Project Plan

CS 301/302

Group -8

Time - Table Generator

Contents

1.Introduction

1.1 Overview

This document contains the plan which our team will carry forward in each phase of our software development. And give a tentative cost estimation and time constraints for our project.

1.2 Skills Required:

- Knowledge of programming language specially javascript.
- Knowledge of web-framework for front-end development - react.
- Grip over Material Design Convention and solid concepts over design of UI/UX.
- Environment for back-end development -node.js.
- Familiarity with a cloud platform for deploying the project - Amazon Web Service(AWS).
- Experience in document based Databases for storage - MongoDB .

1.3 Skill Level of Team Members:

- Aman Yadav : Back-end development, Documentation,
- Dakshkumar Gondaliya: Front-end development, Documentation
- Kirtika Singhal: Front-end development, Documentation
- Mayank Pathela:Back-end development, Documentation
- Parmeshwar: Unit Testing and System Testing
- Nikhil Sachan: AWS deployment

1.2 Project Deliverables

The Project deliverables will be:

- Feasibility Analysis
- Project Plan
- Software Requirement Specifications
- Software Development Life Cycle
- System Test Plan
- Risk Management
- Testing Report
- Deployment Plan
- User Manual

1.3 Stakeholders

- Team Members
- Intermediate Level School Administration

1.4 Assumptions, Constraints and Risks

The software is designed to solve and generate school time tables. The following is a list of assumptions made:

1.4.1. Assumptions

1. We will collect information about the data needed to generate the time table.
2. Teachers are assumed to be available all the time, i.e, no preference of time and day will be taken.
3. Complexity of the Algorithm we will design depends on the constraints and scope of the usability.
4. Classes are assumed to have enough capacities.
5. Number of classrooms and labs are assumed to be sufficient.

1.4.2 Constraints

There will be two types of constraints considered:-

Hard Constraints-

1. No faculty will be allocated two batches for different courses in the same time slot same day.
2. No Batch will be given two courses at the same times slot for the same day.

Soft Constraints-

1. Faculties won't have first class in the morning everyday.
2. More than two sections can't have same lab.

1.4.3 Risks

- Generating time-table is an NP-hard problem, therefore finding an optimal solution is not possible.
- It may also happen that no solution is generated due to lot of clashes.
- The time of execution can be quite long like 3-5 minutes.

2. Goals and Scope

2.1 Goal

This project tries to find a solution to the school timetabling problem. The timetabling problem involves scheduling a number of tuples, each consisting of class of students, a teacher, a subject, to a fixed number of time slots. A number of such tuples may be scheduled in the same time slot providing no class, teacher appears more than once in the time slot. Our client(Mahesh Gyan Mandir Senior Secondary School) does not have such software till now and creates time-table manually spending lots of hours. So, we are trying to reduce that work as much as possible within the given time constraints.

2.2 Scope

This software is developed by keeping the general constraints that any school have in preparing time table. This can be used by any Educational Institute which satisfies our given hard and soft constraints.

3. Organisation

3.1 Task Division

The roles and responsibilities have been divided among the team members considering each member's skills, interest and capabilities to ensure smooth and successful completion of the project. The project requires several new technologies and programming languages to be learnt. The following is an elaborate distribution of work:

Name	Role	Activities
Aman Yadav	Team Member	Back-end Development, Documentation Algorithm designing and implementation
Dakshkumar Gondaliya	Team Member	Front-end Development, Documentation
Kirtika Singhal	Team Member	Front-end Development, Algorithm designing, Documentation
Mayank Pathela	Team Leader	Front-end Development, Algorithm designing and implementation,

		Documentation
Nikhil Sachan	Team Member	Back-end Development, Algorithm designing, Documentation, Deployment
Parmeshwar	Team Member	Documentation, Testing

3.2 Schedule and Milestones

Serial No.	Milestones	Proposed Deadlines
1.	Finalize Project Idea	17 August, 2018
2.	Feasibility Analysis	18 August, 2018
3.	Plan the different Phases of our project and get the basic understanding of required skills	8 September, 2018
4.	Designing Mock-Up and Algorithm	23 September, 2018
5	Implementation of Algorithm, UI designing, and Unit Testing.	21 October, 2018
6	Final Testing	31 October, 2018
7	Deployment	6 November, 2018
8	Final Submission	10 November, 2018

4. Cost Estimations

For a given set of requirements it is desirable to know or estimate: How much it will cost to develop the software to satisfy the given requirements? How much time the development will take?
For determining the cost we are using basic *Constructive Cost Model(COCOMO)* which determines cost in terms of efforts expressed in person months. The total Lines of Codes in the project will be in the range of 2200-2500. By using these values in terms of KLOC and as our

team members have a nominal experience regarding the problem which has been solved in the past by others, our project will be characterised as *Organic Model.* By using these values, the range of Effort and Development Time are calculated:

Effort = $a(KLOC)^{b}$, where a = 3.2 and b = 1.05
Range of Efforts = 7.32 - 8.374 person months

Development Time = $c(Effort)^{d}$, where c = 2.5 and d = 0.38
Range of Development Time = 5.33 - 5.6 months
Schedule = Efforts/ Actual Team Size
Estimate of Schedule = 1.22 - 1.39 months

5. Communication and Reporting

Team will be discussing every problem they face in completing the task assigned to them and in understanding any part of the software development we will carry forward. We will have meeting after completion of task assigned and discuss the next part that we would initiate. We will keep informing our progress to each other. Documentation of every meeting will be maintained, so that if any member is not able to attend the meeting due to some reasons can walk through whatever we will discuss.

6. Project Monitoring and Quality Control

After every module is completed, unit testing will be done by team members in order to keep track of any error if occured. After the final Merging and Completion of the coding part we will take different test cases to verify that our software is working properly.