

# SSIP GUJARAT HACKATHON 2020



## Report on EMPLOYEE MANAGEMENT SYSTEM

- Team ID : SGH002493
- Industry Type : Medium
- Problem ID : SGH077

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**GUIDE: Mr. Prayag Patel**

## ACKNOWLEDGEMENT

We would like to express special gratitude towards **SSIP Gujarat Hackathon** for providing this tremendous opportunity to students all over Gujarat which provides the students a platform to come up with new ideas. This kind of hackathon leads students towards technology more and grow more interest in their field. Here students are meet with their skills and imagination. This kind of Hackathon grows more creativity and leadership quality.

We would like to express our special thanks of gratitude to our **mentor Mr. Prayag Patel Sir** who was always stand with us during all the project and also thankful to our **HOD of IT & ICT department Mr. Saurin Dave Sir** to give proper guidance and directs us to correct way for this project as well as our **Director A.C. Suthar Sir** who gives us a golden opportunity to take part in this hackathon and make this project. Secondly we would also like to thank other faculty members who helped us in making things easier. This research was supported by **LJ Institute of Engineering and Technology**.

This project consumed huge amount of work, research, dedication and patience. Still, implementation would not have been possible if we did not have the support of online resources and some of the organizations. Therefore we would like to extend our sincere gratitude to all of them. at last but not least, we express our gratitude toward our families and friends for their kind cooperation and encouragement which helped us in completion of this project and research work. Thank you so much to everyone who helped us directly or indirectly.

## ABSTRACT

Employees are the backbone of any company therefore their management plays a major role in deciding the success of an organization. Company's progress and growth depends on employees. Employee Management System is a distributed application, developed to maintain the details of employees working in any organization. It maintains the information about the personal details of their employees, also it will include leave management, client management, project management, task tracking system that which tasks are allocated to which employee and also the attendance system using thumb impression. task management system to track task assigned to an employ like task assignment, deadline for task, resource allocation to employ for task etc. Also our special feature to rate an employee according to performance and contribution in project. This features make our system more flexible and effective like icing on cake.

This software package has been developed using the powerful coding tools of JavaScript with its libraries and framework with Mongo DB database at the Back end. Bootstrap, Angular JS are framework and node.js is backend script. This software is very user-friendly and eliminates the limitation of real-time access control.

It's flexible and easy to use Employee Management software solution for small and medium sized companies provides modules for personnel information management thereby organization and companies are able to manage the crucial organization asset – people. The combination of these modules into one application assures the perfect platform for re-engineering and aligning Human Resource processes along with the organizational goals. This system brings about an easy way of maintaining the details of employees working in any organization.



*“An approach to having a user-friendly employee management system”*

# CONTENT

## 1. INTRODUCTION :

Manual handling of employee information poses a number of challenges. This is evident in procedures such as leave management where an employee is required to fill in a form which may take several weeks or months to be approved. . The use of paper work in handling some of these processes could lead to human error, papers may end up in the wrong hands and not forgetting the fact that this is time consuming. Employee Management system is an application that enables users to create and store Employee Records. JavaScript is a platform independent language. More over applications developed in Angular JS can be extended to Internet based applications. We use Angular JS as JavaScript framework and use node.js to create server-side JS application. Thus JavaScript was chosen as background to make this application. Also use Bootstrap as framework to make application responsive and attractive.



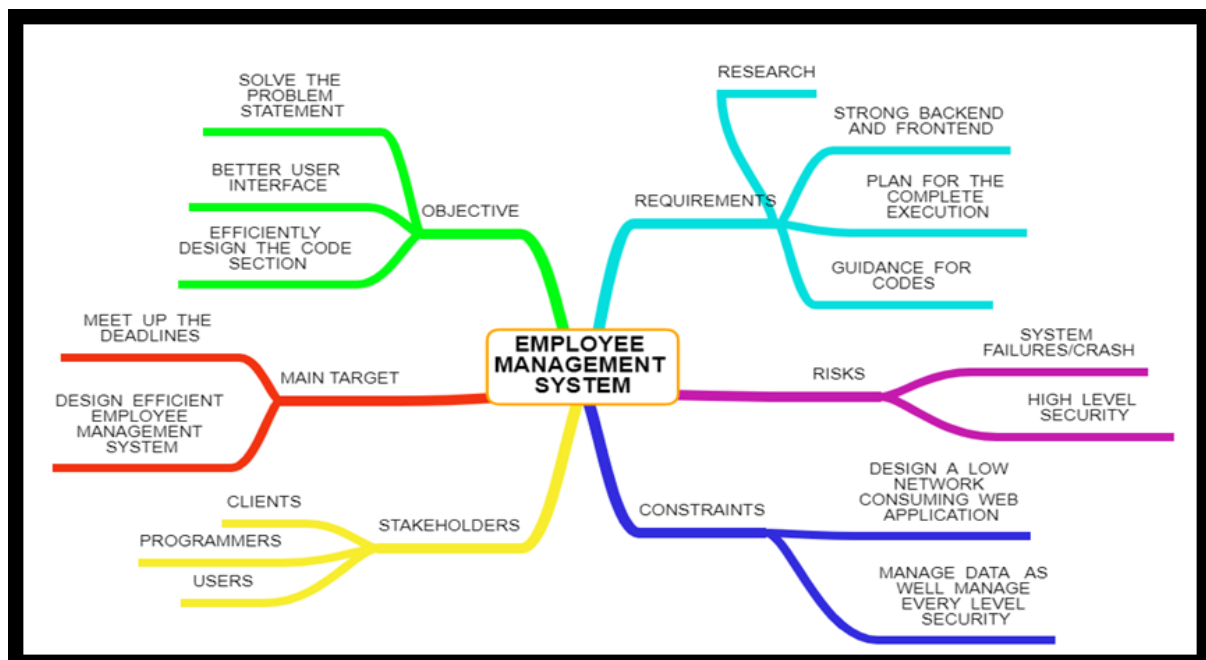
## 1.1 BACKGROUND :

Employees are the backbone of any company therefore their management plays a major role in deciding the success of an organization. Most of the contemporary Information systems are based on the Database technology as a collection of logically related data, and DBMS as a software system allowing the users to define, create, maintain and control access to the database. The process of constructing such kind of systems is not so easy. It involves a mutual development of application program, GUI and database. The application program is actually the bridge between the users and the database, where the data is stored. Thus, the well-developed application program and database are very important for the reliability, flexibility and functionality of the system. The so defined systems differentiate to each other and their development comprises a great variety of tasks to be resolved and implemented.

## 1.2 PROBLEM STATEMENT :

The report's documentation goes through the process of how the organization of employees in a company can be handled with great ease thorough this system. The project is aimed at setting up employee information system about the status of the employee, the educational background and the work experience in order to help monitor the performance and achievements of the employee through a password protected system. our main aim is to encourage digitalization and reduced paperwork, all the companies and industries use these kind of systems in their companies and reduce burdon of employees. This is our small step to contribute in digitalization.

### Problem-solving approach



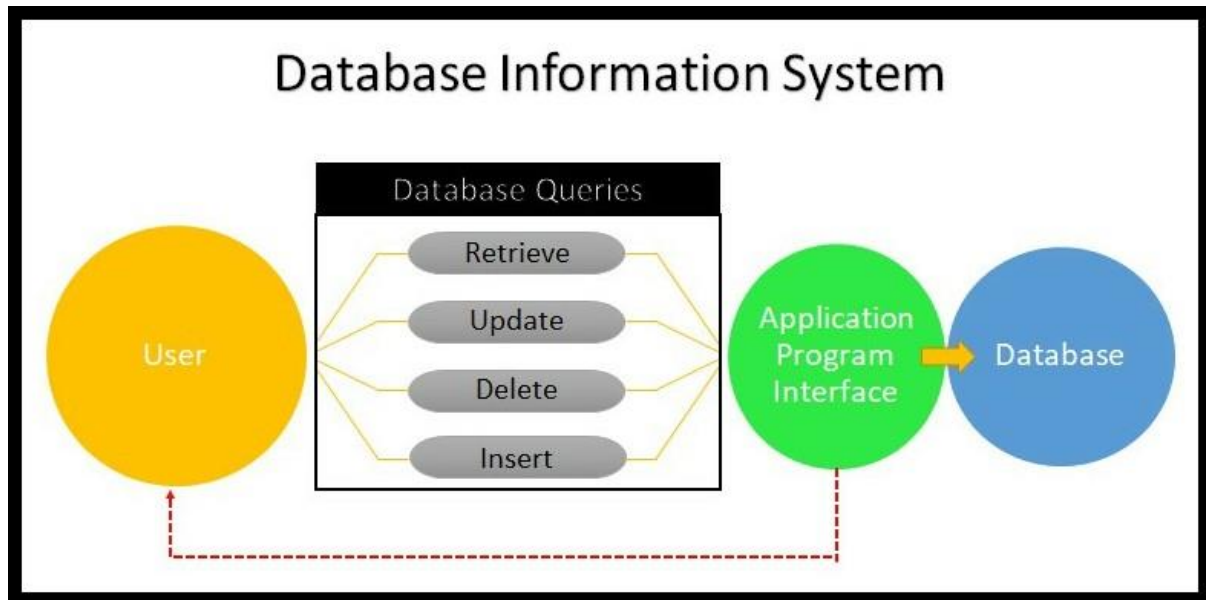
## 1.3 PROBLEM DISCUSSION :

This system should consist of an application program, on one hand(front-end), and a database (repository of data) on the other(back-end). The program should perform the basic operations as retrieving, inserting, updating and deleting data. Any additional functionality is a goal of a further module development.

The process starts from designing and developing the database. The logical database model should respond to the given task and cover the basic requirements .Both controls and forms should logically and functionally be related within the program and fully respond to the structure of the database. Here we use Mongo DB which is very efficient database in this cloud era.

The problem that can be faced is to establish connections upon the database when a query is implemented. Exception-handling should also be taken into consideration during system's development due to eventual exceptions that might occur. Rich GUI and API make system more flexible and user friendly.

Database and API connection in system



- **The objectives of this system include:**

1. Design of a web based management system to fulfill requirements such as project management, leave management, attendance management, salary management report generation to assist in performance appraisal, ESS and employee trainings.
2. Well-designed database to store and retrieve Employees' data easily.
3. A user friendly front-end for the user to interact with the system.

- **The scope of this project will be limited to the following:**

1. Employee profiles: Employees will have access to their personal profiles. This profiles show allover progress of an employee , attendance and projects, ratings thorough chart diagrams.
2. Electronic leave application: Complete elimination of paperwork in leave management by enabling an employee apply for leave as well as check their leave status through the system. This will also enable the manager to accept/reject leave application through the

system. Attendance can be done by thumb impression system .Attendance report also can be generated at daily based and manager have also watch on it

3. Project Management: Assign tasks and projects to employees, assign a project team and keep track of the progress. Report generation: The project manager will be able to generate timely reports in order to monitor employees and this can be used for performance appraisals. The reports will be have all the information of an employee from educational background, trainings attended, projects done as well as technical skills. Also evaluate the project after submission and give rating to employee according to performance.
4. Recruitment Process and salary management: The admin will add an employee and a default password and employee id will be generated and sent to the new employees email. The HR manager will then have the ability to add an employee's information to the database. Salary management would be done by accountant department according to overtime, ratings and leaves.

## 2. Literature Survey

Management is not only about managing people and controlling expenses. Some of the most extremely all the details of employees, employee management system came into the picture. Maintenance, the process of preserving the condition of the equipment and performance in a production facility, stands for a considerable large cost in the budget of manufacturing organizations and is strongly affected by short-term philosophy.

Therefore, both the long-term and short-term consequences of maintenance strategies need to be examined and analysed. Many companies made an important functions of it are management of employees – as they are one of the important aspects of a company.

To manage hundreds of people in a company, it is not easy to do paperwork every time. To handle web/ android application for this, but everyone had their own limitations.

Various employee management system such as mitrefench, hubstaff, gusto, bambooHR, connecteam, 15five, peoplesoft, weberp4, workday, bonusly etc. The main difference between our web application and between others are : deadline reminder, showing ratings of employees and their performance, easy access.

we compare our system to others by taking various applications

### 2.1 MITREFINCH

Optimize your workforce with the global leader in providing employee management tools. mitrefinch deliberates automatic scheduling and forecasting, employee self-service portal, gather time and attendance information, and store data securely at a single place.

### 2.2 HUBSTAFF

Leverage time tracking, reporting, team scheduling, and GPS tracking facilities with Hubstaff's employee management tools. Also, monitor the productivity and timesheets to optimize employee's performance. With Hubstaff, you can automate payroll.

### 2.3 GUSTO

Gusto is an employee management software for small business that incorporates HR and Payroll processes. It keeps track of time-off requests and PTO policies. Moreover, it manages onboarding of new hires, offer letters, organizations charts, and team surveys.

### 2.4 BAMBOOHR :

Tracking employee records through secured employee database simplified. Right from personal and payment information to as much as you want, avail it from a single place. Eliminate double entry errors with a self-service portal that lets employees do self-entry.

### 2.5 CONNECTTEAM :



An online employee management system that lets you manage your employee from wherever you are. Communicate and train your non-desk employees with an all-in-one App. From time clock to employee scheduling, get hold of everything to handle your employees.

## 2.6 15FIVE :

Drive employee engagement for your modern workforce. With this complete performance management solution, let your employees learn and grow from their very first day. Develop them throughout the entire employee life cycle with proper performance strategy.

## 2.7 PEOPLESOFT

PeopleSoft is owned by Oracle. PeopleSoft applications assist in the day-to-day execution of various business operations. It is used by human resource departments to manage employees' information and keep track of their performance.

### COMPARATIVE STUDY WITH OTHER APPLICATION

COMPARISON BETWEEN VARIOUS APPLICATIONS ALONG WITH THEIR FEATURES	FEATURES	LIVE INTERACTION AND SUPPORT	TASK MANAGEMENT	LEAVE MANAGEMENT	EMPLOYEE PERFORMANCE RECORD (RATINGS)	SECURE LOGIN	DEADLINE REMINDER	END DATE AND SUBMISSION DATES OF RECORDS	EASE OF USE	GIVE/GET FEEDBACKS	SECURE DATA STORAGE IN DATABASE	GPS TRACKING
SR NO.	NAME OF WEB APPLICATION											
1	WebERP4	√	√	x	x	√	x	x	√	x	√	x
2	BAMBOOHR	√	√	x	x	√	√	x	√	x	√	x
3	CONNECTEAM	x	√	x	x	√	x	√	√	x	√	x
4	15FIVE	√	x	x	x	√	x	x	√	√	√	x
5	EMMS	x	√	√	√	√	√	√	√	x	√	x
6	POCKET HRMS	√	√	x	x	√	x	x	√	√	√	x
7	GUSTO	x	√	√	x	√	√	√	√	√	√	x
8	MITREFINCH	√	√	x	x	x	x	x	√	√	√	x
9	HUBSTAFF	x	√	x	√	√	√	√	√	x	√	√
10	PEOPLESOFT	x	√	x	x	√	√	x	√	√	√	x

## WORKING AND USERS

Employee management system is for small or big commercial or an IT company. There are 2 types of users of this system

### 1. Admin

Admin can operate this system by login. An Admin has right to enter a data and to modify data in database. All the database's power is associated with Admin. When a new employee enrol in a company then admin add personal information and distribute projects in this system, also assign department. Admin evaluates already have done projects. After evaluation of project, Admin gives stars rating to an employee and end of month which employee has highest no. of stars who will become '**EMPLOYEE OF THE MONTH**'.

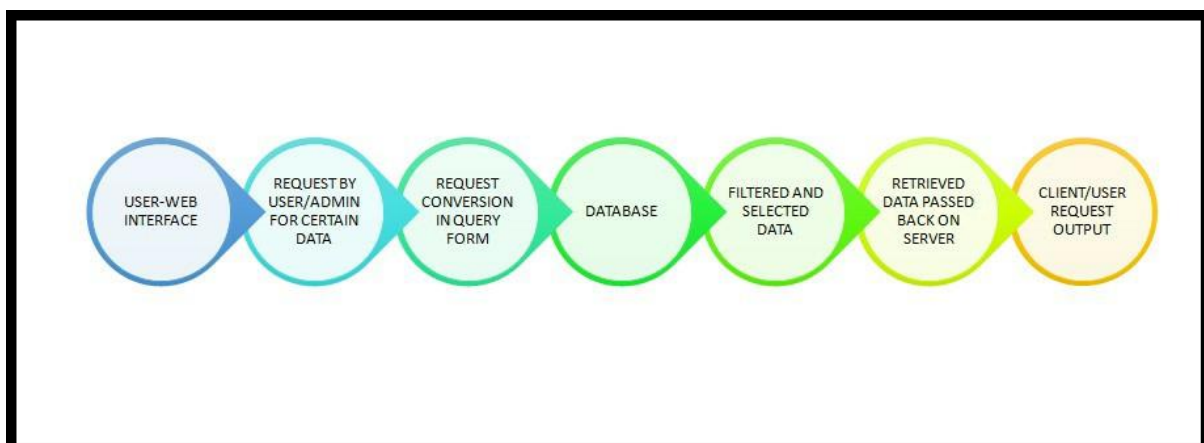
In Admin 3 users can be login.

- a. HR manager: Keeps all the employees' information.
- b. Manager: Register an employee to the system.
- c. Project Manager: Project assignation and evaluation.

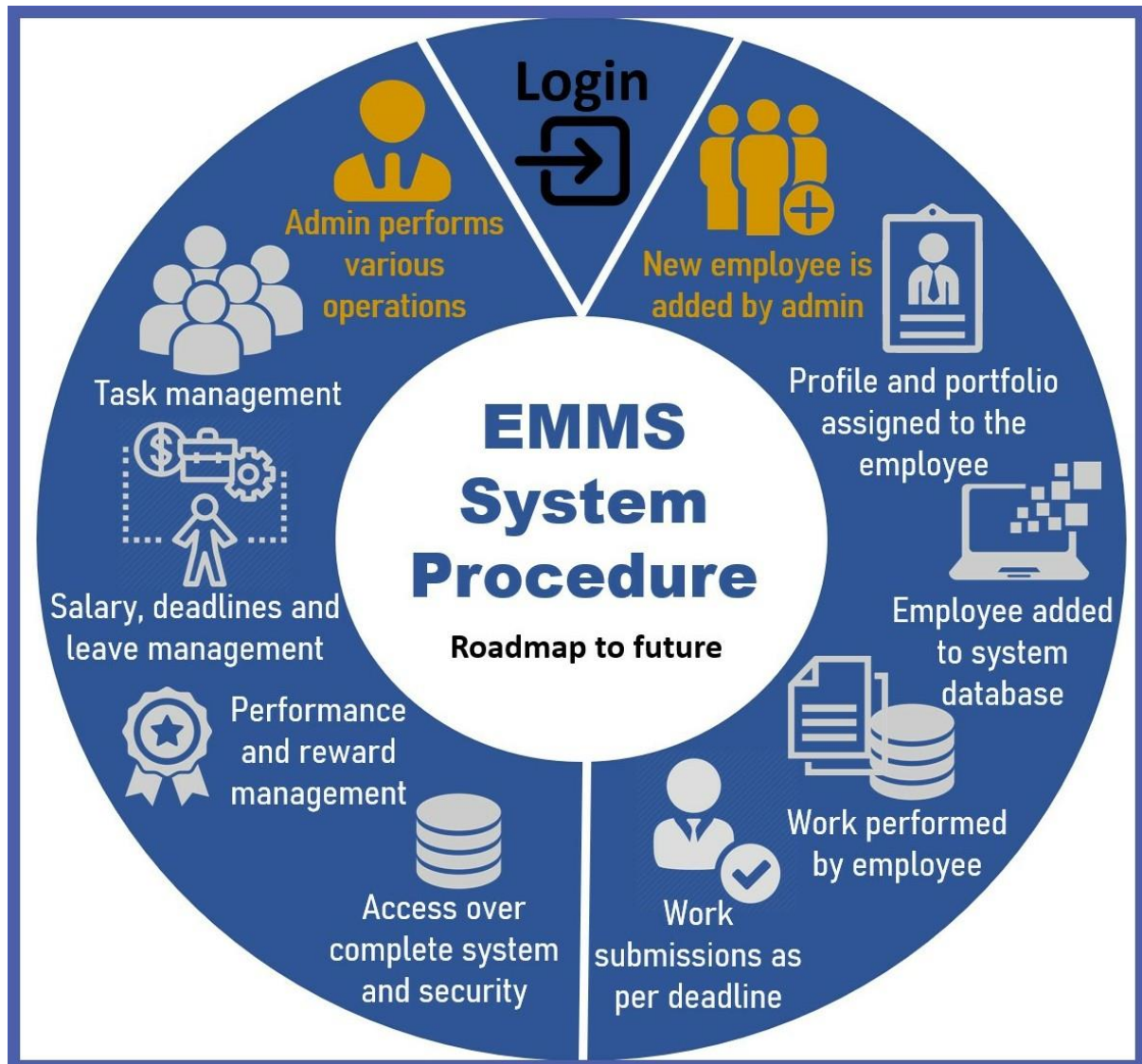
### 2. Employee

Employee connect to the system by login. Employee has right to read the data only from backend database. Employee only enter Work progress report and leave information. Project evaluation and distribution is done by an admin. Deadline reminders before a day of submission. Every employee is warned on project submission day , if an employee fail to submit a project then they get some disadvantages in rating and salary. Employee logs in the system and see all over progress, attendance, leaves and projects on their projects details through visual graph diagrams

process overview



## EMMS SYSTEM PROCEDURE



### 3. CHALLENGES

#### FACED BY US:

- There are many problems that arise while making an application but the major issues that came while making our prototype, we were confused about features because most of features were already there in other application.
- The other problem is many people rejected our application because it's web based as now people prefer android. also it has limited browser support.
- One more major issues or challenge that came across us was how to make our application more user-friendly so decision like fonts, color combination of our application and also where to place which buttons was an issue and keeping in mind how our website will look in mobile for responsive view and in PC was something we always had to keep in mind. Frontend design is also very tough for attractive looking application. Also secure and efficient database is necessary, so this is very tough task to make whole the back end secure database..
- There are already available employee management websites/apps providing multiple features and the main challenge is to stand out and build such a platform which is better than the rest and also comfortable.
- Such websites are prone to attacks from hackers, and the personal information of the members of the company can be at risk. Its important to make such an application which keep all the sensitive data of company and ongoing projects. So making such application, which is risk free was difficult. So this is big job to make secure application.
- we are using JavaScript in our application. It does not provide low-level control over allocated memory. so, It's challenge for us to make application memory efficient.
- Speed is biggest issue for us. now days everyone wants high speed application. JavaScript's interpreted nature makes application slow.
- Another problem is low transfer speed. Even if server is superfast many users would see user-interface as sluggish.

#### FACED BY USERS:

- Some users can't prefer as this is desktop application instead of android.
- Every companies is not tech-savvy, so proper utilization of the application is difficult in non-tech companies.
- Even if the software is provided, constant maintenance and up-gradation is difficult.
- low internet speed or inefficient database make it dull.
- security issues are risen often.
- If server is down then it can't be work properly.

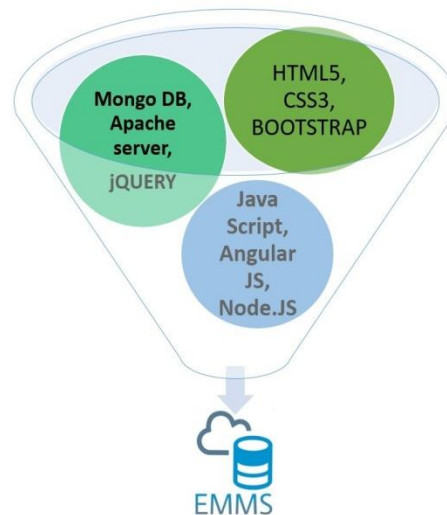
## 4. Tools and Technologies

Tools and technologies to solve this problem:

Frontend designing with HTML5, CSS3, Angular JS ,JavaScript, bootstrap and jQuery.

Node.js is server side scripting language.

Backend database is Mongo DB. and Apache2 is server for our system.



- **HTML5** : Page layout and structure has been designed in HTML.
- **CSS3** : It is used for designing page for making effective and more attractive with colors, designs, animations, fonts.
- **JavaScript** : 'It's Client scripting language' Gives control over application. It also helps in validation tasks and HTML has been developed by JS. It uses for making this web-application and server application.
- **Angular JS is JS MVC framework.** HTML declares only static viruses but it fails to declare dynamic viruses in web application. Viruses created by Angular JS is more expressive and reachable. It has several advantages like exception handling, reach GUI and API collections which makes application more effective.
- **Bootstrap** is framework of HTML, CSS and JavaScript for developing responsive designs and gives effective templates. It gives support for JavaScript pluggins. It compatible with all modern browsers.
- **Node.js for backend scripting.**  
It handles open files at server and returns control to client. Also eliminates waiting and simply continuous request, generates dynamic page. Node.JS can add, delete, modify, create, read, write and collect data files on server.

- **Mongo DB is backend database.** It is a general purpose document based, distributed database for modern application. It has features like more scalable, flexible and maps object in your application.
- Open Source means you never need to rely on the manufacturer to release the next version if something doesn't work or pay for expensive upgrades.
- **Apache2** is server on which application will be run. It serves web pages requested by client PC.
- **jQuery** is a light weight JavaScript library uses for document traversal, DOM manipulation, AJAX and for making easy to use API. It make easy to use JavaScript on application, also use for CSS manipulation and HTML event methods.

Coding/scripting languages, frameworks & database used to make EMMS

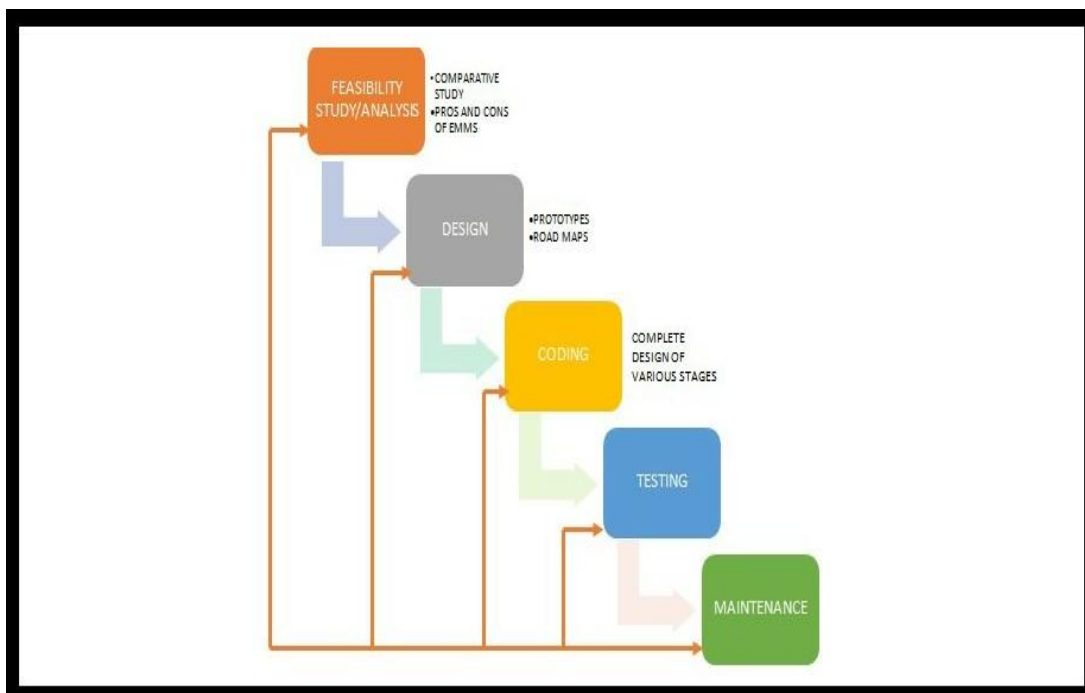


We are using **iterative waterfall technology** for our project. It's extension of waterfall model. The iterative waterfall model provides feedback paths from every phase to its preceding phases, which is the main difference from the classical waterfall model. Thus our project is developed in incremental, rapid cycles and we meet the exact requirements.

Phases:

- 1.Requirement Analysis & .Feasibility study
- 2.Software Design
- 3.Implementation
- 4.Software testing and Deployment
- 5.Software maintenance

Iterative Waterfall model for EMMS



## 5. FEATURES

### 5.1 Attendance Management:

- Employees will mark in and out attendance using through thumb impressions.
- Admin gets report of daily attendance and has watch on it.
- It also shows number of working hours, overtime hours, total meetings attended.
- At the end of the month shows overall percentage of attendance.
- Overall Attendance display through graph-diagram on employees' profile.

### 5.2 Manage Employees' information:

- Admin logs in the system and can add, remove, update or retrieve developers information to database
- Manager register data of new recruited employee to the system and modify data as needed also have watch on Attendance of employee and approve or reject leave application of an employee.
- HR manager register data to HR department and manages new employee's information and training of an employee.
- Basic information about the employees can also be sorted using the portal.

### 5.3 Project management:

- Admin will assign each employee one or more project to work on based on their skills and experience.
- Similarly each project have one or more employees on it.
- Admin will also give each employee a role like team leader.
- Meetings or conferences are also updated through it
- Project evaluation can be done by project manager and he/she can rate the employee according to performance in project.
- Task tracking will be also done, project manager have watch on daily task progress and status. Deadline reminder also comes before a day of submission. If employee fails to submit or complete project then he/she gets some disadvantages in rating and salary.

### 5.4 Leave management:

- When a leave is applied by an employee, if he/she has sufficient leaves left or have valid reasons then it is approved by the higher authority. And their counts decrease accordingly.
- Due to some reason if the leave doesn't get approved then the count remains the same. If any employee didn't apply for leave and being absent then it effects on employee's salary and rating directly.

### 5.5 Employee rating system:

- After completion of project evaluator gives stars out of 5 to rate an employee according to performance and contribution. Ratings are shown on employee's profile in this system.



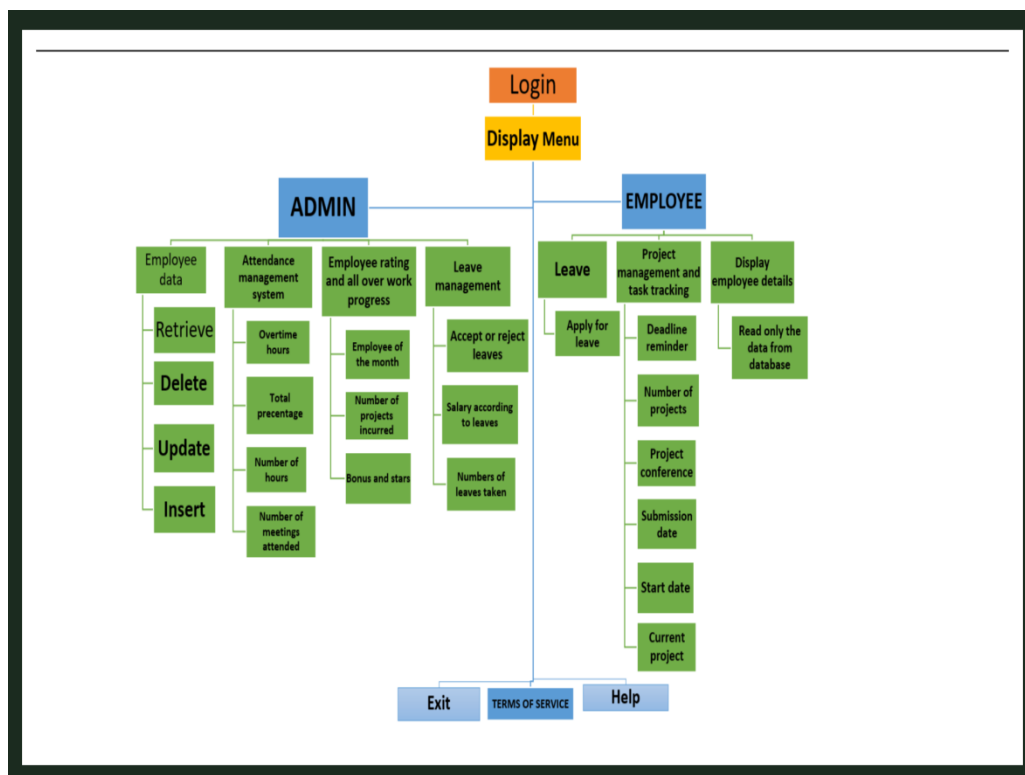
- At the end of the month, employee who collected more number of stars obtains first position and they get incentives accordingly. This employee is declare as 'EMPLOYEE OF THE MONTH'.

### 5.6 Salary management:

- Calculation of net salary can be done based on leaves and overtime in the company and various allowances can also be calculated.
- Print of salary slips of various can be generated and also be sent via email.
- Employees can also submit appraisal report online for their annual or biannual increment.

Employee logs in the system and see all over progress, Attendance, leaves, stars, salary, project details on their profile page in system.

Flowchart of System



## 6. POSSIBLE OUTCOME

- The possible result that we are expecting of our application will be that the management of data will be synchronized as per the name suggests and can be reduced human work and organization will become digital.
- Our application will help to maintain all the records of the employees working in a company and also manages salary and other recruitment, training process. Employees' attendance and leaves are also managed. Manager can approve or reject leave application of an employee. Project registration, assignation and after submission evaluation also can be done. Task tracking and deadline reminder is also very important feature.
- And our application will also have daily updates and reminder of meetings and project conferences, which also notifies when deadline comes. For missing deadline some disadvantages in rating and salary also will be faced by an employee.
- With all this possible features one more feature has been added for rating of the employees who give considerable performance. Admin have to give stars out of 5 to all the employees after completion of a project.
- At end of the month the employee who gets the highest number of stars is entitled as **'EMPLOYEE OF THE MONTH'**.

## 7. Work done till date

Employees are the backbone of any company therefore their management plays a major role in deciding the success of an organization. Company's progress and growth depends on employees. So, we choose project 'Employee Management System' to reduce manual work and for secure data optimization. our main aim is to encourage Digitalization. We invest our time, ideas, creativity in this project. This project consumed huge amount of work, research, dedication and patience. A name gives identity to anything so that we decided a name "EMMS" for our employee management system.

we researched very much about this topic. Because before starting in project it is very necessary to search about project. it is necessary to find all the possible solution about particular problem. According to our problem statement we have to make an efficient employee management which contains modules like attendance management, leave management, salary management, task tracking system and project management. we studied about all the features and decided what can we do in this modules.

We analysed many research paper and got information about all the features. We also studied comparatively all the systems. Management is not only about managing people and controlling expenses. Some of the most extremely all the details of employees, employee management system came into the picture. Maintenance, the process of preserving the condition of the equipment and performance in a production facility, stands for a considerable large cost in the budget of manufacturing organizations and is strongly affected by short-term philosophy. Therefore, both the long-term and short-term consequences of maintenance strategies need to be examined and analysed.

Many companies made an important functions of it are management of employees – as they are one of the important aspects of a company. To manage hundreds of people in a company, it is not easy to do paperwork every time. To handle web/ android application for this, but everyone had their own limitations. we studied various employee management system such as mitrefench, hubstaff, gusto, bambooHR, connecteam, 15five, peoplesoft, weberp4, workday, bonusly etc. We studied about some already exist features and tried to do something new. We decided to add some new features like deadline reminder, employee rating system according to their performance in project, etc. We put attendance, leave, project, salary modules in our system..

We tried to implement this using following tools and technologies. We put prototypes at the end of report.

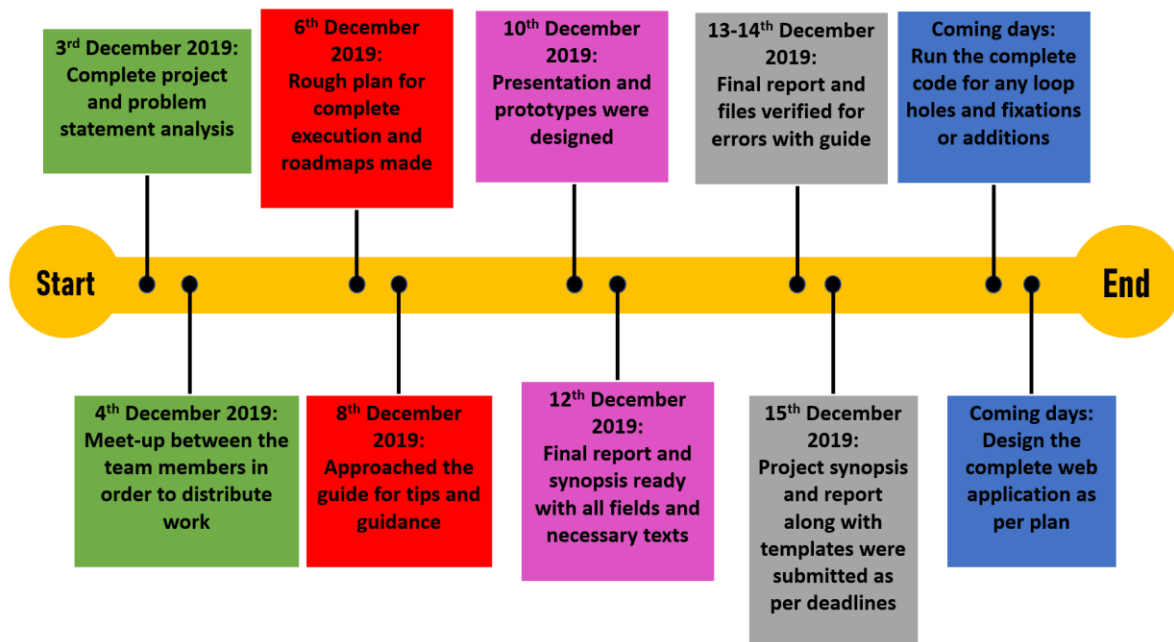
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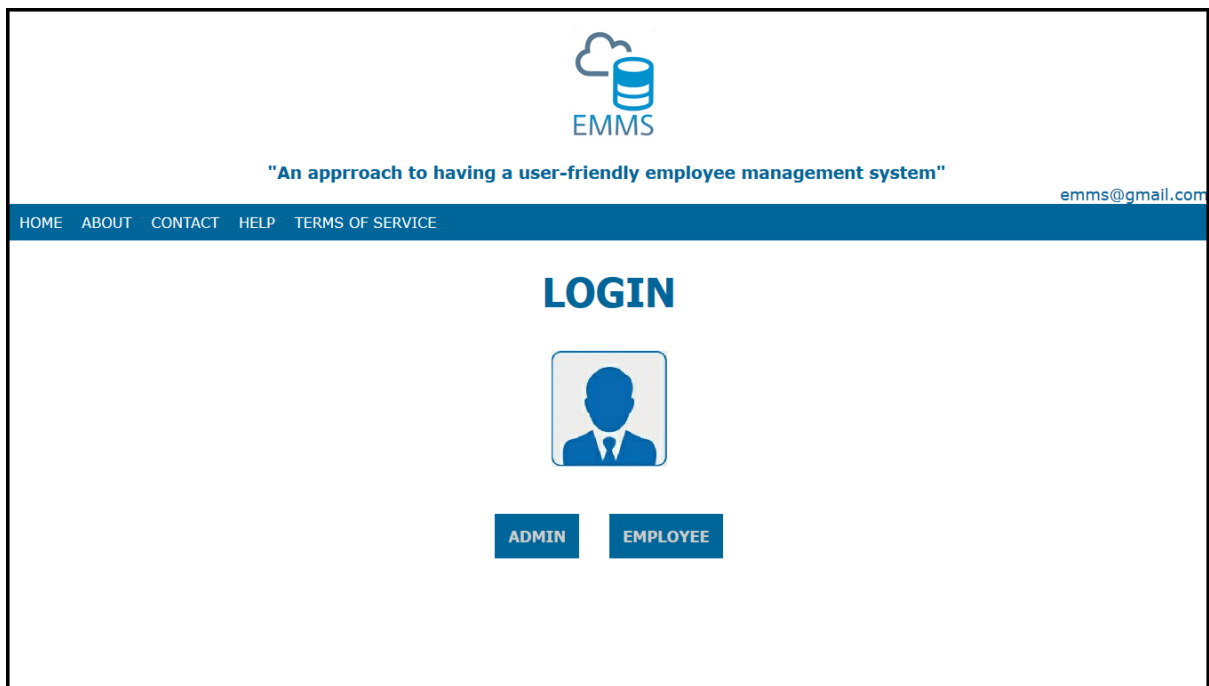
we design Home page of system and other web pages for login, manager and employees. further implementation will be done as soon as possible

## Road-map of our work till date

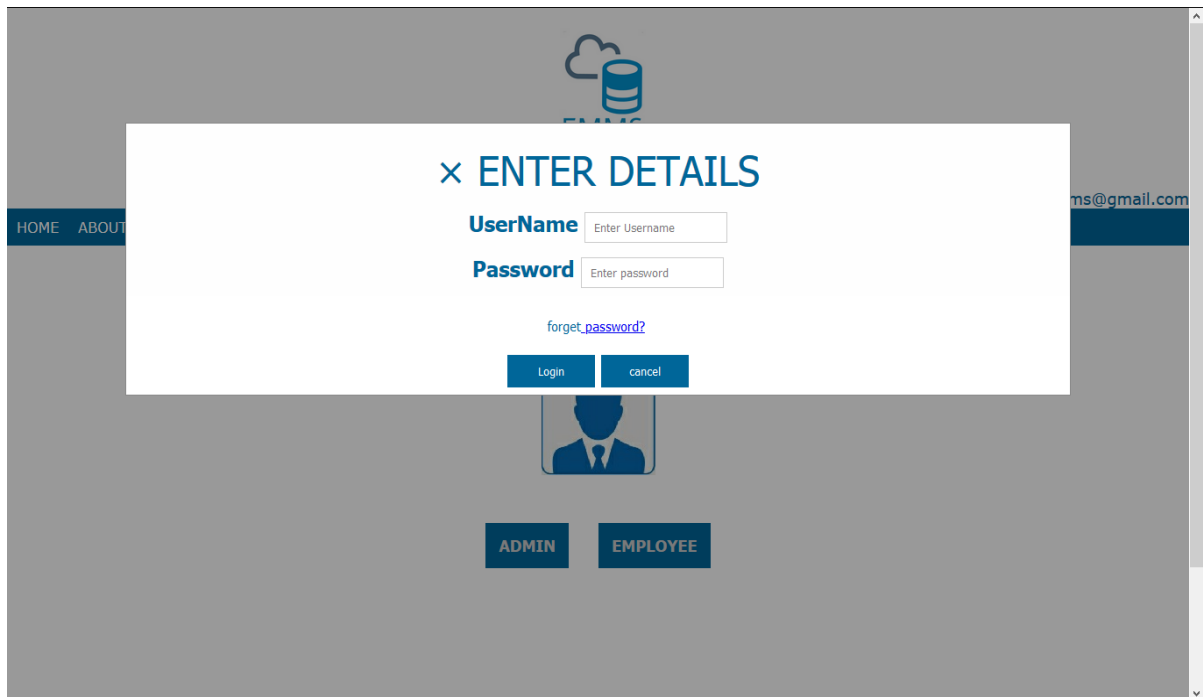


## 8.PROTOTYPE

### HOME/LOGIN page of application



**This login popup comes when click on ADMIN OR EMPLOYEE button.**




The screenshot shows a web application interface with a grey background. At the top center is a logo consisting of a cloud and a database cylinder. Below the logo is a dark blue navigation bar with the text "HOME" and "ABOUT" on the left, and "ms@gmail.com" on the right. In the center of the page is a white login popup titled "× ENTER DETAILS". The popup contains two input fields: "UserName" with the placeholder text "Enter Username" and "Password" with the placeholder text "Enter password". Below the password field is a link that says "forget password?". At the bottom of the popup are two buttons: "Login" and "cancel". Below the popup, in the background, is a silhouette of a person in a suit. At the very bottom of the page are two dark blue buttons labeled "ADMIN" and "EMPLOYEE".

**When admin logs in the system with MANAGER LOGIN and registers employee to EMMS. Manager can rate employees and have watch on attendance and leaves of employee. Approve or reject leaves of employee.**

[HOME\\_EMMS](#) [RATING\\_MANAGEMENT](#) [ATTENDENCE\\_MANAGEMENT](#) [LEAVE\\_MAGEMENT](#) [LOG\\_OUT](#)

### REGISTER NEW EMPLOYEE TO EMMS



UPLOAD EMPLOYEE'S IMAGE

FULL\_NAME

EMPLOYEE\_ID

DATE\_OF\_BIRTH

PHONE\_NUMBER

EMAIL

GENDER

CITY

ADDRESS

JOB\_EXPERIENCE

QUALIFICATION

dd / mm / yyyy

MALE ☐ FEMALE ☐

AHMEDABAD

REGISTER DATA

In Admin, HR to logs in and registers data to HR department and manages all new recruited employees.

[HOME\\_EMMS](#) [RECRUITMENT\\_PROCESS](#) [SALARY & ACCOUNTS](#) [TRAINING\\_PROCESS](#) [LOGOUT](#)

**EMPLOYEE'S DETAILS FOR HR DEPARTMENT**

ENTER DATA

UPLOAD\_IMAGE

FULL NAME

REGISTRATION\_ID

EMPLOYEE\_ID

BRANCH

STATUS

☐ FULL\_TIME ☐ PART\_TIME ☐ VISITING ☐

DEPARTMENT

☐ ACCOUNTING ☐ MANAGEMENT ☐ R & D ☐

DESIGNATION

HIRE DATE

DATE OF BIRTH

GENDER

☒ male ☐ female ☐

QUALIFICATION

EMAIL

MOBILE NUM.

ADDRESS

PINCODE

CITY & STATE

PAYMENT DETAILS

REGISTER DATA



**In Admin, project manager to logs in, and assign project to an employee. And have information about ongoing projects and evaluate projects.**

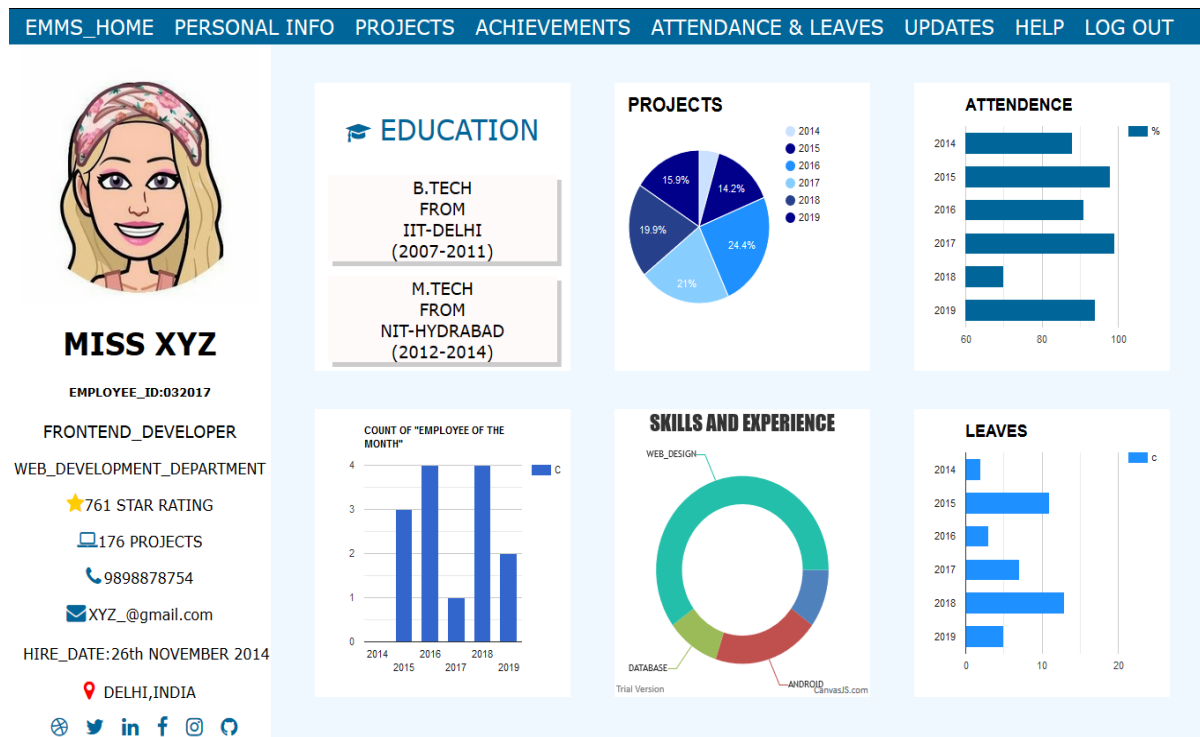
[EMMS\\_HOME](#) [ABOUT](#) [ONGOING\\_PROJECT\\_DETAILS](#) [HELP](#) [ANALYSIS](#)

### PROJECT REGISTRATION

EMPLOYEE_NAME	<input type="text"/>
EMPLOYEE_ID	<input type="text"/>
CLIENTS	<input type="text"/>
PROJECT_ID	<input type="text"/>
PROJECT_TEAM_ID	<input type="text"/>
PROJECT_CATEGORY	HIGH <input type="radio"/> LOCAL <input type="radio"/>
PROBLEM_STATEMENT	<input type="text"/>
TEAM_LEADER	<input type="text"/>
MEMBERS	<input type="text"/>
START_DATE	<input type="text" value="dd / mm / yyyy"/>
SUBMISSION_DATE	<input type="text" value="dd / mm / yyyy"/>

REGISTER DATA

When employee logs in the system, This Profile-page shows all-over progress and basic information about an employee using visuals and graphs, there are sub modules for Attendance, leaves, projects etc shows information in detail.



## 9. CONCLUSION

This Application provides users with a complete package of all the features that are required to manage a company and employees.

The idea is to provide a unique employee management platform which can be used by small scale as well as large scale companies. As this application provides basic features of salary management, attendance management, leave management, project management, task tracking etc. It also provides advance features of employee rating system, 2 step verification and high security as well.

With this application, we try to cover all the features which a company needs to manage employee's data and other information in a synchronized manner. our aim is to reduce manual work. also we aim data security and easy backup/recovery of data. Which is not much possible in manual dataprocessing.

To make companies or industries more digital and reduced human work this is our aim to encourage digitalization.

## 10. REFERENCES

- 1) <https://studymafia.org/employee-management-system-ppt-and-pdf>
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