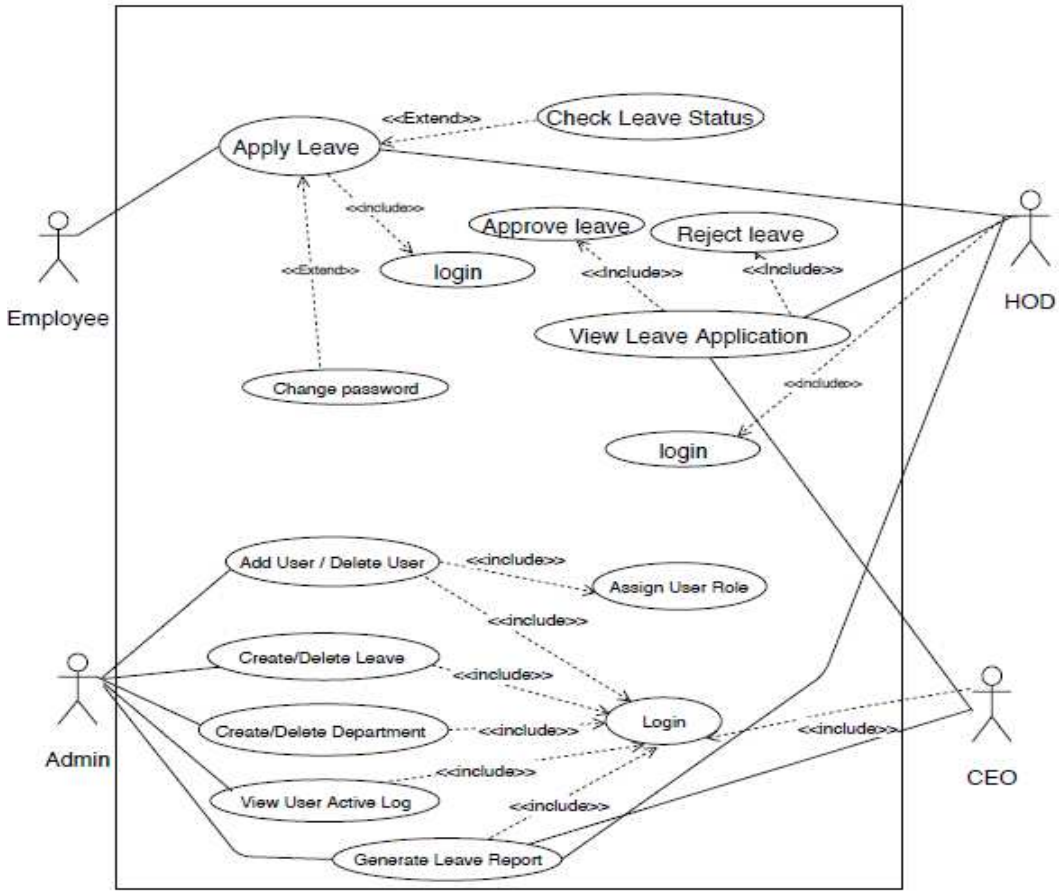

Fig. 2. Use case diagram [9]

4.2 Database Design

A database is a collection of organized data to easily be accessed, managed, and updated [10]. The designer defines what kind of data should be stored and interconnect. The proposed system used the MySql database to store information. This database has tables, where each table links to one specific type of information. This information in the table is called a field. A field defines the nature of the data stored in the table. A table also has records. One or more fields are used to identify a record uniquely called the primary key in the table.

4.3 Entity Relationship Diagram (ERD)

An entity-relationship diagram (ERD) is a graphical illustration of entities and their associations (Fig. 3). An entity can be a person, place, concept, object, or event for which data is collected and maintained. Each

entity in ER Diagram represents a database table and the relationship lines represent the keys in one table that point to specific records in related tables [8].

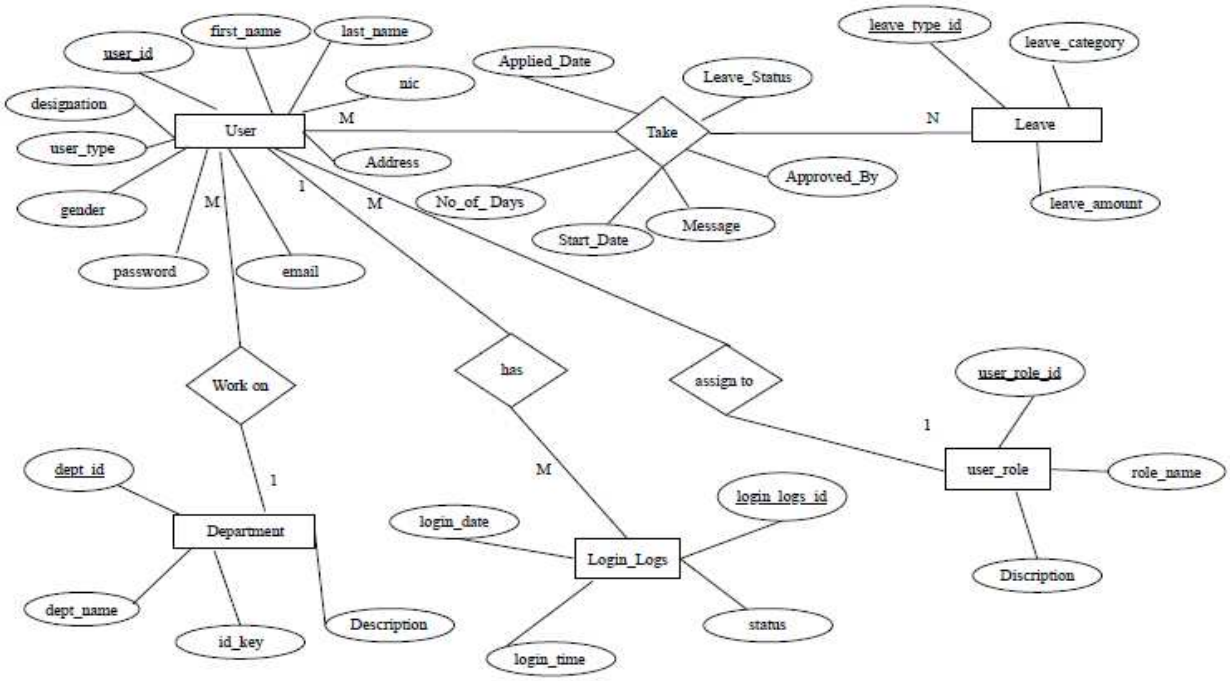

Fig. 3. Entity Relationship Diagram (ERD) [8]

5.RESULTS

The proposed Web based Leave Management System is made up of user friendly interfaces and has well-defined processes. The foremost advantage of this system is the users can apply for leave and can also view the previous leave applied by them through the system. The data integrity is achieved by this system by keeping data in the database in a proper way.

User Login:

The home screen contains the login page, the users can login to the system using valid username and password (Fig. 4).

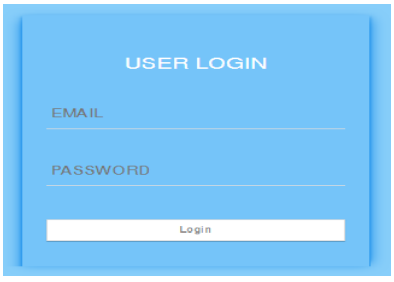

Fig. 4. User Login

Create New User:

In this module admin can create user profile by clicking “Create New User” button. Also admin can create login username and password for the relevant user (Fig. 5).

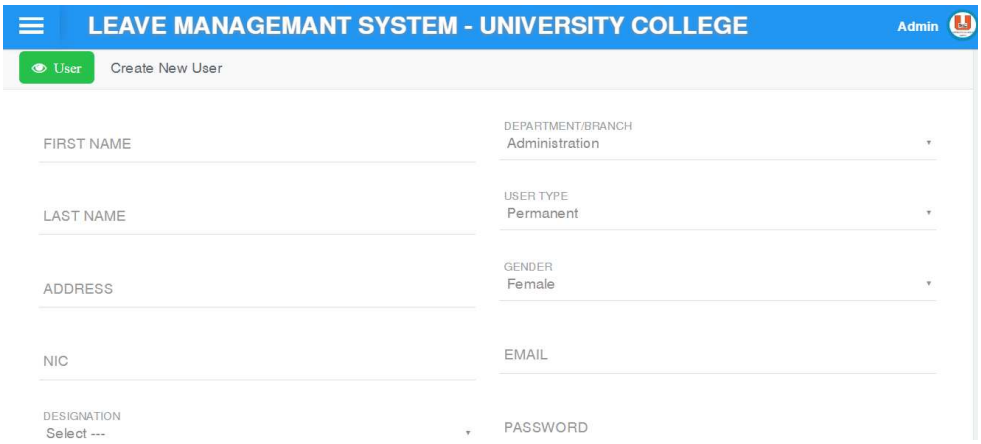

Fig. 5. Create New User

View User

In this module admin can view all registered user profiles by clicking “User” button. Also, admin can edit or delete existing user details (Fig. 6).

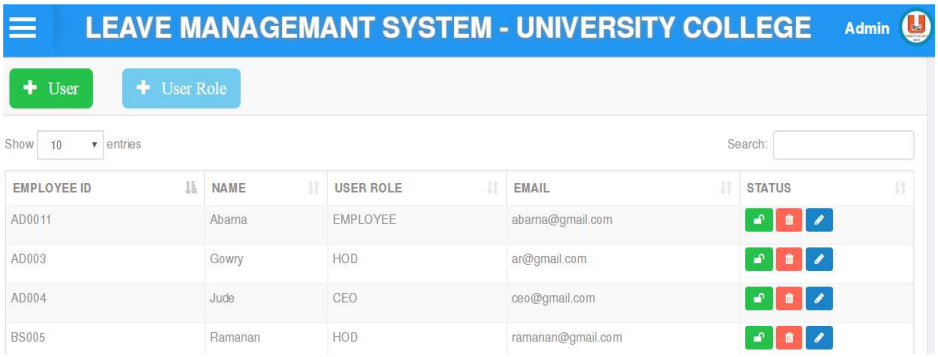

Fig. 6. View User

View Department

In this module admin can view created department details. Also, admin can add department details by clicking “Department” button (Fig. 7).

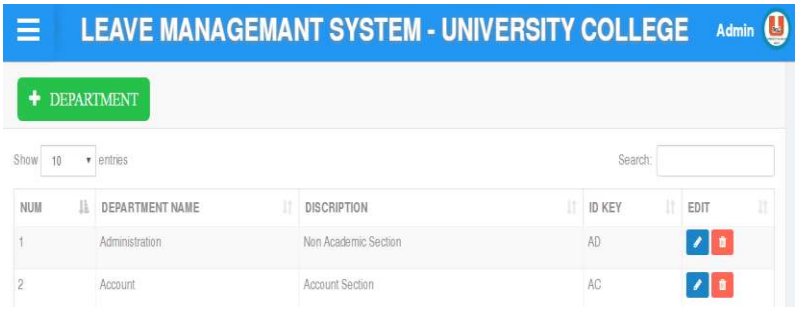

Fig. 7. View Department

Leave Request

This is a leave request form. Employee can fill the form and request the leave from the relevant authority

(Fig. 8).

Fig. 8. Leave Request

Approval of leave request

HODs/CEO can view the staff leave request and can update their decision (Fig. 9).

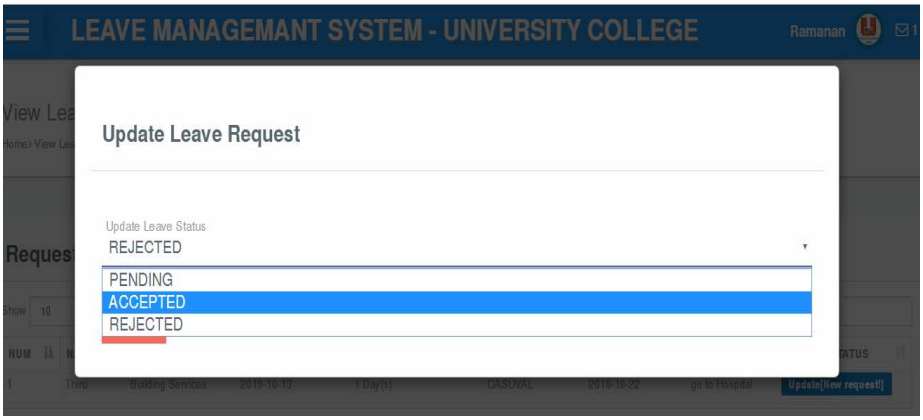

Fig. 9. Approval of leave

My Leave History

In this module each user can view details of the applied leave with date wise and approval status (Fig. 10).

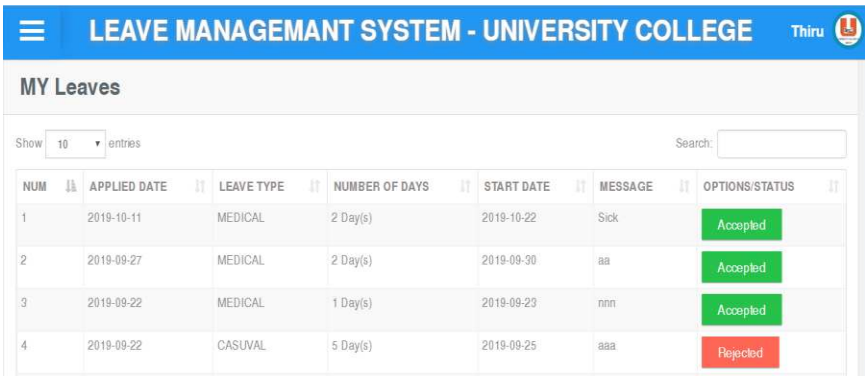

Fig. 10. Leave History

6. CONCLUSION

The Web-based Leave Management System has been developed to overcome applying for leave manually, which is time-consuming. It helps staff to apply the leave request through an online platform and get approval from higher authorities. Also, the system is an automated one aids in reducing time to leave requests and eliminate paperwork. At this juncture, the Web-based Leave Management System is an excellent tool for staff to apply their leaves and view the status and facilitates the admin to filling staff profile details, creating leave types, create departments, and generate leave reports. The system notification to higher authorities upon application of leave and leave status is notified to the respective user. Thus the application provides an optimized solution for leave request, approval, tracking of leaves status and generating leave reports.

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