



# ADVANCED AND SECURED LEAVE APPLICATION PORTAL USING AES ENCRYPTION

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## ABSTRACT

*This paper aims to provide an important online leave application system for either a business or an individual organization. This system is an Intranet-based application that may be accessed by any group or department inside an organization. This technology can be used to approve process for leave applications, the crediting of leave on a regular basis and updating of leave related salary report is likewise automated. This paper is to provide a platform where user can not only apply for a leave but also provide various information and updates relating to leave and leave related salary reports. The main highlight of this system is the encryption system used for login credentials. The encryption algorithm used here is AES (Advanced Encryption Standard) encryption system. This paper includes features such as leave approval and denials, leave types, employee details, annual and monthly leave report of employees, approved leaves, leave history, pending leave approval and salary report generators, and more. Leave applications will save paperwork and allow for more efficient record keeping.*

**KEYWORDS:** AES algorithm, Administrator, Employee, Reports, Search, Leave, Leave types.

## I. INTRODUCTION

The online leave management system is an application that may be accessible by any group or department inside an organization. The paper has been designed with a distributed architecture in mind, with centralized database storage utilizing MySQL structures. The "SQL Connection" methodology is used to plan database connectivity. Security and data protection requirements have been given a wide range of options for proper application. The program manages many modules and their accompanying reports, which are created in accordance with the administrative staff's recommended strategies and standards. This makes it easy for an employee to request and track their own leave. Administrative department of an institution on the other hand can easily allocate, grant, and manage all leave requests. The request is automatically forwarded to the appropriate superior officer for approval through the employee leave management system. If the superior officers reject the leave, a reason for rejecting the leave must be entered into the system and the employee who requested the leave will be notified and if the leave request requires a higher superior officer for approval before notifying the employee, the respective officer will be notified.

The AES (Advanced Encryption Standard) encryption algorithm has become global standard and safeguards significant amount of our communication data. The Advanced Encryption Standard (AES) is a fast and secure form of encryption that keeps prying eyes away from our data. We see it in messaging apps like WhatsApp and Signal, programs like VeraCrypt and WinZip, in a range of hardware and a variety of other technologies that we use all of the time. The AES encryption is superior when compared DES encryption which has 56-bit key. The AES algorithm has variable key size 128-bit, 192-bit and 256-bit (maximum). The superiority between these algorithms has significant margins when cracked using brute force key. The DES algorithm took one day to crack whereas AES algorithm was predicted to take years over years to be cracked for 256-bit key. The National Institute of Standards and Technology (NIST) announced that it had finally made its selection in late 2001. Their choice was a specific subset of the Rijndael block cipher, with a fixed block-size of 128-bits and key sizes of 128, 192 and 256-bits. It was developed by Joan Daemen and Vincent Rijmen, two cryptographers from Belgium. In May of 2002, AES was approved to become the US federal standard and quickly became the standard encryption algorithm for the rest of the world as well.



## II. METHODOLOGY

### A. AES ALGORITHM

In this, we are implementing an encryption technique to encrypt the password. So this will be make the application became more secure. The hackers cannot able to hack the password of the employee because we are encrypting the password using AES Algorithm.

### B. ADMINISTRATOR

In this module the Administrator has the privileges to add all the Employees and register them in the organization and check the information of the Employee and check the status of the leave when they have taken and what type of leave they have taken and search is done based on the employee and report is generated based on employee.

### C. SEARCH

This module contains complete search like Leave search, Type of Leave, Employee based on the leave and starting and ending day of leave.

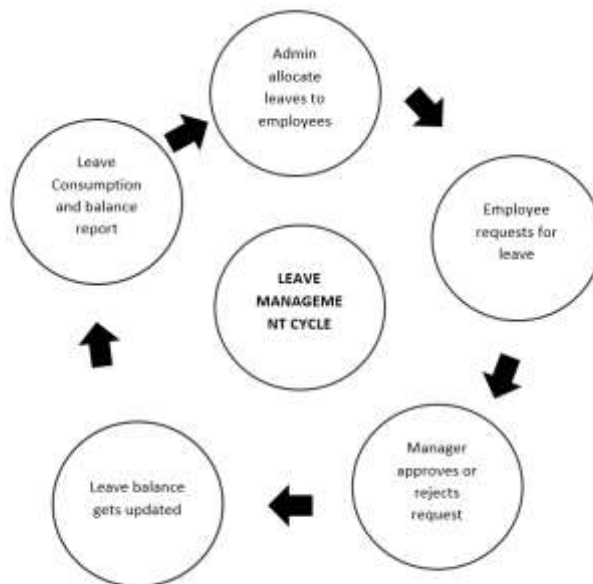
### D. EMPLOYEE

In this module employee has the privileges to use his username and password for login and he can see the request given by the customer and he can pass the process to the Business Manager and maintain the record of the customers.

### E. REPORTS

This module contains all the information about the reports generated by the Employees based on the Performance and by the leave status.

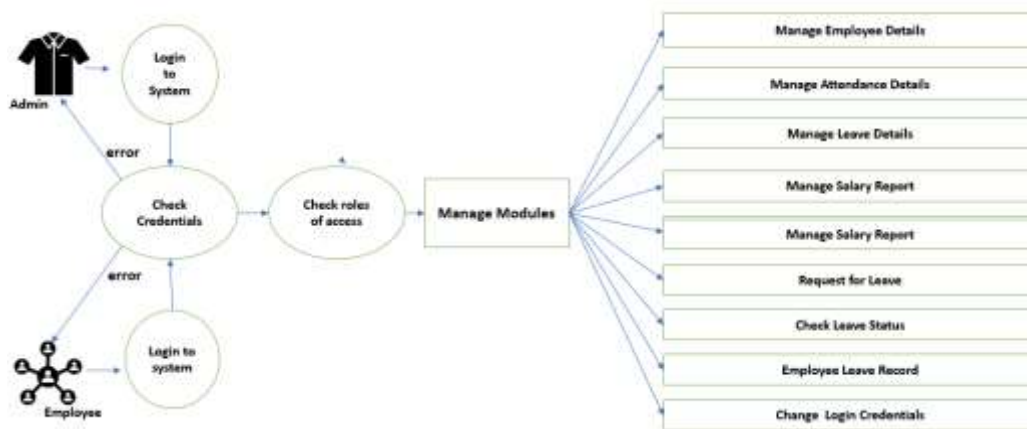
## III. SYSTEM ARCHITECTURE



**Fig 1: System Architecture**

The Dynamic Easy Leave Application System is a part of the HR management, which includes various departments and managements to look after the leave structure of each and every employee. It includes Personnel Data Management, Resource Management, Skill Management, HR & Benefits Administration etc. Each and every department is involved to grant the leave .The user i.e. the employee has to enter the details of the leave with the reason which then the HR manager will go through it and grant the leave.

#### IV. DATA FLOW DIAGRAM



**Fig 2: Data Flow Diagram**

The DFD is also called as bubble chart. It is a simple graphical formalism that can be used to represent a system in terms of input data to the system, various processing carried out on this data, and the output data is generated by this system.

The data flow diagram (DFD) is one of the most important modeling tools. It is used to model the system components. These components are the system process, the data used by the process, an external entity that interacts with the system and the information flows in the system.

DFD shows how the information moves through the system and how it is modified by a series of transformations. It is a graphical technique that depicts information flow and the transformations that are applied as data moves from input to output.

#### V. RESULTS

##### A. Login Page

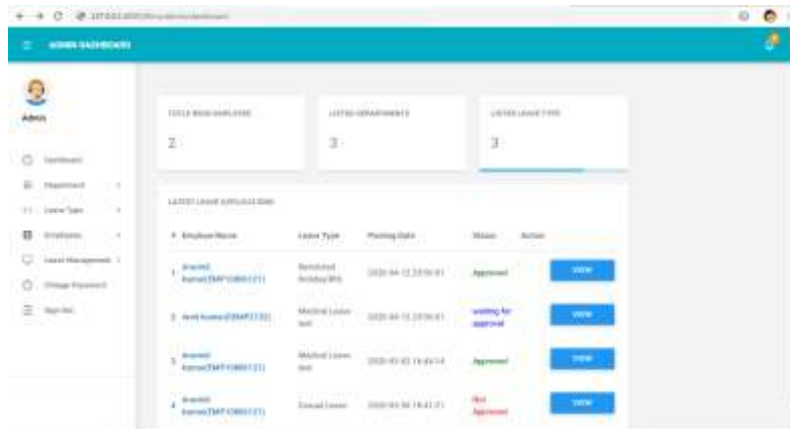


**Fig 3: Login Page**

In this page Admin can login using user name and password. A user name is uniquely identify the user. A password can be combination of characters, numbers and special characters. In the time of login one session will be creating that session is called login session. The admin can access the page only after entering correct user name and password. Every Password is in the AES encrypted form.



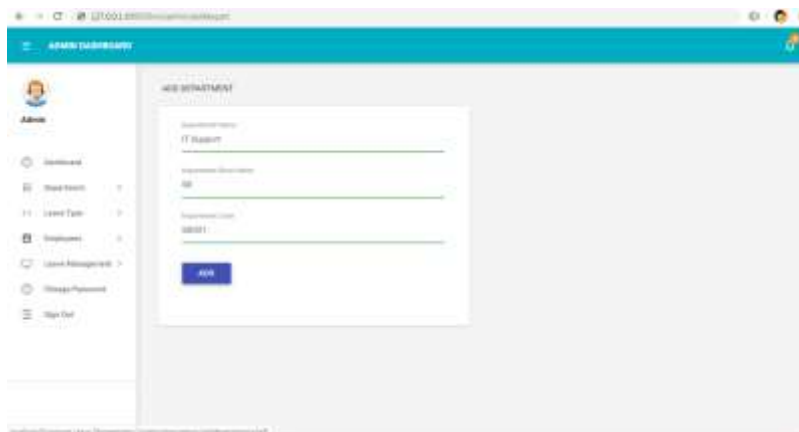
**B. Admin Dashboard**



**Fig 4: Admin Dashboard**

In this page Admin can access all the roles available to manage the leave system. The admin can manage the departments, view the types of leave and also modify them, view the employees list. The leave management section contains approval and rejection of leaves, history of leaves pertaining to each employee. And also reports on annual leave, individual employee leave report.

**C. Add Department**

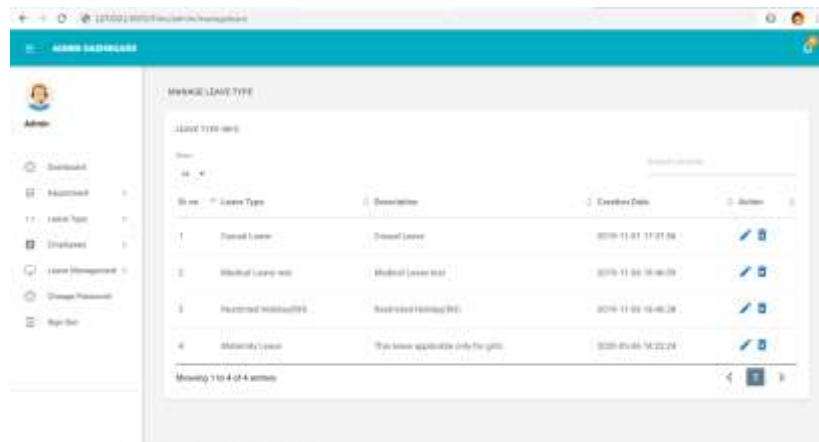


**Fig 5: Add department**

In this page Admin can add or remove departments based on the requirements of the organization.



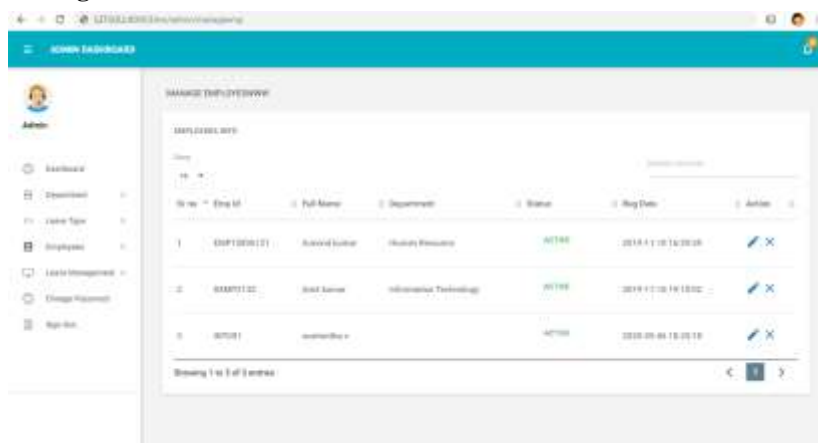
**D. Leave Type**



**Fig 6: Upload location details Page**

This is Manage Leave Type where any editing of the leave can be done. There is Add Leave Type option where new type of leave can be added if insisted by the company.

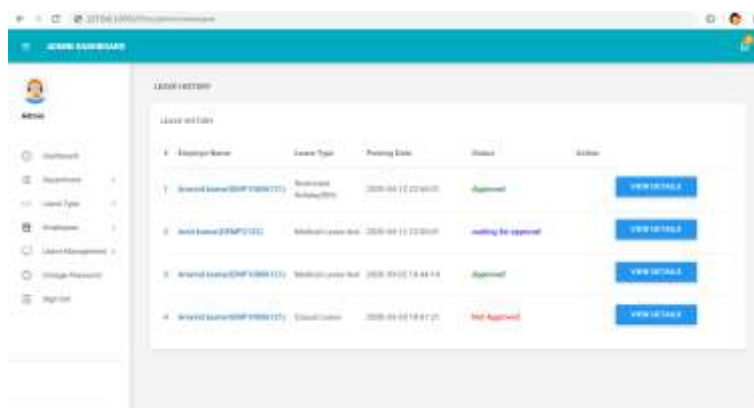
**E. Manage Employees Page**



**Fig 7: Manage Employees**

In this page admin can view all the information of the employees in an organization or department. Admins have the privilege of adding employees and also removing them. But the addition or removal of employee's information is passed to the admin by the HRMS of that organization.

**F. Leave History**



**Fig 8: Leave History**



In this page we can see employee name, type of leave, date of application, status of the leave and view details button which is previewed in the below diagram.

### G. Leave Details

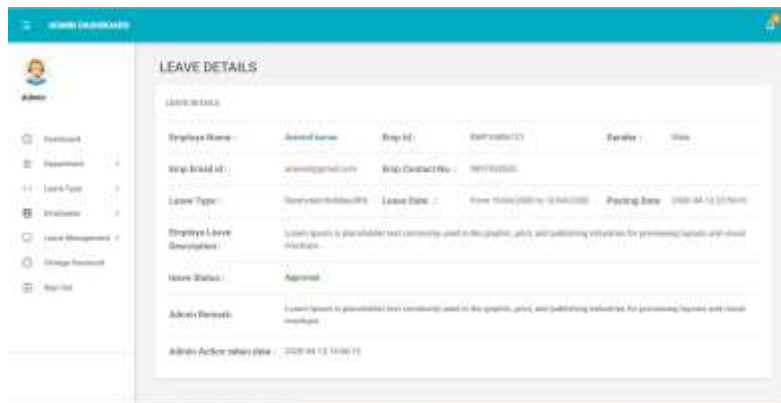


Fig 9: Leave Details

This page contains all the information relating to leave applied by the employee. It contains employee name, employee ID, gender, email ID, phone number, leave type, leave description, leave status, admin remarks, and admin action taken date.

### H. Approved Leave History

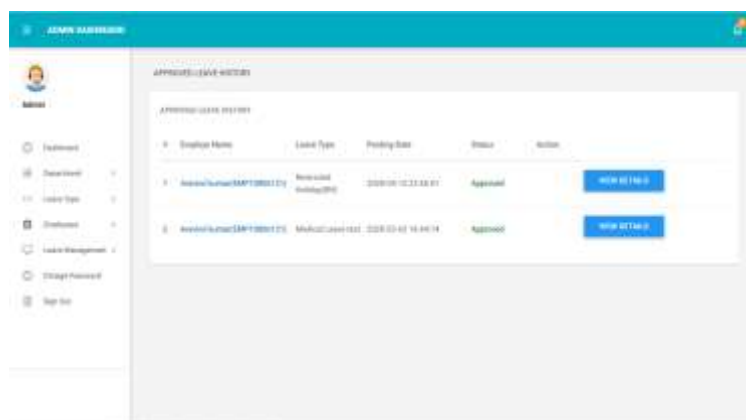


Fig 10: Approved Leave History

This page shows the list of approved leave of employees. This page also contains the view details button which shows all the details of the leave as shown in the above figure.

### I. Cancellation of leave

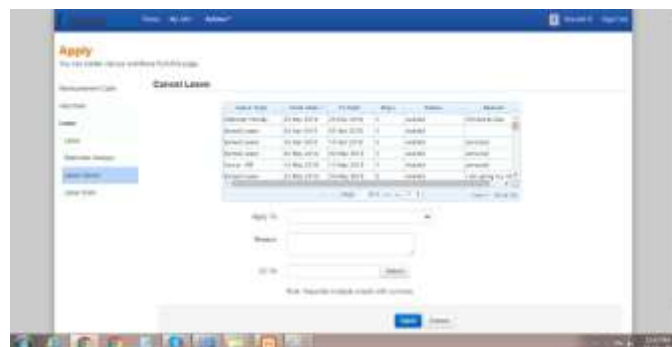
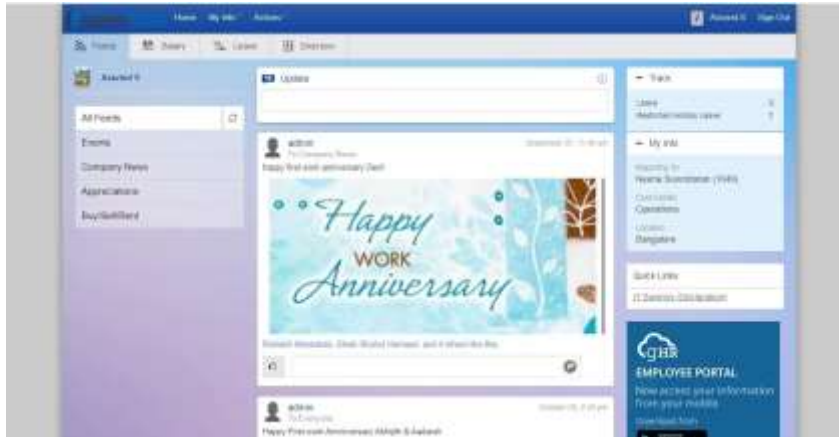


Fig 11: Cancellation of leave



This page allows admin to cancel leaves requested by the employees. The admins are supposed to provide reason for the cancellation to the employees. The admin can cancel more than one leave at a time providing they have exact same reason for cancellation.

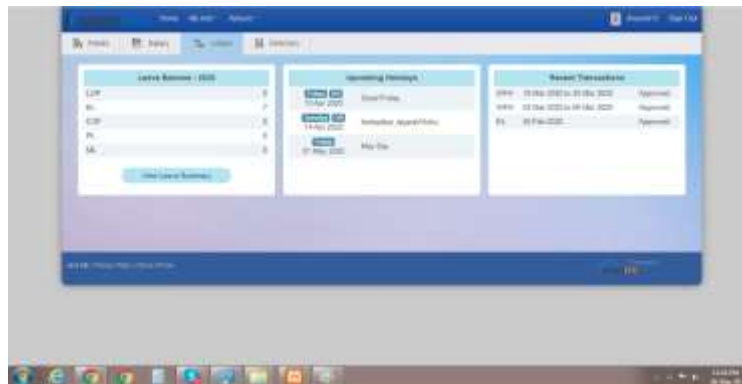
### J. Employee Dashboard



**Fig 12: Employee Dashboard**

This page is the main dashboard for the employee where the organization can share details to the employees. It contains leave section where the employee can request for leave and check status of the requested leave.

### K. Leave Summary



**Fig 13: Leave summary**

This page contains the leave summary of individual employee. It shows how many leave are left for the employee and the upcoming organization holidays.



## L. Leave Application

**Fig 14: Leave application**

This is the page where an employee applies for a leave request with all the necessary fields to be filled for a leave. This page contains leave type, date, session, days, reason, attachment and CC field.

## VI. CONCLUSION

So here we finally are with a leave application management system that can take the request of the staff for leave to be applied according to its own set of attributes filled by the user and requested. Once request is shown to the admin, admin reads that and approves or disapprove according to his requirement which is up to the admin. Admin reviews all the actions and other activities beyond that and takes necessary actions. The leave request screen is an internal part of Employee Self Service. Leave request empowers the worker to request for varied leaves as per their demand & company time unit policy starting from short leaves to long leave, leave of absence to come off. Employees will read their past leave request & current leave application standing. Leave request will be saved within the draft mode by the worker & then will be submitted to the reportage manager & the hierarchy for applicable action. The choice to regularize leave or cancel the applied leave at any time makes the leave request operate. The introduction of AES algorithm has proved that the system has robust login system which has variable key length to provide higher security for both employee and admin. This encryption enhancement in leave management system is very necessary for any organization to protect its data and integrity of the employees.

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