Software Project Management Plan (SPMP)

For

LEARNING MANAGEMENT SYSTEM (LMS)

Submitted By - _____

Date - _____

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1. Introduction

This document refers to planning for software project management. This section of SPMP provides a basic overview of the project.

1.1 Project Overview

The objective of this project is to design and develop a plan for virtual learning environment and learning management system. This is web-based server software featuring course management and a platform that allows integration of student information systems and authentication protocols. This is used to manage online classes in academic institutions and deliver lectures online. The students can attend live sessions online and teachers can deliver classes with the help of this system.

1.2 Project Deliverables

The project deliverables include the entire source code of the product. It also consists of documentation about the implementation of the software that can be used for modifications in the future. Deliverables also include design documents, project plans at the initial stage. After the product is ready, the deliverables include a database, integrated system and the complete product.

1.3 Evolution of SPMP

The requirements have to be precisely mentioned before starting the project. Any further changes have to be incorporated in the SPMP before implementation. Also, the changes have to be first agreed by the project manager and verified if they can be added to the existing development without the major cost involved.

1.4 References

http://athena.ecs.csus.edu/~buckley/CSc190/SPMP.pdf

Steve McConnell, Software Project Survival Guide, Microsoft Press, 1998.

Ali Behforooz and Frederick J. Hudson, Software Engineering Fundamentals, Oxford University Press, 1996.

P1058: Standard for Software Project Management Plans, Draft 2.1, Institute of Electrical and Electronics Engineers, Inc., 1998.

1.5 Definitions and Acronyms

LMS – Learning Management System

SPMP – Software Project Management Plan

UI/UX – User Interface/ User Experience

QA – Quality Assurance Analyst

MERN – MongoDB, Express JS, React JS, Node JS

2 Project Organization

This section describes the details of the process model to be used for the project and the structure of the team.

2.1 Process Model

The process model to be followed in this project is an incremental model. This model is chosen for the project as the requirements can be divided into multiple standalone modules. The different phases of the process, namely, requirements gathering, analysis and design, implementation and unit testing, acceptance and system testing, and deployment will be done in increments with each phase in an interleaved manner. The increments will be delivered and each subsequent module release will add functions to the previous release. This process will continue till the entire product is delivered.

2.2 Organizational Structure

The organization developing this product is a start-up. The organization is handled by the managing director. A project manager is handling all the projects of the organization and reporting to the managing director. Then there are developers in the organization. They are assigned different designations based on the skills they possess among the frontend, backend and database development. Also, some testers are responsible for the code review for the projects. Two employees are there for maintaining code revision with Git and do the deployment of the product on the cloud.

2.3 Organizational Boundaries

All the requirements by the clients are handled by the project manager in the team. He is responsible to communicate any requirements in the team to the managing director. The project manager will be dealing and talking to clients for modifications and report the development progress. If any modifications or changes affect the milestones or the budget of the project then that has to be first discussed with the managing director of the organization.

2.4 Project Responsibilities

The team for this system consists of a project manager responsible for the requirements gathering with having interactions with the client and measuring the progress of the work.

Then is the team lead responsible do the analysis and designing the entire system with the help of other developers in the team. Also, he is responsible to assign work to the

team based on their skills and capabilities. Team Lead also creates user stories with the help of software progress tracking software such as Jira and communicates this to the entire team.

There are two UI/UX designers and developers responsible for the frontend of the system.

Four backend developers are responsible for writing the logic on the server-side.

One database administrator is required to work on and manage the databases.

Also, the team includes two QA engineers responsible for code review and automation testing. All the management of the workforce and the infrastructure required is done by the Managing Director of the organization.

The deployment of the product is done by the two cloud engineers who are also responsible for check-in in the version control system Git and GitHub used by the organization.

3 Managerial Process

This section of the SPMP specifies the management process for this project.

3.1 Management Objectives & Priorities

The overall objective of the management is to deliver a product that is running without any bugs or issues and to deliver the system on the decided time without exceeding the budget already decided for the project.

If they fail to achieve this then a product for managing online classes is delivered as a high priority and the student information system is given low priority.

There are daily meetings between the team lead and the team to discuss various aspects such as daily schedules, work progress, any difficulties or requirements for the project. There are weekly meetings with the clients to discuss the overall progress of the project and deciding if any changes are needed before the next release of the system.

3.2 Assumptions, Dependencies & Constraints

Few assumptions and constraints to develop this project is mentioned below-

- ✓ The system has to be reliable.
- ✓ The deadlines for each release and the budget constraint have to be met.
- ✓ The system has to be user friendly.
- ✓ The architecture has to be open so that the additional modules can be added at the later stage.

3.3 Risk Management

Risk factors and the tracking mechanisms include:

1. The end-users of the system are the teachers and students. The classes are live sessions between them so there has to be no downtime for the system.
2. If any failure the recovery should be as fast as possible with no downtime.
3. Any maintenance in the system is to be first notified to the clients so that they can manage their schedules accordingly.

3.4 Monitoring and Controlling Mechanisms

The team lead is responsible to assign the work to the developers and tracking their progress. Daily meetings between the developers will take place to monitor any problems.

The project manager will take updates from the team lead periodically to assure that the progress is taking place as per the specifications discussed and SPMP.

Any major problem faced by the team will be immediately reported to the manager.

3.5 Staffing Plan

The project manager is needed for the initial discussion and giving regular updates to the clients. The project manager can simultaneously handle multiple projects as he is handling only the managerial roles and client interactions for all the projects. The team leader is needed for the entire 24 weeks (6 months) as he is the one handling the entire development of this LMS.

Developers are needed for 22 weeks to carry out the development task. Testers are needed for the last 2 weeks to do the final testing of the project.

A deployment team is needed after the final testing and completion of the project to deploy the system to the cloud.

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4 Technical Process

This section includes the technical methods, tools, and techniques to be used in developing LMS.

4.1 Methods, Tools and Techniques

The incremental model is used to develop this project. UML diagrams are first designed by the entire team to get an idea of the project functionalities and flow.

The software stack followed by the team in this project is MERN stack. Frontend developers will be using React to develop the UI and Material UI to apply the stylings.

Backend is developed using Node JS framework. MongoDB database is used in this project. The version control system used by the team for developing this project is Git and the code is updated on a remote GitHub repository to be accessible to all the team members. All the members of the team have to be familiar with JavaScript.

QAs will use Selenium for the testing of the project.

4.2 Software Documentation

Software documentation will be done by individuals upon completing their tasks. This will follow company standards.

Reviews of documentation will be conducted by the team leader at the end of the completion of each module before the release.

This will ensure that the documentation for a particular phase has been completed before the next phase is started.

All the test cases have to be properly documented as well.

4.3 Project Support Functions

The deliverables are provided to the client on the cloud where the end product is hosted. The QA is assured by the QA team of the organization.

5 Work Packages, Schedule, and Budget

5.1 Work Packages

First Release-

Backend services will be needed for authentication and authorization of the users. Three types of users will be considered for the initial release. The admin who is the head of the academic institutions has access to see all student and teachers' information.

Teachers will be able to create classes. Students will be able to see which all classes are there for a particular day and attend those classes at the specified time. Both can see their timetable for the day.

Second Release-

Teachers will be able to upload assignments and exams on the system and students can submit their solutions and upload assignments on the system. Students can see how many assignments they need to submit, the deadline for submission and all information. Students and teachers can see their attendance on the system.

Third Release-

Teachers can enter grades on the system which students can view. All the study materials for all the subjects student has registered for can be accessible from the system. Also students have the option to pay the fees through this system.

5.2 Dependencies

Dependencies are as specified in the process model. No phase will begin unless the previous phase has been approved by the manager.

5.3 Resource Requirements

Each developer will require one Windows-installed PC with 8 GB minimum RAM. Various tools required will have to be purchased by the organization if they are paid soft wares for the development.

5.4 Budget and Resource Allocation

Phase	No of People	Budget	No of Hours/Days
Requirements Gathering	Manager	na	na
Design and Analysis	Lead & Developers	$30/hour	2 weeks
Implementation	Lead & Developers	$30/hour	20 weeks
Testing	Testers	$25/hour	2 weeks
Deployment	Deployment Team	$25/hour	na
Total	13	$40,000	6 months (estimated)

5.5 Schedule

Gantt chart for the project duration is shown below. Each release is shown as a milestone. End product is the final delivery.

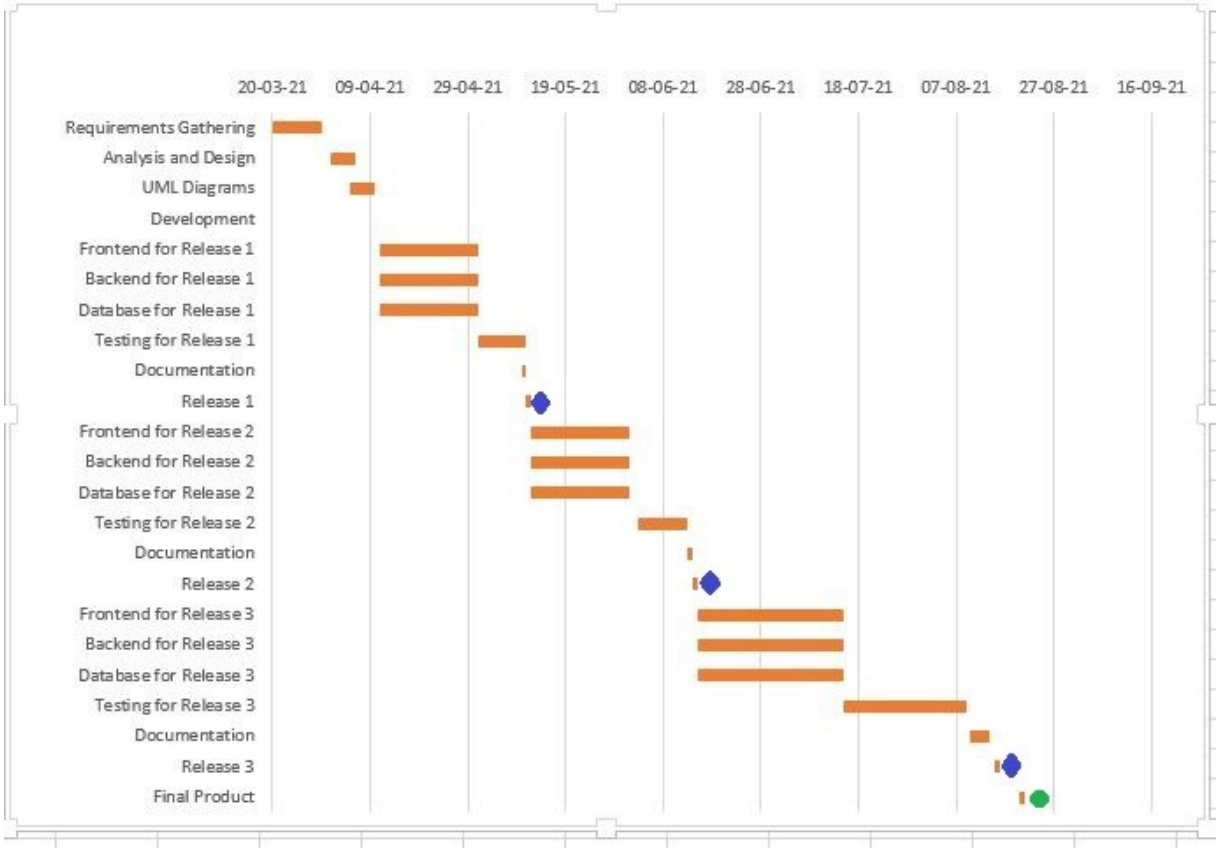

Figure 1: Timeline for project

6 Additional Components

6.1 Index

Security - ID and passwords will be needed by all the users to access the system.

Training - A thorough walk-through of the system will be given to the users of the system to make them aware of the flow of the system. This training will be given by the project manager. Also, post-release maintenance and support will be provided by the organization for one year.

Product Maintenance – Period software checking and support will be provided for one year. If additional modifications are needed after the delivery, they will be considered as amendments and a separate contract will be needed.