SWE 6633:
Comprehensive Plan

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1. Problem and Requirements

1.1 Problem Description

Managing multiple projects concurrently or even a single project depending on the size can sometimes be a very daunting task. A project manager may have trouble tracking specifics related to a project such as a brief overview, team members, and product requirements. In addition to tracking these items, at an user level you may need to track time spent on an individual task. While a project is in progress the project manager should have visibility into the progress of the project so that risk can be identified and resolved that could potentially delay completion. A project manager having the ability to track all of these items can improve the project's overall success and the quality of the product produced.

In order to provide better visibility and to increase project success a project management system will be developed to efficiently manage projects. In the project management system a manager will be able to provide a high level description of the project that will give insight into what is currently being developed. In addition to providing insight on the current development, owner as well as team member information will also be included .The high level description of the project will be very useful in quickly identifying projects when several projects are being worked on concurrently. Along with providing a high level description, owner, and team member information the project management system will also allow the manager to list all potential risk and assign an appropriate status. Risks not properly documented can lead to serious issues causing delay in project completion and reducing product quality.

In addition to these items, the manager will be able to list requirements both functional and nonfunctional for a project. The functionality to properly track the list of requirements is key as many projects fail due to poor understanding or incomplete requirements. Last but not least, the project management system will track and monitor effort in the number of person-hours expended on each activity they're working on. Users will have the ability to enter effort at a daily or weekly basis across the different phases of software development such as requirements analysis, designing, coding, etc. Upon entering the effort associated with each task the manager shall be able to view the total expended hours against each phase to determine the progress of project and to make future predictions.

1.2 Requirements

1.2.1 Functional Requirements

Guide:
F-1.1:
F-1.2: Description and Priority of Requirement

- Priority:
- Description:

F-1.1: Enter general project information
F-1.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to enter general project information into the software. General project information includes:
    - High level description of the Software Project
    - Owner Name
    - Project Manager Name
    - Project Team Members (no limits)

F-2.1: Entering functional requirements
F-2.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to enter functional requirements for each project created in the system. There is no software limit for the functional requirements needed for this project.

F-3.1: Entering nonfunctional requirements
F-3.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to enter a list of nonfunctional requirements for each project

F-4.1: Creating tasks for a project
F-4.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to create tasks that are tied to a project

F-5.1: Categorize tasks
F-5.2: Description and Priority of Requirement

- Priority: Medium
- Description: The system shall allow the user to categorize each task into the following types: Requirements Analysis, Designing, Coding, Testing, Project Management.

F-6.1: Enter effort expended on each task
F-6.2: Description and Priority of Requirement

- Priority: Medium
- Description: The system shall allow the user to enter effort expended on each task in the unit of person-hours.

F-7.1: View total person-hours for each task type for a project
F-7.2: Description and Priority of Requirement

- Priority: Medium
- Description: The system shall allow the user to view total person-hours expended for each task type (Requirements Analysis, Designing, Coding, Testing, Project Management) for each project.

F-8.1: View total person-hours for each project
F-8.2: Description and Priority of Requirement

- Priority: Medium
- Description: The system shall allow the user to view the total person-hours expended on a particular project.

F-9.1: View total person hours for each task
F-9.2: Description and Priority of Requirement

- Priority: Medium
- Description: The system shall allow the user to view total person-hours expended on each task entered in a particular project

F-10.1: View general project information
F-10.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to view general project information for each of the projects entered. General information consists of: High level description of the Software Project, Owner Name, Project Manager Name, Project Team Members (no limits)

F-11.1: View functional requirements
F-11.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to view functional requirements for each project entered

F-12.1: View nonfunctional requirements
F-12.2: Description and Priority of Requirement

- Priority: Medium
- Description: The system shall allow the user to view nonfunctional requirements for each of the projects entered.

F-13.1: View Tasks
F-13.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to view tasks for each of the projects entered

F-14.1: Enter risks for a project
F-14.2: Description and Priority of Requirement

- Priority: High
- Description: The system shall allow the user to enter risks for a particular project in the system

F-15.1: View Risks for a project
F-15.2: Description and Priority of Requirement

- Priority: Medium
- Description: The system shall allow the user to view all the risks that pertain to a particular project.

1.2.2 Non-functional Requirements

- A task may only be of one major type

1.2.3 Characterization of Different Users

One user: project manager

2. Product and Project Description

2.1: Project Objective

The main objective of this project is to make the life of a project manager easier. A system to track and maintain project deliverables, deadlines, resources, costs, risks, and meta-data including the project name, project manager, owner, team members is necessary for the successful completion of this project.

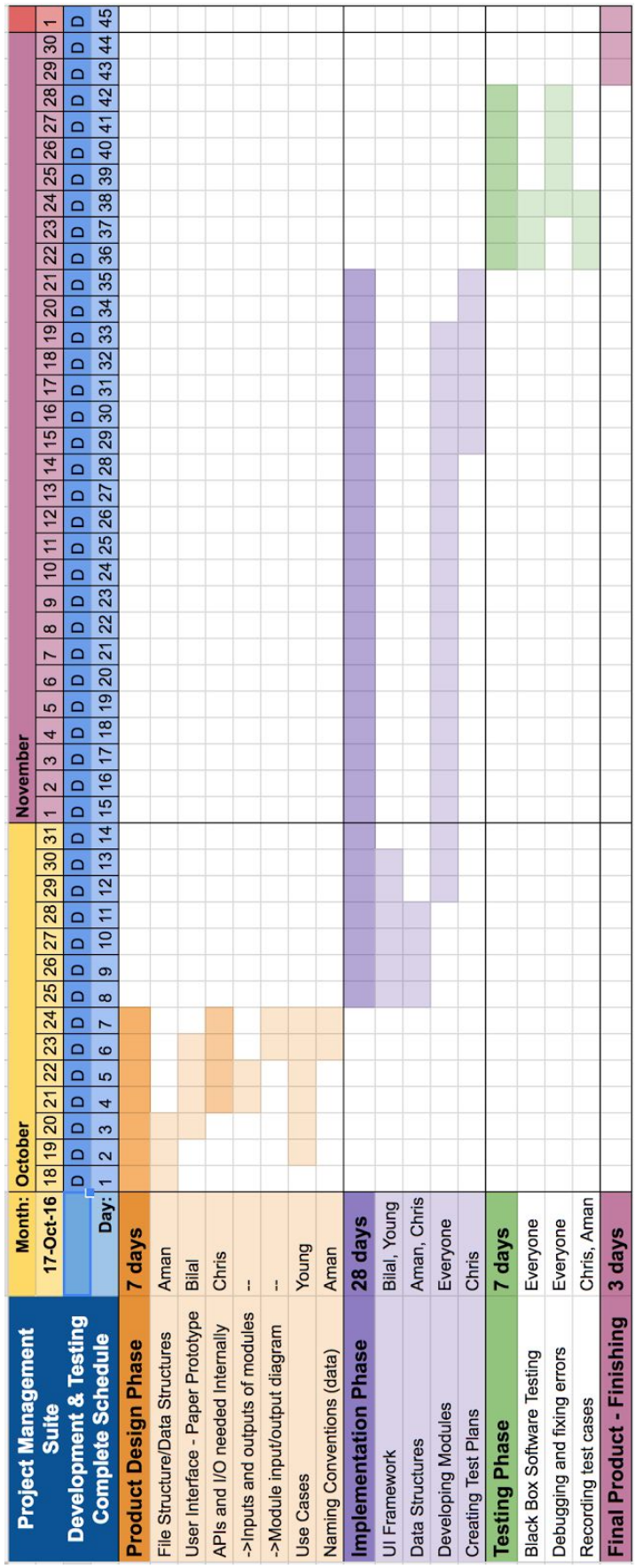
2.2: Project Phases

During the scope of this project, there will be four phases:

- Planning Phase (at the time of writing this document)
    - Quick Plan: A quick plan will be developed and approved by the client. This will help give input towards the next part.
    - Comprehensive Plan: A comprehensive plan (this document) is developed in order to set the functional requirements and the success criteria for the project.
- Design Phase
    - User Interface: A user interface design prototype will be delivered before the code is implemented. This will be a horizontal incremental prototype.
    - Data Structures: The data structure design (NoSQL Database Design) will confirm what attributes and fields are needed in the records of the application.
    - Naming Convention: The naming convention for the data that needs to be stored has to
- Development and Unit Testing
    - Coding: The development phase includes further development of the incremental prototype.
    - Data storage: The database will be implemented during this phase so it matches the requirements of the project
    - Unit Testing: Each application (program and database will be tested individually to see if they perform perfectly.
- Integration and Testing:
    - Data Integration: The database implemented in the development phase will be integrated with the program created. The integration will also be tested for verification.

The deliverables of this project include the program along with the data storage system (software). The description of the product is located in section 1.1 of this document along with the functional and nonfunctional requirements listed in section 1.2.

3. Complete Schedule



4. Detailed Cost

Based on the deliverables in the schedule, here are the costs of each deliverable and phase that is involved in this project:

Definition of Person-Days: A person day in this project setting is a single person working a total of 4-hours (part-time employees).

- If two employees are assigned to work on Task A, both employees working 4 hours simultaneously on Task A is considered to be 2 person-days.

Phase / Task	Person Days
Product Design Phase	**19**
File Structure/Data Structures	3
User Interface - Paper Prototype	4
APIs and I/O needed Internally	--
->Inputs and outputs of modules	2
->Module input/output diagram	2
Use Cases	6
Naming Conventions (data)	2
Implementation Phase	**115**
UI Framework	12
Data Structures	8
Developing Modules	88
Creating Test Plans	7
Testing Phase	**38**
Black Box Software Testing	12
Debugging and fixing errors	20
Recording test cases	6
Final Product - Finishing	**12**
Total Person-Days Needed	**184**

6. Resources

This project will be developed in C# .NET using the Visual Studio IDE and the source control solution Source Tree to interface with a git repository. One external library, LiteDB, will be needed to implement the file storage for this project.

The project team will consist of four members: Bilal Adams, Young Chung, Chris Taylor, and Aman Bhimani. As all four team members are students and this project is part of a university course, no specialized training will be required.

The final product will be developed on Windows based computers and will be designed to run on computers with the following system specifications:

- Windows 7 or newer
- 1Ghz processor
- 2GB RAM

7. Processes and Methods

The project will be organized in a semi-agile structure where development will be broken down into sprint development cycles lasting one week each. During the weekly meeting that is allocated for in the course schedule, critical issues will be resolved and the following sprint will be planned. Every sprint will have numerous component deliverables that will be integrated into the project as a whole.

8. Detailed Risks

R-1.1 Inexperience
R-1.2 Priority and Probability of Risk

- Priority: Moderate
- Probability: High

R-1.3 Description and Modules Affected

- This project is part of a university course, and so the development team involved are all relatively inexperienced programmers. This will impact all functional components of the project, and will be mitigated by constraining the design of the product as much as is possible while still satisfying the requirements.

R-2.1 Limited meeting time
R-2.2 Priority and Probability of Risk

- Priority: High
- Probability: High

R-2.3 Description and Modules Affected

- Because team members are enrolled in multiple classes , and have professional obligations outside of the university, there is very limited time available for team meetings. Because of this, meetings will be focused on high level decision making and resolving any showstopper issues that arise, and remote-collaboration tools such as Google Hangouts will be used heavily to keep team members in contact with each other.