Web Based Project Management and Monitoring System (PMMS) using Laravel as PHP Framework

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Abstract - *Traditional way of managing and monitoring the projects of students using manual method is a very tiresome task. The motto of this project is to create an automated system for managing and monitoring all the activities of projects. It is a web based system which is helpful for students, project Coordinators, HOD and Faculty. System lets Admin add students and faculties into the system. Then students get authority to login into the. Similarly, faculty needs to login into the system. Faculties can assign a projects to a particular group of students and also assigns a task to that group. While creating a task faculty will be able to assign a weightage for that task and when task is created email will be sent automatically to the group of student for that project only. Then student will get notification of email and they will be able to see tasks and documents uploaded by the faculties and they can complete their assigned task and also upload work document. Then faculty will be able to close that task and assign new one. Project coordinator and HOD are the main roles in the system who can monitor the progress of projects of their own department. Project coordinator, faculty co-ordinates with each other. Progress Bar is increasing by some percentage if and only if faculty close the status of task. For creating progress Bar we are using a work breakdown structure (WBS). WBS used to break overall project into tasks and tasks are divided into semesters I and semester II.*

Key Words: **PMMS, Project Management and Monitoring, Web based System, Laravel, Student, Faculty**

1. INTRODUCTION

Traditional process for managing and monitoring the projects of students is very time consuming. Project coordinator assigns task for students. Students complete the work as per requirements of coordinator and submit it and coordinator stores documents and details about each project, so here all work is done manual. Also, traditional method can take more time to complete project related work. Many students miss the updates and deadlines related to their projects because some communication gap. Hence for consuming necessary time, to organize all documents into one place and most importantly to keep track of projects or for keeping an eye on mistakes that occur during the work process, we propose web based system to manage and monitor project related activities. It

becomes very easy if all the details and updates of the project from faculties and coordinator are easily available for the students.

This system can be used in planning, monitoring and controlling projects which are assigned to students. It manages and stores project related information which is used by different groups of people such as students, coordinator, and faculty. All the modules of the system have a unique username and password. Then any entity can login into the system using their credentials to get authenticated. Coordinator allows the group of students to provide at least three project domains and then assign the guides to the groups of students. Faculty assigns various tasks to the students. Progress chart will be displayed as per work is completed in percentage to project coordinator, HOD and faculty/guide. Notifications are sent to the groups about the important notices and updates related to their project. The main objective of this web based system is to help the user in the process of managing the project related activities rather than manually storing and remembering details about each project. Using this system user can swiftly go through the process with the help of few mouse clicks only.

The main goal is to build a system which can manage, monitor and control project related activities. There is no wasting of time on searching project related documents and details manually thus, web based PMMS will help to manage and store project related information which is used by different groups of people such as students, coordinator and faculty. Another objective is for collaboration that has been getting things done quick and better by applying their common knowledge, because valid collaboration with teams speeds up result-making. To prove such kind of improvement and to make easier everyday working life, it was needed from the colleges to make an inside system for project management.

2. LITERATURE REVIEW

Pradeepa S. Seneviratna, S.T. Nandasara explained about success of project is relying on timely transfer of information among the parties involved such as team leader, manager, developers, designers and clients. It provides information about software project collaboration, monitoring and management. [1]

Prof. T.R. Shinde and Nehal Sharma, Swapnil Limgude, Amruta Gadekar, Pallavi Jadhav explained information about software system which is designed to help in managing different projects for a company and allows easy management, tracking of varying projects running in the company. The software system allows for simple project management and tracking activities in those projects. The project manager has the overall control of the system that allows him to create and remove projects as per the requirement. [2]

Halil Cicibas, Omer Unal, Kadir Alpaslan Demir explained about the comparison of a set of project management software tools (PMST). In which first, they developed criteria to determine which PMSTs would be subject to analysis. Then, they developed criteria to compare and evaluate these PMSTs then present the findings in a tabular format which will help to assess the strengths and weaknesses of these available project management tools. [3]

Guru Prakash Prabhakar explained about literature search on what is a project, its classification, characteristics like a start and a finish, A time frame for completion, A sequencing of activities and phases, its life cycle, tools and system used in those tools like WBS(Work Break Down Structure). [4]

Kieron Conway explained about essential software development as well as about complete project life cycle, particularly in the areas of planning and estimating. Written book provides the skills for setting up a technical framework for successful software development. Covers a basic set of skills needed for effective software development not found in any other book. [5]

Sanket Kale, Aniket Shewale, Premsagar J. Sarang, Prasad S.Pawar, Safia Sadruddin explained about project management process including planning,scheduling,resource management, requirement analysis and designing to achieve project goals and objectives. They stated about use of hashmap to implement automatic assignment of project guide with the domain to student groups. [6]

3. PROPOSED METHODOLOGY

In this proposed system we are going to implement a web based system using Laravel framework 5.4.36. It manages and stores project related information which is used by different entities such as Faculty and Student. Here Faculty module is further having different roles those are Admin, Coordinator, HOD, Dean, and Faculty. All the modules of the system have a unique username and password. Then any module can login into the system using their username and password to get authenticated. Admin can be able to create as well as delete the users such as faculty and students through bulk import and export. Faculty can be able to create projects, allocate tasks with weightage, start and completion dates for projects and monitor project progress. System allows student to add project related information on the dashboard as per the requirements given by faculty and complete given tasks before deadline. It allows coordinator, Dean, HOD and faculty to monitor progress of all projects and view progress bar of project. System maintains schedule of the projects that is the start and end date of project. Accomplishment and reminders prior to the last date. As well as students get email on their registered mail as faculty assigned any task.

3.1 Work Breakdown Structure

Work Breakdown Structure is related to planning and scheduling a project. It is a functional decomposition of the tasks of the project into phases. The overall project is broken down into different phases which starts with dividing project into two semester and subdividing it into manageable components: project, system, subsystem, components, tasks, subtasks, and different work elements in terms of size, complexity and time. Using break down structure, coordinator can be able to divide the project related work into tasks and subtasks, and assign those task to students including duration for each task.

3.2 Graphical Representation

In this system Progress Bars are used to show the graphical representation of projects assigned to students by their corresponding faculties. These Bars are used to show the percentage of how much tasks are completed by the students. A Progress Bar provides an illustration of a schedule that helps to coordinate and track specific tasks in a project.

The important aspect of graphical representation is calculation of percentage of progress bar. We have divided overall project work into two halves i.e. Semester I and Semester II and it has 50% weightage for semester I and other 50% for semester II. Each task has its own weightage but sum of overall task's weightages must not exceed the limit for each semester i.e. 50%.when the tasks from both semesters completes the progress bar shows the 100%.so the formulae used to calculate these percentages are

For Semester I: $(w/50*50)$

For Semester II: $(w/50*50)$

Using these formulae system can calculate the percentages for two Semesters.

These Bars give a timeline for each activity and used for assigning, scheduling and then display progress against these schedules and assigned tasks. Coordinator can be able to track the project progress by using progress bar.

3.3 Working Modules
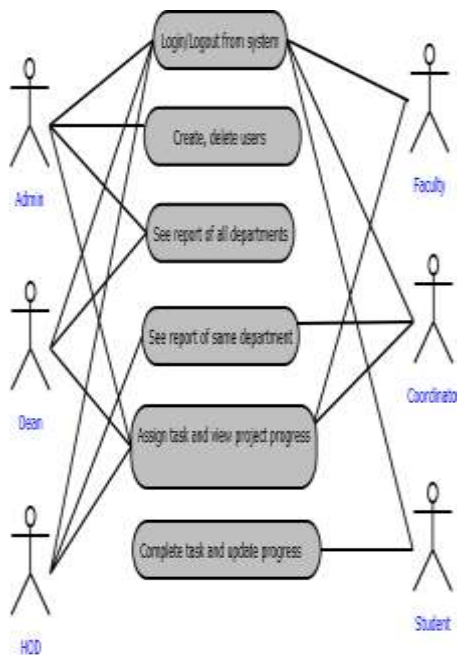
1. Faculty

- **Admin:**

Login - Admin logs into the system using username and password.
Create users - Admin create users such as faculty and student.

- **Dean:**

Login- Dean logs into the system using username and passwords.
Project Progress - Assign task and see project progress of all departments.

- **HOD:**

Login- HOD logs into the system using username and passwords.
Project Progress- Assign task and see project progress of same department.

- **Coordinator:**

Login- Coordinator logs into the system using username and passwords.
Project Progress- Assign task and see project progress of same department.

- **Faculty:**

Login- Faculty logs into the system using username and passwords.

Project Progress- Assign task and see project progress.

2. Student

Login- Student logs into the system using username and passwords.
Project work- Student can see the task allocated by faculty and due date for each task completion and he/she can add or update task related information as per requirement of faculty.

4. RESULT AND DISCUSSION

The developed system solves the problem of communication between staff and students. The system bridges the gap between student and faculty by providing a system where faculty can monitor the overall progress of a particular project. Also, faculty can mail a task to a specific student. This web-based project management and monitoring system is implemented where projects need to be managed efficiently. This system especially implemented for the final year project management and monitoring.

Choosing the right framework for your application is one of the most difficult aspects of the early stages of project development. We used the Laravel framework. This framework has become more popular since the release of version 3, which includes features such as command line interface, database system support and migration, called Artisan. It also introduced a packaging program called bundle. The first and foremost advantage of using the Laravel Framework - it follows the model, view and build model based on the controller and has a nice visual syntax that makes it object oriented.

5. CONCLUSION

We conclude that, Project Management and Monitoring System is a very effective web based system which can be used to a great extent. PMMS have many advantages over the traditional system i.e. Centralized data, up-to-date status reporting, ease of use etc. The use of this system reduces the extra time and efforts required to manage and monitor the projects in colleges. It also provides a good interface which is easy to understand by the users and helps in adapting to the use of this web based system. Most important aspect behind developing web based system is, this system will be used by non IT students also, so system must be easy to use.

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