PM ASSIGNMENT #1

Group 1, 02/02/2024

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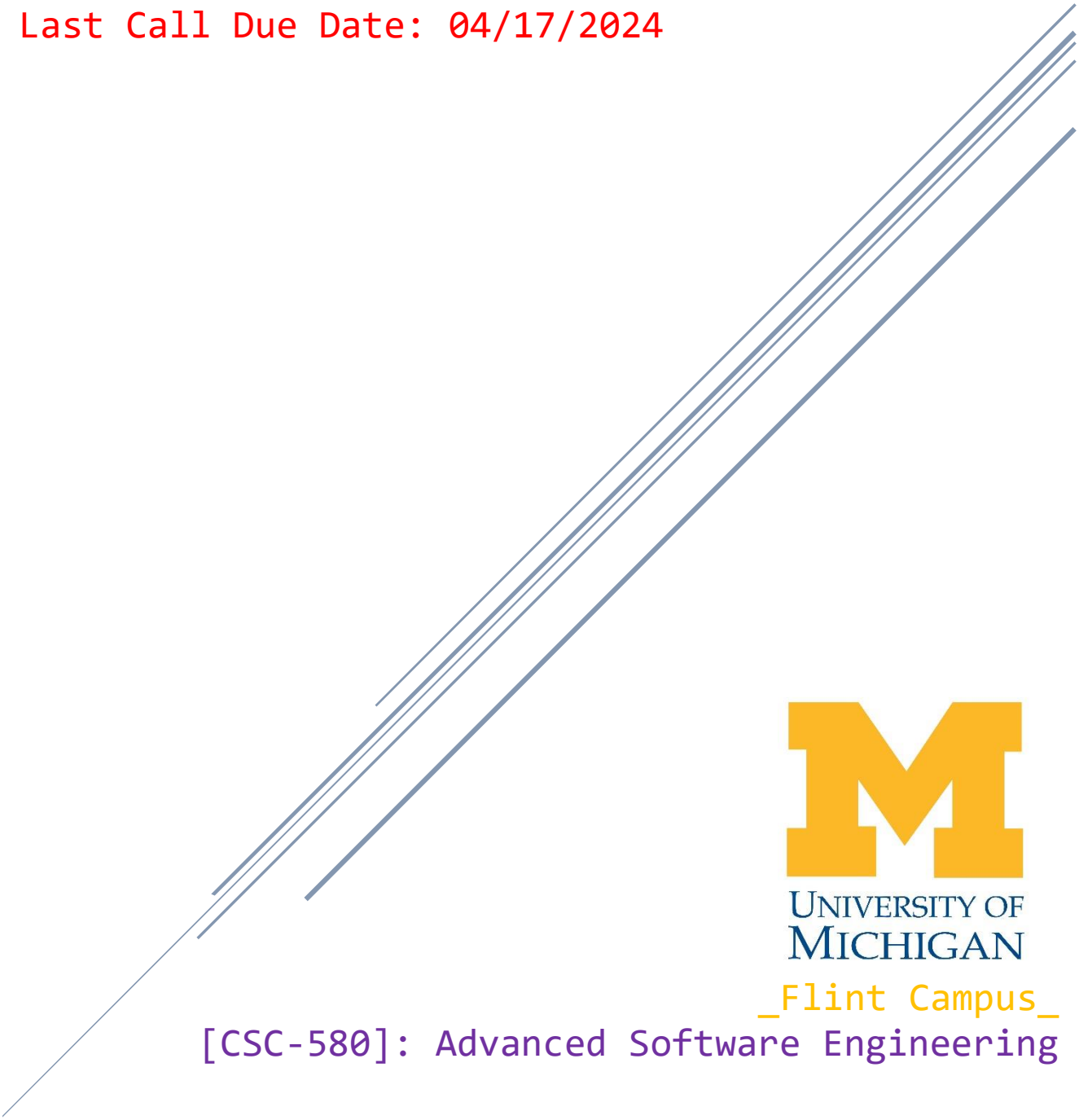
Recommended Due Date: 02/06/2024

Last Call Due Date: 04/17/2024



UNIVERSITY OF MICHIGAN

Flint Campus

[CSC-580]: Advanced Software Engineering

Contents

CSC-580 PM CASE: THIRD AVENUE SOFTWARE HEALTH-CARE APP PROJECT

This case is new for the ninth edition of Information Technology Project Management. The case provides an opportunity to apply agile and Scrum principles to project management.

Each part of the case contains several task assignments to help you explore the use of agile and Scrum principles.

Part 1: Project Integration Management

Third Avenue Software is a relatively young company that develops mobile applications for phones. The company is still trying to find its corporate identity and permanent footing; it has released several moderately successful products but is still looking for a best-seller. Likewise, the company is still trying to determine which internal systems work best for its employees. Project management is among these systems. The company has used a few agile principles in previous projects with some success; its new project will use agile and Scrum whenever possible.

Many of Third Avenue's products thus far have been designed to serve niche markets, so the company's cofounders instructed their marketing staff and programmers to identify markets that have more universal customer appeal. A couple of programmers quickly turned their focus to the field of health care, which affects everyone directly or indirectly. The programmers drafted an idea for an app that could serve as a "one-stop shop" for customers' health-care information and needs. The app's name is to be determined, but it will contain the following features and information. Because Third Avenue knows from experience with agile projects that software complexity ratings can be useful for later time and cost estimates, management asked the programmers to include initial complexity estimates for each major feature set. These numbers are shown in parentheses and use a scale of 1 to 8:

• A fitness tracker that allows customers to record and track their blood pressure readings, cholesterol levels, exercise regimen, calorie intake, and other related information (3).

• A medication tracker in which customers can enter their medications and schedules for taking those meds. This "electronic pillbox" will contain a calendar that displays the customer's medication schedule and an alarm that sounds whenever it's time to take one of the medications (3).

• A physicians list that is essentially an electronic address book for the customer's health-care company, doctors, nurses, and physician's assistants. The list will include controls that allow customers to quickly incorporate existing entries from other contact lists in their phones (2).

• An emergencies list for storing vital phone numbers and addresses. This list will provide quick access to local in-network hospitals, urgent care clinics, and children or friends who can be relied upon to provide transportation in an emergency. As soon as the customer enters and saves an address, an interactive GPS map becomes available in a new window, with voice and text directions (6).

• An emergency information list in which customers store important information about themselves, such as medical conditions (e.g., the customer is diabetic), allergies, adverse reactions to drugs, and other personal information that a physician, nurse, or other concerned party might find useful in an emergency (2).

• A resource feature that lists links to other popular online health sites, such as WebMD. The customer will have the option to add links to the list (1).

• A payment feature that tracks the customer's medical expenses and allows customers to make medical payments through their phones (4).

The budget for the project is $350,000, and Third Avenue management would like to see a finished application available in four months.

Scrum will be the preferred approach to managing the project's development because Third Avenue wants a working version of the application quickly but does not yet know the full scope of the project. This working version will be released for review and testing well before the planned official release in four months. Remember that agile projects involve numerous iterations and software versions before the final release. These versions should be responsive to the concerns expressed by all stakeholders.

For example, programmers assigned to the app's development might be needed to provide support for other company projects, and more functionalities might be added to the app after various stakeholders have had an opportunity to evaluate the first working version.

Usability

Usability will be extremely important, as customers will tend to be older than those who download and buy many mobile apps. For example, the app will require a prominent control for increasing the text display size. Such controls are available in a phone's Settings feature, but many older users tend not to explore such "hidden" settings.

The features mentioned above need to be immediately available and easily accessible when the app is launched.

Another usability issue is crucial: How does the app balance customer privacy against the need to share some of the customer's information in an emergency? For example, the emergency information list might be of no use in a medical emergency if the customer's phone access is blocked by a password that only she knows.

Taken as a whole, programmers give usability issues a complexity rating of 4 on a scale of 1 to 8.

Monetizing the App

Another unknown is the question of how to monetize the app most effectively—for example, the app will use ads, but how? Pop-up ads are an annoyance to many people; will they be tolerated by users, or will they be immediately rejected? Will the app offer premium services, and if so, what are they? Will a subscription paywall be viable after an initial period of free use?

Instructions

• Open a new Microsoft® Word document and complete the Tasks below.

• Save the file on your computer with your last name in the file name. (Example: part 1 tasks_Jones.doc)

• Click the Choose File button to select and upload your saved document.

Task 1 Mike

Task Definition

Review the seven processes of project integration management and identify which processes are needed to begin planning the project from an agile perspective. Briefly explain your reasoning for including and excluding processes. The processes are listed below and explained in more detail in the Module 4 Reading.

Seven processes of project integration management
1. Develop the project charter
2. Develop the project management plan
3. Direct and manage project work
4. Manage project knowledge
5. Monitor and control project work
6. Perform integrated change control
7. Close the project or phase

Task Solution

Included Processes:

Develop the project charter: This process is essential as it formally authorizes the project, identifies the project manager, and provides the project manager with authority over the project. In an agile context, the project charter sets the overall vision, objectives, and high-level scope for the project, aligning stakeholders to a mutual understanding of the project's purpose and goals. The project charter is developed as an initialization task and thus should be done before any extensive planning.

Develop the project management plan: Agile projects embrace change and iteration, but they still require a high-level plan to guide the project team. A project management plan outlines how agile practices will be implemented, key roles and responsibilities, communication plans, and initial estimates for budget and schedule. This plan provides the framework for executing and controlling the project work. This process of project integration management is where the planning starts.

Excluded Processes:

- *The following processes occur after initialization and planning has begun.*

Direct and Manage Project Work: Agile projects emphasize self-organizing teams and iterative development cycles. In this process, the Scrum Master facilitates the *execution* of project work according to the agile practices outlined in the project management plan. The team collaboratively identifies and prioritizes tasks, conducts sprint planning, and actively engages in delivering increments of working products.

Monitor and Control Project Work: Agile projects require ongoing monitoring and control to ensure that work progresses effectively toward project objectives. In this process, there is a need to track progress against the project plan, identify and address issues and risks, and adjust course as needed to optimize project outcomes.

Perform Integrated Change Control: In this process, the Scrum Master and team assess proposed changes, evaluate their impact on project objectives, and determine whether to incorporate them into the project scope. Agile methodologies like Scrum provide mechanisms for managing change iteratively through backlog refinement, sprint planning, and sprint review meetings.

Manage Project Knowledge: While knowledge management is important in any project, agile methodologies prioritize direct communication and collaboration over formal documentation. Agile teams focus on creating working software and delivering customer value, often favoring lightweight documentation and knowledge sharing practices such as pair programming, collective code ownership, and shared understanding of project goals and requirements.

Close the Project or Phase: Agile projects usually don't have distinct project phases in the traditional sense. Instead, they operate in iterative cycles called sprints and deliver increments of working product throughout the project lifecycle.
So, the concept of closing a project or phase does not apply in the same way as it does in traditional project management. Agile projects continuously evolve and adapt to changing priorities and customer feedback, with the potential for ongoing enhancements and future iterations beyond the initial release.

Task 2 Mike

Task Definition

Begin developing a project charter for the health-care app project. Assume that the project will take four months to finish and have a budget of $350,000. Use the project charter template provided in this text and the sample project charter in Table 4-1 if you need assistance. Project personnel have not been determined yet, so do not be concerned for now with this area of the charter.

Task Solution

Project Charter
Date

Project Title: THIRD AVENUE SOFTWARE HEALTH-CARE APP
Project Start Date: 12/17/2023 **Projected Finish Date:** 4/17/2024
Budget Information: $350,000
Project Manager: Name, phone, e-mail
Project Objectives: Develop a comprehensive health-care app that serves as a "one-stop shop" for all our customers' health-related needs. The app will implement a range of features tailored to enhance user experience, including fitness tracking, medication management, emergency contacts, and payment tracking. The design will ensure usability for users of all ages, including older individuals, incorporating accessible text display options and striking a balance between privacy and emergency information sharing. Our platform will facilitate seamless communication between healthcare providers and patients, integrating a secure messaging system for real-time interaction. Personalized health recommendations will be provided based on user data and medical history, empowering individuals to make informed decisions about their health. Telemedicine capabilities will accommodate remote consultations and medical appointments, ensuring accessibility to healthcare services regardless of location. Central to our design philosophy is the implementation of a user-friendly interface with intuitive navigation, prioritizing ease of use and enhancing overall user experience.

Success Criteria:

- Successful launch of a fully functional health-care app.
- Positive feedback from target users regarding usability and functionality.
- Stay within the allocated budget and meet the project timeline.
- Ensure compliance with healthcare regulations and data privacy laws.
- Achieve a high adoption rate among target users within the first three months of launch.

Approach:

- Utilize agile principles, specifically Scrum methodology, for rapid and iterative development.
- Conduct regular sprint planning, review, and retrospective meetings to ensure continuous improvement.
- Prioritize features based on customer needs and feedback.
- Collaborate closely with stakeholders to address concerns and incorporate changes throughout the development process.
- Implement rigorous testing procedures to ensure the app's reliability, security, and performance.
- Provide comprehensive user training and support resources to facilitate seamless adoption of the app.
- Establish a feedback mechanism to gather user input and identify areas for future enhancement and optimization.

Roles and Responsibilities			
Name and Signature	***Role***	***Position***	***Contact Information***
Eric	Project	SCRUM Master	Eric@3rdAve.com
Dr. Dev	Developer	Senior Developer	D.Dev@3rdAve.com
Sketchy Designerman	Designer	HMI Architect	sketch@3rdAve.com
Quincy Recall	Quality Assurance	UX Analyst	Q.Recall@3rdAve.com
Stake Holderson	Stakeholder	IT Director	Stake.Hold@3rdAve.com
Comments: (Handwritten or typed comments from above stakeholders, if applicable)			

Task 3 Tom

Task Definition

Third Avenue first needs to identify a good project manager. Remembering your study of agile concepts in the text, by what title is the project manager known when using a Scrum approach? What skills and qualities must this person possess to lead the project effectively? How do these skills and qualities differ in a Scrum approach versus that of a more traditional project management style?

Task Solution

In an agile scrum approach, the typical project manager role is called the ScrumMaster. The ScrumMaster role is significantly different from a traditional management role. This is because the traditional management responsibilities are split between the Product Manager and the ScrumMaster. The Product Manager maintains responsibility for the budget, timeline, resource allocation, and maintains authority over the team. This allows the ScrumMaster to focus on facilitating the scrum, coaching the team, and removing obstacles from the team. A ScrumMaster should contain the following skills and qualities:

- Comfortable surrendering control to the product owner and team

- The ability to lead by serving
- The ability to foster a collaborative atmosphere among the team
- Must be a strong facilitator and communicator
- Conflict Resolution to keep the team focused
- Provide coaching to the team and organization in the Scrum
- Problem-solving to tackle obstacles that arise during each sprint
- Must be transparent and assertive to serve the self-organizing team effectively
- Patience and flexibility are important when dealing with changes within the project while maintaining peace and productivity

These skills differ from a more traditional project management style in that the ScrumMaster holds the position of "servant leadership" as opposed to a traditional manager's hierarchical role. The traditional manager must command and control authority, make decisions, and assign tasks. They are expected to possess qualities like time management, budgeting, detailed planning, risk management, and negotiation and execution skills.

Pressman, R. S., & Maxim, B. R. (2020). *Software engineering: A Practitioner's Approach by Pressman, 9th edition* (pp. 43-45). Mcgraw Hill.

Schwalbe, K. *Information Technology Project Management by Schwalbe, 9th edition* (pp. 130-139).

Task 4 Tom

Task Definition

Next, the person identified in Task 3 must form a team and establish a project framework within which the team will create a successful app. Describe at a high level how the team and framework will function, using as many relevant terms and concepts from Scrum as possible.

Task Solution

The scrum team should be a cross-functional team of five to nine people who organize themselves and the work to produce the desired results for each sprint. A sprint normally lasts two to four weeks before review. If the project is large enough it may require several teams.

The product owner creates the product backlog, which is a list of features prioritized by business value. The ScrumMaster will take the highest-priority items from the product backlog and create a sprint backlog. Each task in the sprint backlog will take roughly 12 to 16 hours to complete. In addition to the sprint backlog, the ScrumMaster will manage the burndown chart showing the cumulative work remaining in a sprint daily.

The ScrumMaster facilitates four meetings; sprint planning sessions, daily scrum, sprint reviews, and sprint retrospectives.

Sprint planning session: A meeting with the team to select work from the product backlog to deliver during the sprint (4 hours to a full day).

Daily Scrum: A short meeting (less than 15 minutes) for the development team to share progress and challenges and plan work for the day. The ScrumMaster asks for progress updates and what work is planned for today. They also ask about and document any stumbling blocks that might hamper the team's efforts. ScrumMaster is responsible for managing stumbling blocks with key stakeholders. The Scrum team refers to items that do not need to be resolved in the next 24 hours as issues and items that need to be solved in the next 24 hours as blockers.

Sprint Reviews: A meeting in which the team demonstrates to the product owner what has been completed during the sprint.

Sprint retrospectives: A meeting in which the team looks for ways to improve the product and the process based on a review of the actual performance of the development team.

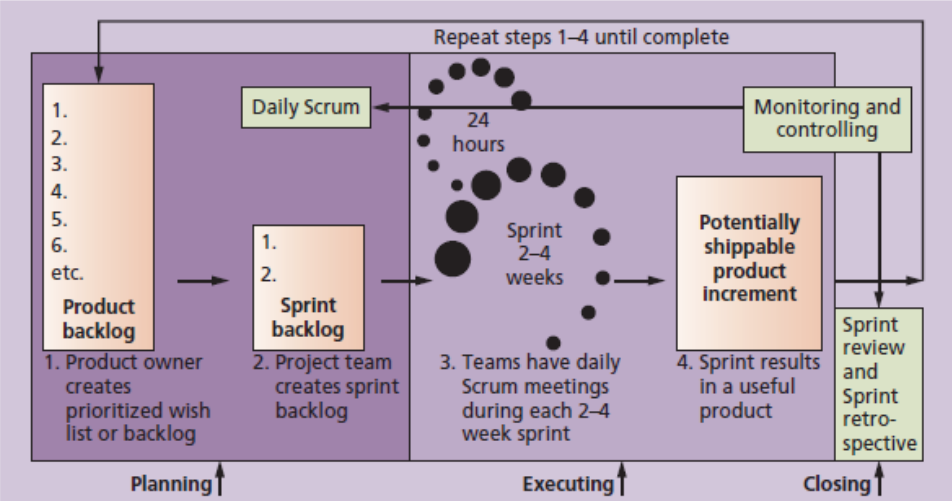


FIGURE 3-5 Scrum framework and the process groups

Schwalbe, K. *Information Technology Project Management by Schwalbe, 9th edition* (pp. 130-139).

Task 5 Cason

Task Definition

After identifying a manager, team members, and project framework, Third Avenue needs to research the market to determine what competing apps might exist and how they operate. Your task here is to locate a similar mobile app or online program and then get a feel for its content and users. Use a targeted Web search to find the app or program and then spend a half-hour or so reading about it to get

an idea of what the Third Avenue application should be able to do. Describe your findings in a bulleted list. Is something important missing from the preceding list of features for the health-care app?

Task Solution

Targeted web search queries:

- health care application
  - https://www.botreetechnologies.com/blog/most-popular-healthcare-applications-examples/
  - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4029126/ *
  - https://www.tekrevol.com/blogs/top-healthcare-apps/
  - https://www.digitalauthority.me/resources/popular-types-of-healthcare-apps/
- personal health care application
  - https://www.onlinedoctor.com/15-best-online-medical-apps-that-make-personal-health-easier/
  - https://www.healthspek.com/

Apps found:

- HealthTap: https://www.healthtap.com/features-pricing/
- WebMD: https://www.webmd.com/
- Generis?
- Pocket Pharmacist: https://pocketpharmacist.io/
- Teladoc: https://www.teladoc.com/
- Medisafe Pill Minder: https://medisafeapp.com/
- Apple Health: https://www.apple.com/ios/health/
- PEPID: https://pepid.com/
- Headspace: https://www.headspace.com/
- Medici: https://medi.ci/
- … and some more but not listed.

App Targeted for Research: https://medi.ci/

Findings:

- The app provides access to a concierge to assist you in scheduling visits and finding records.
- The app provides their own network of doctors from various disciplines.
- The app includes veterinary care for your pets.
- The app provides a personalized health score for patients.

- This app generally targets to act as your primary care physician, reduce time to care, and provide virtual care outside of other supplementary features.
- A main selling point of the application is access to a real person (concierge) who is always at hand to help.
- A lifestyle medicine program is available which targets treating people as a whole and implementing a `healthy living plan` for the patient.
- The app includes access to a network of labs for imaging and testing.
- While this is a health care app the scope seems to be quite limited, or otherwise the development is still quite young. Many of the features laid out in the case are not available from the research findings. With that said some new possible features have been realized which are noted in the next section.

Missed Features:

- An assistant to help with retrieving records and scheduling appointments (real or artificial).
- Access to virtual appointments through the app.
- Providing an aggregate health score based on your fitness, medications, and testing results.
- Ability to import personal records from external sources.
- Additional functionality to support pet health.

While there are some potential improvements and new features, we find the initial list in the case to encompass core functionality of such a one stop health app. Grated, initial features could be inspired by the research application especially in the case of connecting users with trained assistants to carry out the mundane aspects of health care for them.

Task 6 Cason

Task Definition

Once the team has studied the app or program in Task 5, an initial meeting is necessary to discuss the features and content needed for the software's first software iteration and to assign tasks to team members. The team also needs to establish schedules for project milestones and subsequent meetings. List your ideas for conducting the initial meeting and for creating an initial high-level schedule, using as many relevant terms and concepts from Scrum as possible.

Task Solution

- Prior to the sprint planning meeting the product owner should have the product backlog integrated into a track and release system such as Jira (a.k.a. a project management information system).
- The initial meeting will consist of a sprint planning session in preparation for the first sprint (lead by the scrum master).

- The goal of the first sprint is to conclude with the first software iteration.
- Within the session () the team shall add selected features into the sprint backlog which they plan to deliver in the first software iteration (at the end of the sprint).
- It would be useful to use a Kanban or sprint board to already have a clear structure of how the team will work going forward (e.g. keeping upcoming stories in mind while working on current stories and easily reviewing work which has been completed to build upon).
- Having story points estimated for the backlog (based on feature complexity) would be useful in ensuring the planning sufficiently utilizes the available team capacity.
- Story points will enable a burndown chart and calculation of the idealized velocity which the team should agree on.
- Within the features it is important to generate sub-features which are `shippable` and could be completed within the sprint alone. These may be associated tasks or technical stories included within user stories.
- For each task or user story in the sprint backlog a team member should be assigned.
- Burndown charts can be created, and story points analyzed for each team member, ensuring that their capacity fits their expectations.
- Ideally a Gannt chart for the project is created along with the planning (which may be integrated into the track and release system).
- In creating the sprint backlog, it is thus important to identify dependencies and assign expected start dates.
- As the project is targeting completion in 4 months, having 1-month long sprints would provide a consistent schedule for releases. With this said, it may make sense to implement an approach where sprint duration decreases over time as initial development required a large overhead. e.g., 6 sprints consisting of 4,4,3,3,2,2 weeks in duration.
- Future meetings should be planned, and timing aligned for the daily scrum, sprint reviews, and retrospectives.

Group Member Contributions

Cason Konzer

- HW Preparation / Template Creation
- Task 5
- Task 6

Tom Green

- Task 3
- Task 4

Mike Turley

- Task 1

- Task 2

ALL

- Discussed answers and distributed workload. Made suggestions to improve each other's work as applicable.

Works Cited

Schwalbe, K. (2019). *Information Technology Project Management* (9th ed.). Course Technology, Cengage Learning.

Pressman, R. S., & Maxim, B. R. (2020). *Software engineering: A practitioner's approach* (9th ed.). McGraw-Hill Education.