

Project Plan

Software Systems Scalability
Software Engineering 468

University of Victoria
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Team: Extreme Workload

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Glossary

Client	The company requesting the day trading system (DayTrader Inc).
Group	The team building the requested day trading system (Extreme Workload).
Manager	A person who has the responsibility for a specific deliverable. Note that a manager does not complete the assigned deliverable themselves, but ensures that the group completes the deliverable on time. It is expected that managers divides up the work for the deliverable among the group appropriately.

1.0 Introduction

This document details the project plan that will be followed to fulfill the day trading system requested by the client, DayTrading Inc. by the group Extreme Workload. This project plan is separated into four main phases: initial planning, feature complete system, scaling the architecture, and documentation. Each phase details how the work will be completed with deadlines, responsibilities of team members, and possible risks factors. Note that multiple phases may occur simultaneously. Table 1 details the start and end date of each phase and Figure 1 highlights the overlap of phases as a gantt chart. The reason why phase 4 happens two weeks into phase 3, is to avoid drafting the documentation too early as the system architecture could change due to scalability issues.

Table 1. Start and end dates of phases.

Phase	Start Date	End Date
1. Initial Planning	January 13th, 2020	January 31st, 2020
2. Feature Complete System	January 25th, 2020	January 31st, 2020
3. Scaling The Architecture	February 1st, 2020	March 27th, 2020
4. Documentation	February 14th, 2020	April 5th, 2020

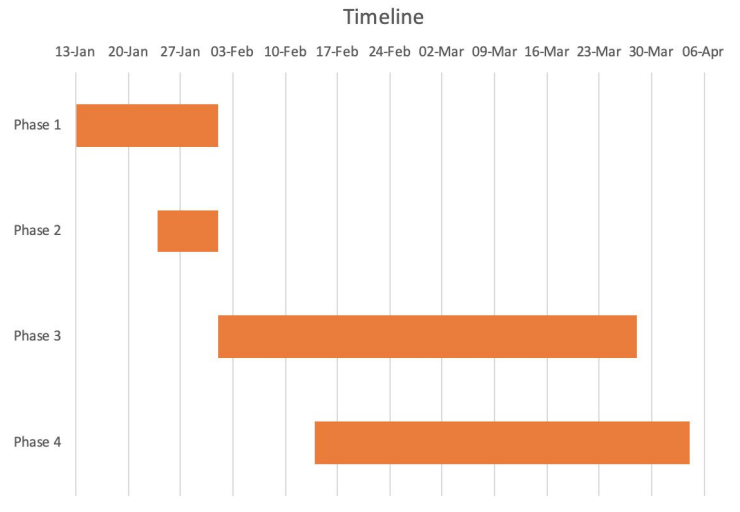


Figure 1. Phase overlap as Gantt chart.

2.0 Phase 1: Initial Planning

In phase 1, the initial planning of the project is to be completed. The deliverables due at the end of phase 1 is this document (the project plan), the initial requirements, and the architecture of the system. To distribute the work, each member of the group was selected to be a manager of a deliverable. Note that a deliverable manager does not complete the deliverable by themselves, but instead is responsible for ensuring that the deliverable completed by the group before the group deadline. This includes dividing up the work between group members for a deliverable. Table 2 details the managers of each deliverable.

Table 2. Phase 1 deliverable managers.

Deliverable	Manager
Project Plan	Kian Gorgichuk
Initial Requirements	Goh Sato
Architecture	Devlyn Dorfer

The client requires that the phase 1 deliverables be submitted on Friday January 31st, 2020. The group will have a deadline for the 1st draft of all three phase 1 deliverables ready by Friday January 24th, 2020. This is to facilitate the completion of phase 2 by the group before the phase 2 deadline. Extreme Workload will be using Google Docs real-time collaboration features to generate the phase 1 deliverables.

2.1 Risk Factors

There is little risk that the deliverables for phase 1 will not be completed on time as all deliverables are documentation related. However, there are still two main risk factors for phase 1 that will not appear immediately in the project but may appear in later phases. The first risk factor is that initial requirements are missed which could result in a substantial change in architecture. Likewise, if the initial architecture is designed incorrectly, it can be foreseen that Extreme Workload may have to completely rewrite their prototype for the client. To minimize these risk a significant amount of time is being spent on phase 1 to ensure that necessary planning (requirements and architecture) is completed correctly.

3.0 Phase 2: Feature Complete System

Phase 2 will begin on Friday January 24th, 2020, when the 1st draft of the deliverables of phase 1 are available. The deliverable for phase 2 is the verified execution of 1 user on the day trading system that Extreme Workload is building. The system will be built based on the architecture documentation created in phase 1. Like phase 1, phase 2 deliverable are due on Friday January 31st, 2020. Therefore, Extreme Workload will have a group deadline for a working prototype of the system on Wednesday January 29th, 2020. This is to ensure that the verified execution of 1 user on the prototype system is ready by the client's deliverable deadline. To build the system, Extreme Workload will be using git as the version control system. The repository will be hosted in GitHub. All code written by Extreme Workload will also be reviewed by all members of the team using GitHub pull requests to ensure a distributed knowledge of the codebase. All other technical decisions like languages and frameworks used are available in the Architecture document.

3.1 Risk Factors

The risk factors for delivering phase two are minimal if all the requirements are accurately documented in phase 1. As the prototype system must only support 1 user, scalability issues should not appear in this phase. Additionally, the project plan provides 2 days to solve issues with the prototype system should they arise.

4.0 Phase 3: Scaling the Architecture

Phase 3 will begin on February 1st, 2020, after the submission of the deliverables of both phase 1 and phase 2. Phase 3 will be the process of scaling the day trading system from 1 user to 1000 users. Table 3 details the group deadline of when the group must have the deliverable working and the client's deadline. The reason why the group deadlines are multiple days in advance is to allow Extreme Workload the time to fix any outstanding issues that may arise before the client deadline. Like in phase 2, all code written for the system will be reviewed by all team members to ensure that knowledge of the system is distributed across all team members. Note this document does not assign deliverable managers for the phase 3 deliverables as a member's workload will depend on external factors such as coursework outside SENG 468. Therefore, deliverable managers will be assigned by the group at a later date.

Table 3. Phase 3 timeline.

Verified execution of	Group Deadline	Client Deadline
10 user workload file	Wednesday February 5th, 2020	Friday February 7th, 2020
45 user workload file	Sunday February 9th, 2020	Friday February 14th, 2020
100 user workload file	Sunday February 23rd, 2020	Friday February 28th, 2020
1000 user workload file	Sunday March 8th, 2020	Sunday March 14th, 2020
Final 2020 workload file	Sunday March 22nd, 2020	Friday March 27th, 2020

4.1 Risk Factors

The major risk factor with phase 3 is that Extreme Workload could experience significant scalability issues with the system as the required user load increases. High risk user count increases are the increase from 45 users to 100 users and from 100 users to 1000 users. The ability of the prototype system to handle these will be based on how well the requirements and architecture were defined in phase 1. Therefore, Extreme Workload has planned their group deadlines significantly ahead of the client deadlines by almost a week. This is to ensure that the group has enough time to identify the scalability problems, receive assistance if necessary, and implement the required changes. Otherwise, there is a non-insignificant probability that Extreme Workload will miss a client deadline.

5.0 Phase 4: Documentation

The client also requires multiple deliverables be submitted after the final prototype system is built. This includes documentation on various aspects of the system, a project presentation, and a web interface. There are three main areas of deliverables to be completed. Like with phase 1, each deliverable area will have a group deadline, a client deadline, and a deliverable manager. See table 4 for this information.

Table 4. Phase 4 documentation timeline.

Deliverable Area	Manager	Group Deadline	Client Deadline
Web Interface	Devlyn Dorfer	Tuesday March 31st, 2020	Thursday April 2nd, 2020
Project Presentation	Goh Sato	Sunday March 29th, 2020	To be determined. (Anticipated week of April 3rd, 2020)
Documents	Kian Gorgichuk	Friday April 3rd, 2020	Sunday April 5th, 2020

Due to the documentation requirements requested by the client. The group has elected managers to ensure that all aspects of the system are accurately documented and complete. In total there are 6 documents that must be created by the group. These document deliverables can be seen in Table 5. In addition to the documentation it is expected that these managers also take a leading role in their specific aspects of the system throughout all phases of the project. For example, Kian Gorgichuk will lead the design and analysis on the performance of the system in addition to leading the writing of the Performance Design and Analysis document.

Table 5. Documentation managers for phase 4.

Document Deliverable	Manager
Security Design and Analysis	Goh Sato
Test Plan Design and Analysis	Goh Sato
Fault Tolerance Design and Analysis	Kian Gorgichuk
Performance Design and Analysis	Kian Gorgichuk
Capacity Planning Analysis and Measurement	Devlyn Dorfer
Overall Architecture and Documentation	Devlyn Dorfer

5.1 Risk Factors

As the deliverables for phase 4 are all documentation related, the group foresees no areas of high risk in completing the deliverables on time. Hence, the group deadline is much closer to the client deadline when compared to phase 3. One risk that may arise from phase 4 is the deliverables for phase 4 occur at the end of the semester. This time period is extremely busy for all group members so appropriate time management must be used by all group members to ensure enough time is dedicated to the project.

6.0 Conclusion

This project details four phases to finish all deliverables that the client has requested. Within each phase both group and client deadlines are set to ensure that Extreme Workload submits all deliverables on time. Due to the many different parts of the project, Extreme Workload has selected managers to divide responsibility among group members. Extreme Workload is confident that this project plan provides enough detail yet flexibility to accomplish the work set out by the client in the timeline required.