Medical School LIC Scheduler

Software Development Plan

Version 3.1

Revision History

Date	Version	Description	Author
05/Nov/2018	1.0	First draft	Katie Ortstadt
06/Nov/2018	1.1	Iteration specifics	Alexander Parris
26/Nov/2018	2.0	Revisions to better reflect project plan Updates for the first iteration	Katie Ortstadt
01/Feb/2019	3.0	Updated the plan to reflect our switch from iterations to 2-week sprints. Included 10-week schedule for 2nd semester.	Katie Ortstadt
25/Apr/2019	3.1	Minor tweaks and approval	Alexander Parris

The Yellow Walkman

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Software Development Plan

1.   Introduction

1.1   Purpose

The purpose of the *Software Development Plan* is to gather all information necessary to control the project. It describes the approach to the development of the software and is the top-level plan generated and used by project managers to direct the development effort.

The following people use the *Software Development Plan*:

- The **project manager** uses it to plan the project schedule and resource needs and to track progress against the schedule.

- **Project team members** use it to understand what they need to do, when they need to do it, and what other activities they are dependent upon.

1.2   Scope

This *Software Development Plan* describes the overall plan to be used by the TCU/UNTHSC LIC Scheduling project, including the deployment of the product. The details of the individual iterations will be described in the Iteration Plans document.

The plans as outlined in this document are based upon the product requirements as defined in the *Vision Document* and Use Cases.

1.3   Definitions, Acronyms, and Abbreviations

See the Project Glossary.

1.4   References

- Iteration Plans

- Vision Document

- SRS

- Glossary

- Kanban board: https://trello.com/b/9BFilSNy/lic-kanban

1.5   Overview

This *Software Development Plan* contains the following information:

Project Overview — provides a description of the project's purpose, scope, and objectives. It also defines the deliverables that the project is expected to deliver.

Project Organization — describes the organizational structure of the project team.

Management Process — explains the estimated cost and schedule, defines the major phases and milestones for the project and describes how the project will be monitored.

Applicable Plans and Guidelines — provides an overview of the software development process, including methods, tools, and techniques to be followed.

2. Project Overview

2.1 Project Purpose, Scope, and Objectives

The new TCU and UNTHSC School of Medicine is taking a progressive approach to curriculum for their students. The standard for medical clerkships is for a medical student to focus on one practice, then move on to the next practice. This leaves a gap of time between learning and implementing a medical practice in the real world. The Longitudinal Integrated Clerkship (LIC) will engage students in a variety of medical practices in 2-week cycles, so students will constantly be maintaining their grasp on import skills and practices. It is our job to provide the scheduling application that will best match each student and doctor, at the best times. We solve this problem with two solutions. The first allows students to built their own schedules based on location and time preferences. This involves an interactive user interface sent to each student. The second, referred to as "brute force", automatically generates schedules with no student input. The "brute force" algorithm serves as a backup, in the event that the first solution fails. The end goal is to provide student and doctor schedules in an appropriate format so that the LIC administrator can easily view and distribute them.

2.2 Assumptions and Constraints

2.2.1   We assume that the LIC Scheduling project will be completed by five computer science students over the course of one school year.

2.2.2   We assume that the LIC schedule does not overlap year to year.

2.2.3   We assume that any further maintenance on the system beyond the complete release will be the responsibility of the TCU/UNTHSC medical school.

2.2.4   We assume doctor and student data will be provided by the LIC admin.

2.3 Project Deliverables

Deliverables are delivered towards the end of the iteration, as specified in section *4.2.4 Project Schedule*.

2.4 Evolution of the Software Development Plan

The *Software Development Plan* will be revised prior to the start of each Iteration/Sprint. The target dates for the end of each iteration and sprint are shown below:

- *Iteration 1*: November 5, 2018 - November 26, 2018
- *Iteration 2:* December 3, 2018 - January 14, 2019
- *Sprint 1:* January 15, 2018 - January 28, 2019
- *Sprint 2:* January 29, 2019 - February 11, 2019
- *Sprint 3:* February 12, 2019 - February 25, 2019
- *Sprint 4:* February 26, 2019 - March 11, 2019
- *Sprint 5:* March 12, 2019 - March 25, 2019
- *Sprint 6:* March 26, 2019 - April 9, 2019
- *Final Sprint*: April 10, 2019 - April 30, 2019

3. Project Organization

3.1 Organizational Structure

The project team consists of five TCU Computer Science students. The project lead is Alexander Parris. The team members are Katie Ortstadt, Huy Bui, Justin Herold, and Zach Alaniz. The team is supervised by the Senior Design professor, Dr. Bingyang Wei. The project will be delivered to the administrator of the LIC system, Kayla Beeler.

3.2   External Interfaces

The LIC schedules will be uploaded to LCMS+ after they have been created. The LCMS+ system takes .csv files as input. Our algorithm will output schedules in the .csv format so that they are compatible with LCMS+. The TCU/UNTHSC technology department will be responsible for uploading the .csv files to LCMS+ so that they can be displayed to the students.

3.3   Roles and Responsibilities

Person	Project Role
Alexander Parris	Project Manager Deployment Developer
Katie Ortstadt	Documentation Manager Backend Developer
Justin Herold	User Interface Architect Frontend Developer
Zack Alaniz	User Interface Architect Full-Stack Developer
Huy Bui	Backend Developer Database Manager

Anyone on the project can perform any role activities. These roles serve as a guideline, and all members have contributed to all aspects of the project.

4.   Management Process

4.1   Project Estimates

The only cost for this project will be web hosting for the application and database. The AWS costs can be roughly estimated to be $60 per month.

The scheduling estimates are detailed below. All estimates are based on previous work velocity and concrete deadlines established by the course instructor.

4.2   Project Plan

4.2.1   Phase Plan

Phase	Iteration/Deliverable	Description
Inception	Pre-iteration Planning	The team met over the course of several weeks to map out the project, schedule, requirements, use cases, personas, etc.
	Iteration 1	The team revised initial plans as we completed Spring tutorials and learned what was reasonable within the technology stack
Elaboration	Iteration 1	The team developed prototypes and a UML diagram for the database.
Development	Iteration 1	The team coded the database and a first draft of the frontend. Developed UC04 to low fidelity
	Demo 1	Team presents the results of the first iteration
	Iteration 2	Develop UC01 and UC02 to low fidelity.

Development (Continued)	Sprint 1	Develop remaining use cases to low fidelity.
	Sprint 2	Develop UC07 to a higher fidelity, including error checking and support across all browsers. Research and apply Ajax for frontend to backend communication.
	Sprint 3	Move project onto a web server.
	Sprint 4	Increase fidelity of all remaining use cases.
Testing	Sprint 2	Create and run tests for all use cases.
	Sprint 5	Create and run tests for updated use cases, as well as server tests.
Evaluation	Sprint 6 and Final Sprint	Finalize the project.

4.2.2   Iteration and Sprint Objectives

4.2.2.1   Iteration 1 will focus on implementing UC04 at low fidelity.

4.2.2.2   Iteration 2 will focus on implementing UC01 and UC02 at low fidelity. We will also increase the fidelity of UC04, which was started in the previous iteration.

4.2.2.3   Sprint 1 will focus on implementing the remaining use cases to low fidelity.

4.2.2.4   Sprint 2 will focus on testing all the use cases, as well as developing UC07 to medium fidelity and implementing Ajax in our project.

4.2.2.5   Sprint 3 will focus on establishing a web server for the project.

4.2.2.6   Sprint 4 will focus on continued development of all use cases.

4.2.2.7   Sprint 5 will focus on continued testing for the use cases and the server.

4.2.2.8   Sprint 6 will focus on finalizing the project, including preparing the final deliverables.

4.2.3   Releases

4.2.3.1   Demonstration 1 will involve an in-class presentation of Iteration 1.

4.2.3.2   Demonstration 2 will involve a presentation of Iteration 1 to the board of LIC clerkship directors

4.2.3.3   Demonstration 3 will involve a presentation of Sprint 3 to the board of LIC clerkship directors

There have been no software releases yet.

4.2.4   Project Schedule - First Semester

Date	Name	Description
26/Nov/2018	Iteration 1	Implement UC04 to low fidelity. Create the first version of the frontend. Create the database and fill it with sample data.
30/Nov/2018	Demo 1	Present the database and frontend to the class and client

| 03/Dec/2018 | Iteration 2 | Implement UC01 and UC02 to low fidelity. Continue to improve UC04 and frontend. |
| 12/Dec/2018 | Demo 2 | Present the latest version of the database and frontend to the client at a meeting of the LIC clerkship directors. |

4.2.5   Project Schedule - Second Semester 10-Week Plan

Date	Name	Description
14/Jan/2019	Sprint 1	Implement all use cases to low fidelity.
21/Jan/2019		Continue development on all use cases. Establish a project Github.
28/Jan/2019	Sprint 2	Implement UC07 to higher fidelity, introduce Ajax to the project.
04/Feb/2019		Merge all UC branches together on Github. Meet with Kayla for a progress report. Begin testing all use cases.
11/Feb/2019	Sprint 3	Establish web server and begin uploading the project to the server.
18/Feb/2019		Continue merging onto the server. Begin extensive testing of the server.
25/Feb/2019	Sprint 4	Increase fidelity of all use cases. Meet with board of clerkship directors to confirm progress and ask for feedback.
04/Mar/2019		Merge all UC branches together on Github. Continue testing all UC, focusing especially on new development.
11/Mar/2019	Sprint 5	Meet with Kayla to discuss progress. Gather feedback. Implement any requested changes.
18/Mar/2019		Test any changes. Confirm that all of Kayla's concerns have been addressed appropriately.
25/Mar/2019	Sprint 6	Finalize the project. Ensure everything is running correctly. Complete final tests.
01/Apr/2019		Finalize documentation. Practice presentation.

4.2.6   Project Resourcing

The staff will remain consistent throughout the project.
The first iteration will require special training the Java Spring framework for all five team members. All members will complete an online Spring course prior to coding in the first iteration. During the second sprint, members will complete training in Ajax. Following this, the team will require training in creating and maintaining a server. After this, no further training is anticipated.

4.3 Project Monitoring and Control

Requirements Management

The requirements for this system are captured in the Vision document. Changes will be recorded in the version control table at the top of the document.

Schedule and Budget Control

Expenses are monitored by the project manager. We do not anticipate any expenses beyond website hosting.

The project manager maintains a schedule showing the expected date of each milestone. Changes to the schedule are discussed by the team and approved by the project manager. Deadline changes must be approved by the course instructor and/or TCU/UNTHSC administrator.

Quality Control

Any issues with the system will be recorded and addressed during the next iteration.

All deliverables are required to go through the appropriate review process. The review is required to ensure that each deliverable is of acceptable quality. Each team member will be responsible for testing and providing feedback. The review process will occur during team meeting when all members are present and able to contribute to the discussion. Review may also involve a presentation for the instructor or administrator.

Reporting and Measurement

Updated cost and schedule estimates and metrics summary reports will be generated at the end of each iteration.

In addition, the overall costs will be monitored against the project budget.

Risk Management

Risks will be identified in the Inception Phase. Project risk is evaluated at least once per iteration and documented in this table.

Risk Ranking	Risk Description	Mitigation Strategy
Low	The TCU/UNTHSC medical school fails to receive accreditation.	At this point, the project must be canceled.
Medium	A team member is sick, busy, or otherwise unable to contribute to the project for a significant amount of time.	The team will temporarily cover the missing member's work. In extreme cases, the team will reassess iteration goals and plan more realistic deadlines.
Low	Laptop failure	Use the senior design computer lab.

Configuration Management

All source code, test scripts, and data files are included in baselines. Documentation related to the source code is also included in the baseline, such as design documentation. All customer deliverable artifacts are included in the final baseline of the iteration, including executables.

5. Annexes

The project will roughly follow a combination of Agile and the RUP for Small Projects process. For the first semester, we split the work into iterations. In the second semester, we will rely on two-week sprints.