Employee Time Management System

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Abstract: *An Esteemed organization has thousands of Employees working in different departments and every department has different teams separated based on their work categories(eg: In IT department we have designing team, developing team, etc) All these employees record their daily basis work data in excel sheets,mails,laptop,notepads,etc. Additionally, the Managers may be contacting with the employees under them on a range of different platforms – phone, email and social media. Asking for reports, following up on projects . It is a dynamic and useful web application that provides an automated and centralized method of tracking and monitoring daily work time for active projects by enabling managers to track employees work time and efforts spent while working on various projects performing tasks assigned to them, also leave can be recorded. This system helps in completing projects on-time by providing real-time project status. It optimizes resources utilization and measures the performance and productivity.The project is being developed by using ASP .NET framework in C# programming language and a back-end technology of Standard SQL Server.Without this application, it can be difficult to extract required information for time analysis, hard to generate reports, Managers can lose sight of what their team are up to in reality, which means that they can't offer the right support at the right time – while a lack of oversight can also result in a lack of accountability from the team.*
Keywords:*Daily work Record, Time analysis, Resource utilization,Report generation, Leave records.*

I.   Introduction

Employee Time Management System is to develop a web application which will help the employees of the company to record the amount of a work time spent on each job. Timesheet is a sheet of pre-formatted fields in which daily tasks performed by each person are filled in their individual sheet. Timesheets can also be used to build a body of knowledge about how much effort tasks takes to develop.The purpose of this project also serves the higher authorities (like managers, HOD's) to keep a record of time taken, quality and quantity of work being done by the employees under them. Also serves as a good tool for HR to find out the vacation trend of an individual.vIn positive sense the purpose of timesheet is not to track the person but to prepare a repository to refer immediately or later for various purposes.

The Other purposes are to calculate total man hours spent on a project, the cost incurred on a project, the engagement/ percent time of an individual in a project, backlog analysis at any stage during the development, re-allocation of task, requirement analysis etc. The system will help manage employee relationships, including assignment of projects, redistribution, planning and monitoring. It allows the employee to have a comprehensive and detailed mapping of each project assigned by the manager of the company. This will enable the Manager/Supervisor to effectively manage and monitor their own performance, their team's performance, their project progress, performance, past interactions, and leads.

The web-application facilitates the monitoring of progress at different levels in the hierarchy.Employee Time Management System(ETMS) for Maintaining Timesheet can generate reports that the Manager/HOD can view

depending on the nature of login, i.e. IT department Manager, Civil Manager, Electrical Manager, etc. The reports are generated based on input given by the employee till date, and presents it so that better and quicker decisions can be made. As Web Applications have added a new and faster way to interact with customers, the opportunity and the need to turn employee work data into useful information has become generally apparent. The project provides a generic platform to all the departments to maintain a single work space area. The Web application can also benefit when integrated with payroll system of the organization.

II. Current Scenario Of Time Management Systems

There are various existing timesheet systems available, such as TSheets,Sling,Shift Board,Deputy Scheduler,Harvest etc.

TSheets : Track time from any location, using any device, in real time also tracks employees paid time off.the main purpose of system is to track employees working record.[1]

Sling Time Scheduler : is a free communication and shift scheduling software.With Sling you can create employees' work schedules, assign tasks, send messages to groups or individuals, and share information with your employees on the internal newsfeed. So instead of using multiple platforms, you will be using just one tool and keeping everything in one place.Sling is available on the web and through the apps making work accessible anywhere.[2]

Shiftboard : is an Automated Scheduling Software. with main features as follows: Easy Employee Schedule Communication, Mobile Employee Scheduling Software, Shift Scheduling, Absence & Leave Management.[3]

Deputy Scheduler : is the ultimate workforce manager, offering you the best technology in a web based solution. Simplifying your scheduling, timesheets, tasking, employee communication and administrative tasks. With brilliant apps and one click payroll integration we make your life easier. Let Deputy give you visibility and control over your business and workforce management.[4]

Harvest : is a cloud-based time tracking tool designed for businesses of all sizes. The solution provides invoicing and timesheet features for small businesses and freelancers. Key features include time and expense management, team management, project management, scheduling and invoicing.[5]

In the current scenario the time management systems are not well organized and the companies, are currently dependent on excel sheets containing different attributes and then mailing it to higher authorities, which creates unnecessary drift between different departments. There is no proper platform where data can be centralized and employees can maintain relation in a team via online interface. The Time management systems available in the market does not meet all the requirement of the project based companies. Majorly no Time management system is project based. Also this system enables Managers /HOD to track timely reports of the team working under them.Also Graphical representation of the report will help the higher authorities to analyze time consumed in each activity.

The following Table (II.i) shows comparison between different Timesheet softwares available in market.

Table no 1: Comparison between different Timesheet softwares available in market.

Parameters	TSheets	Sling	Shift board	Deputy	Harvest	ETMS
Timesheet	NO	YES	YES	YES	YES	YES
Integrations	YES	YES	YES	NO	YES	YES
Web based	YES	YES	YES	YES	YES	YES
News sharing	YES	NO	NO	NO	NO	YES
Mobile optimized	NO	YES	YES	YES	NO	YES
Single Sign-On (SSO)	NO	NO	YES	NO	NO	YES
Project-oriented	NO	NO	NO	NO	NO	YES
Cost	$20 per month	$4 per month	$6 per month	$2 per month	$12 per month	$0

III. How This System Is Better?

Employee Time Management System(ETMS) is a business solution that helps maintain information about various activities/ tasks performed by employees on daily basis.
● The system enables the Team Leader to effectively manage and monitor its own performance, their team's performance, and their relationship progress or past interactions.
● The system also helps monitor the progress at different levels in the hierarchy. Records time required for project completion and improves project efficiency.
● Ease of operation

The system will collect information from various sources and have a centralised storage to store, retrieve, and manage each employee's work and performance data and assigned project data, a lot easier than the traditional method of maintaining Excel workbooks and other files.

● Performance Evaluation

The system will capture each employees work data on daily basis and project related data and associate it with the respective Manager of the Team. The Manager/HOD will be able to track and monitor the performance of their subordinates using Qualitative and Quantitative parameters to help understand the Targets vs. Actual performance growth.

Unlike most TimeSheet software, Employee Time Management System for Maintaining timesheet will be working on all platform to promote interaction with users at every point.

IV. Implementation

1.   IDE
Visual Studio 2012: It is an application development framework that supports development of various .net supported applications that is introduced by Microsoft. Many user interfaces like windows applications,web applications can be effectively developed and deployed.
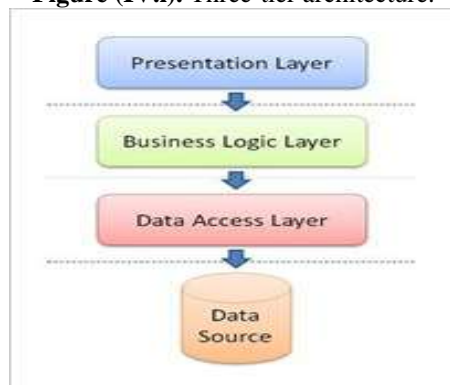
2.   Database
Sql server is popularly used for Web Application development. It is used for backend implementation as it is an open source Relational Database management system. SQL Server is used to remove all the redundancies and implement relationship between datasets. It also provides transactional features to achieve ACID properties.

3.   Technology
.NET Framework 4.0 is a framework developed by Microsoft which provides many class libraries, languages and common language runtime which makes it a platform independent. It runs on Microsoft Windows operating system. It is a software framework developed by Microsoft that consists of many class libraries and has interoperability across many programming languages.In the .NET environment, a layer is usually set as a project consisting of various functions. This layer is responsible for working with other layers to perform some designed goal. The main characteristic of a Host Architecture is that the application and databases reside on the same one host computer and the user will interact with the host using an not so friendly terminal. This architecture does not support distributed computing. Some managers find an issue that developing a host application takes too long and it is quite expensive. These disadvantages consequently leads to a Client-Server architecture.[6

The timesheet management is deployed using the 3-tier architecture as shown in Figure (IV.i).[7]
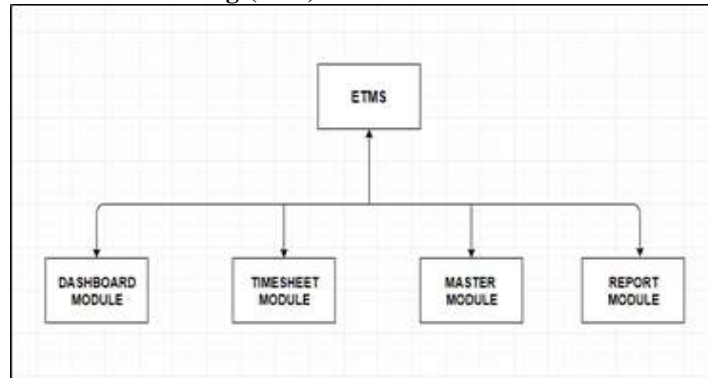
Figure (IV.i). Three-tier architecture.

There are primarily 4 types of users that will interact with the system:
● Admin of the system.
● Employees of the company.
● Managers.
● Head Of Department.

Each user will have certain rights according to the organization hierarchy, based on Bell Lapadula model. Employees of the company can fill their daily time sheet reports which can be reviewed by its Manager and HOD. Where as Employees have no rights to view Managers timesheet data. Admin of the system creates teams, as per requests received from manager for creation of teams. HOD can obtain reports from managers timesheet data as well as employees timesheet data and act accordingly.

If Employee fails to fill its timesheet for more than seven days Manager will be notified and can take actions accordingly. Implementation of this system will help in smooth running of business. Proposed Time Management system would help huge organizations to have a generic platform for their Employees and provide better and easy Communication flow among them. Available on mobile and desktop with instant access for Users of the system.

Fig:(IV.ii) Modules of ETMS
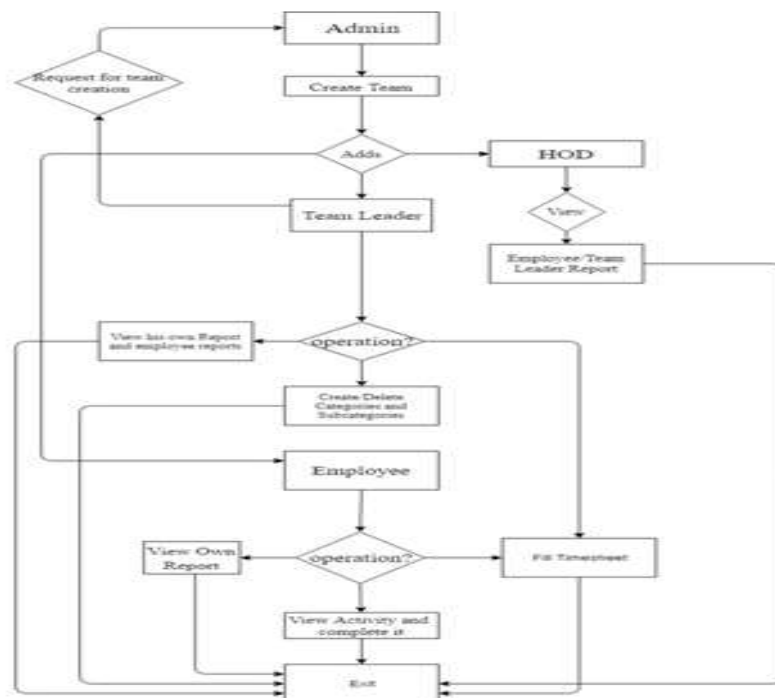

The modules are shown in Figure (IV.ii)

Dashboard Module: Employee Time Management System (ETMS) allows employee to enter their daily work in timesheet easily and efficiently. Dashboard will show the Timesheet date wise and if employee has not filled in details for a particular date then that row in the dashboard will become RED stating ALERT to fill in that date.

Master Module: Master module is basically for Managers. In this module master will be able to create new tasks and sub-tasks and assign it to the employees in the team created by the admin on Managers demand.

Reports Module: Report Module will allow the Employees of the organization to see their detailed timesheet date wise , monthly ,yearly or by range of date. Employees can also filter their data as needed to generate report. Employee can not see any other Employees data and also data of higher authorities. Reports generated may help the Employee in keeping track of his daily activities and help him analyze his performance growth.
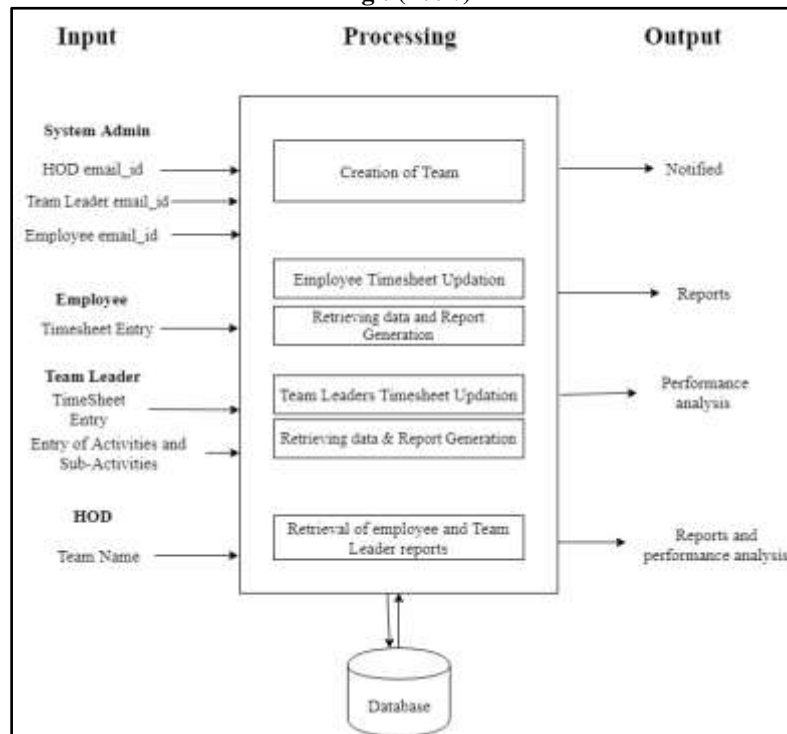
TimeSheet Module: This is a platform where each and every employee can feed their daily work done. Reports are generated based on the Work and duration ene\tered in the timesheet by the employee.

Fig:(IV.iii)

Above figure(IV.iii)represents the Employee Time Management System(ETMS) with hierarchy wise access level Analysis. The system takes the Employee daily activity as input and processes the Employee Activity Response according to the organization's policy. The system also takes the Employee data as input and tracks it to generate a Performance Evaluation Report.

Fig : (IV.iv)

Another highlight of this project is that it extracts knowledge from data which goes beyond the traditional common tools to determine important information about the effectiveness of scheduling projects, employee efficiency and overall organizational success.

The application provides the best platform for the HOD's to keep an eye on the work being done under them and also it is best way for the HR people to see the count of working hours of each employee(if and only if Payroll system is integrated).

At the core is something called Scrum, a project management framework that promotes short cycles, iteration, learning, and team improvement, as well as getting and measuring feedback to ship the next increment of a product. It helps teams respond to unpredictability through incremental, iterative work cadences, known as sprints. Agile methodologies are an alternative to waterfall, or traditional sequential development.

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