SE-491
Software Engineering Studio
Spring 2021-2022
Group Project
Due On: Various
500 points (group work) and 100 points (individual contribution)

Team Project

As a team, you will work on a project of your own devising.

You will come up with a concept and try to attract developers to your project. You will prepare a project plan with the intent of having an initial roll-out of your product by the end of SE491. You will evolve your product to incrementally add value and to address operational concerns such as monitoring, notification, disaster recovery, etc.

1 Activities and Ceremonies

We will use the basic activities and ceremonies of Scrum:

Backlog Management. You will need to keep your backlog groomed throughout the term. That means that you should always have a prioritized, estimated supply of stories. This will help sprint planning go much faster.

Sprint Planning. At the start of each sprint your team will carefully choose the stories that will add the greatest value for your minimum viable product (MVP). Plan on spending 1-2 hours per sprint for this activity.

Daily Scrum. This is the most challenging ceremony. Normally full-time teams meet daily to discuss their progress, but that may not be feasible for your team. You will need to arrange matters with your team members so that you can make solid progress on the project. This might be a combination of on-line or in-person meetings supplemented by useful technologies such as email, IM, and other collaborative work products.

Estimation. The team will need to agree on an estimation model for the various stories and tasks. Whatever model is selected, it must involve collaborative estimation. In other words, no one should be setting the estimate for a story or task without input from the other team members.

Retrospective. At the end of each sprint you will, as a team, conduct a sprint retrospective. You should plan on 30-60 minutes for this if you intend to take it seriously, which you should. You will present the results as part of your sprint review.

Review. At the end of each sprint, you will conduct a sprint review for the class that showcases what you've accomplished during the sprint. You would ordinarily plan on 30-60 minutes for this ceremony for a 2-week sprint, but since we're on a condensed schedule, with small teams, plan for about 15-30 minutes instead. During the review you will demonstrate your product (you should always be able to demonstrate your functionality on a deployable product), address how you are tracking to schedule and budget, and address any changes you might need to make to keep aligned to your schedule and budget.

2 Constraints

As with all projects, this one has a set of constraints that you need to follow:

1. Each student has different availability. You will work with your team to make your commitment for each sprint, but it is reasonable to expect each student to dedicate at least 8 hours per week to the project.

2. You may use any technology that you want, but it must support build automation, unit testing, and continuous integration.

3. You may only use freely available tools and frameworks.

3 Schedule

You will deliver your product in multiple phases using the Scrum framework. The tentative timeline:

Week	Date	Sprint	Major Milestones/Activities
01	2022-03-30	0	Discuss the course, its logistics, and the project.
02	2022-04-06		Complete and present project sales pitches to the class.
03	2022-04-13	1	Finalize project teams. Start project planning.
04	2022-04-20		Complete project plans and prepare presentation.
05	2022-04-27	2	Sprint 1 review and retrospective. Start sprint 2.
06	2022-05-04		Sprint 2 development.
07	2022-05-11	3	Sprint 2 review and retrospective. Begin sprint 3.
08	2022-05-18		Sprint 3 development.
09	2022-05-25	4	Sprint 3 review and retrospective. Sprint 4 development.
10	2022-06-01		Sprint 4 development. Final exam due.
11	2022-06-08		Sprint 4 review and retrospective. Course retrospective.

The individual sprints and their deliverables are described on the following pages.

Each sprint is organized to describe its goal, as well as the planning, retrospective, and review aspects on which you will be evaluated. The evaluation criteria are provided as well as the deliverables to be submitted.

Sprint 0 (2022-MAR-30 – 2022-APR-13) 25 Points

Goal: Funding.

Planning: During this sprint, your goal is to attract developers for your project.

1. Devise your product concept.
2. Produce and present a 3-5 minute sales pitch designed to encourage your classmates to want to participate. If you're attending class "live" then be prepared to present. If not, please submit a link to a video that I can play for everyone.

Review: N/A

Retrospective: N/A

Evaluation: There are no team evaluations for this sprint. Each student will be evaluated on:

25 pts. **Sales Pitch.** The electronic slide deck of your sales pitch as well as your presentation to the class.

Submit: Please submit the following items:

1. The Powerpoint or PDF presentation of your sales pitch.
2. A link to a recording of your presentation (if not done in class).
3. Your top 3 choices for the projects on which you want to work. More details will be provided on this **after** this sprint is complete.

Sprint 1 (2022-APR-13 – 2022-APR-27) 125 Points

Goal: Project planning.

Planning: Work as a team to define a delivery plan for your project.

Review: Your project plan including:

1. A prioritized product backlog organized into epics and stories.
2. An initial assignment of epics and stories to sprints. You won't be held to this – it's an organization exercise.
3. An estimate for your velocity.
4. A sprint 0 prioritized backlog.
5. You team's definition of done.
6. A preliminary technical stack.

Retrospective: A retrospective where you discuss how you can improve as a team. You will use the "stop", "start", "continue" format.

Evaluation: Each team will be evaluated on:

25 pts. **Technology**. Your preliminary technical stack, including key languages and frameworks and hosting providers. You will not be held to this, but you need to think about it early on.

25 pts. **Backlog Management.** Your sprint backlog showing your product backlog, organized by sprint, and showing what your team completed and what will be carried over into the next sprint.

25 pts. **Project Plan.** The delivery plan for your project. The plan should address each of the points above.

25 pts. **Review.** A presentation of your project plan to the class.

25 pts. **Retrospective.** The documentation and presentation of your team's lessons learned for the sprint and how you intend to apply those lessons to later sprints. You should use the "stop", "start", "continue" format. You should call out the changes that the team thought would be useful from the previous sprint, whether any progress was made on those changes, and the impact those changes have had.

Submit: Please submit the following items:

1. A Powerpoint or PDF presentation that captures your team's:
   (a) Project plan.
   (b) Your plan for the next sprint.
   (c) Your team's "definition of done."
   (d) Your team's preliminary technical stack.

Sprint 2 (2022-APR-27 – 2022-MAY-11) 125 Points

Goal: Team's choice.

Planning: Based on your velocity from sprint 2, define your sprint plan.

Review: Your sprint progress including:

1. Your sprint backlog showing what your team did and did not complete.
2. A working demo, outside of your IDE, of your software highlighting all of the functionality that was completed since the last sprint.

Retrospective: A retrospective where you discusses how you can improve as a team. You will use the "stop", "start", "continue" format.

Evaluation: Each team will be evaluated on:

25 pts. **Technology**. Your source code repository holding your code and showing commits from each team member and an automated build script that compiles your code and runs your unit tests. Working automated build and continuous integration solutions, integrated with your source code provider, showing both successful and failed builds.

25 pts. **Backlog Management.** Your sprint backlog showing what your team completed and what you did not. Your product backlog should also show new and removed stories.

25 pts. **Project Plan.** A burndown chart showing the progress your team made in closing the items from the sprint backlog. An accounting chart, showing the story points at the start of the sprint, the number of points completed, any increases in scope, and any changes in estimates. Provide similar burndown and accounting charts that show the same information, by sprint, compared to your original project plan.

25 pts. **Review.** A presentation of your project to the class along with your sprint backlog and retrospective. Demonstrate your CI pipeline.

25 pts. **Retrospective.** The documentation and presentation of your team's lessons learned for the sprint and how you intend to apply those lessons to later sprints. You should use the "stop", "start", "continue" format. You should call out the changes that the team thought would be useful from the previous sprint, whether any progress was made on those changes, and the impact those changes have had.

Submit: A Powerpoint or PDF presentation that captures your team's:

1. A Powerpoint or PDF of your sprint review and retrospective.
2. A link to a recording of your presentation (if not done in class).

Sprint 3 (2022-MAY-11 – 2022-MAY-25) 125 Points

Goal: Team's choice.

Review: Your sprint progress including:

1. Your sprint backlog showing what your team did and did not complete.
2. A working demo, outside of your IDE, of your software highlighting all of the functionality that was completed since the last sprint.

Retrospective: A retrospective where you discusses how you can improve as a team. You will use the "stop", "start", "continue" format.

Evaluation: Each team will be evaluated on:

25 pts. **Technology**. Identify the key telemetry that you'll use to gauge the health of your application and its environment. The telemetry data you choose will depend heavily on your application and its infrastructure.

25 pts. **Backlog Management.** Your sprint backlog showing what your team completed and what you did not. Your product backlog should also show new and removed stories.

25 pts. **Project Plan.** A burndown chart showing the progress your team made in closing the items from the sprint backlog. An accounting chart, showing the story points at the start of the sprint, the number of points completed, any increases in scope, and any changes in estimates. Provide similar burndown and accounting charts that show the same information, by sprint, compared to your original project plan.

25 pts. **Review.** A presentation of your project to the class along with your sprint backlog and retrospective. Review your application and environment telemetry.

25 pts. **Retrospective.** The documentation and presentation of your team's lessons learned for the sprint and how you intend to apply those lessons to later sprints. You should use the "stop", "start", "continue" format. You should call out the changes that the team thought would be useful from the previous sprint, whether any progress was made on those changes, and the impact those changes have had.

Submit: A Powerpoint or PDF presentation that captures your team's:

1. A Powerpoint or PDF of your sprint review and retrospectives.
2. A link to a recording of your presentation (if not done in class).

Sprint 4 (2022-MAY-25 – 2022-JUN-08) 125 Points

Goal: Team's choice and project wrap-up.

Review: Your sprint progress including:

1. Your sprint backlog showing what your team did and did not complete.
2. A working demo, outside of your IDE, of your software highlighting all of the functionality that was completed since the last sprint.

Retrospective: A typical sprint retrospective. Also, a term retrospectives where you present your top three (3) "do's" and "dont's" for the term.

Evaluation: Each team will be evaluated on:

25 pts. **Technology**. Monitoring of the telemetry identified during the previous sprint.

25 pts. **Backlog Management.** Your sprint backlog showing what your team completed and what you did not. Your product backlog should also show new and removed stories.

25 pts. **Project Plan.** A burndown chart showing the progress your team made in closing the items from the sprint backlog. An accounting chart, showing the story points at the start of the sprint, the number of points completed, any increases in scope, and any changes in estimates. Provide similar burndown and accounting charts that show the same information, by sprint, compared to your original project plan.

25 pts. **Review.** A presentation of your project to the class along with your sprint backlog and retrospective. Review your monitoring and notifications.

25 pts. **Retrospective.** The documentation and presentation of your team's lessons learned for the sprint and how you intend to apply those lessons to later sprints. You should use the "stop", "start", "continue" format. You should call out the changes that the team thought would be useful from the previous sprint, whether any progress was made on those changes, and the impact those changes have had. Also include your team's top three (3) "do's" and "dont's" for the course.

Submit: A Powerpoint or PDF presentation that captures your team's:

1. A Powerpoint or PDF of your sprint review and retrospective.
2. A link to a recording of your presentation (if not done in class).

4 Peer Evaluation

At the end of the project, you will be asked to submit a peer evaluation of each of your teammates as well as a self-evaluation of your own contributions. This evaluation is intended to reflect your peers' contribution to the project.

The evaluation is worth 100 points. The peer evaluation score will be the average of your team members evaluations, rounded up to the nearest point. For example, if you receive the following 4 evaluations from your team members, including your self-evaluation: 100, 84, 76, and 88, then you will receive a score of 87. You will not receive the individual scores.

I would encourage everyone on the team to have candid conversations throughout the term. This can be incorporated as part of the retrospective. To be effective, however, you need to be willing to both give and receive honest feedback. However, you should always keep in mind that honest feedback **does not** mean tactless feedback.

Please fill out the form on the next page and submit it as a PDF to D2L for the "Peer Evaluation" submission for each sprint once it becomes available. You should also submit an evaluation for yourself. Guidance on the evaluation criteria and scale is provided on the next page to help you in your assessment. For any scores less than 4, please provide a brief comment to help your team member improve in that area. Please make sure your feedback is **constructive**.

Team Member Name:

DEPENDABILITY	Always	Usually	Sometimes	Rarely	Never
Came to meetings prepared.	5	4	3	2	1
Did their tasks well.	5	4	3	2	1
Did their tasks on time.	5	4	3	2	1
Made timely responses to project communications.	5	4	3	2	1

TEAM PLAYER	Always	Usually	Sometimes	Rarely	Never
Invested in the team's success.	5	4	3	2	1
Exhibited friendly professionalism.	5	4	3	2	1
Was respectful of others.	5	4	3	2	1
Did a fair share of the work.	5	4	3	2	1

PROJECT PARTICIPANT	Always	Usually	Sometimes	Rarely	Never
Proposed (but didn't force) new ideas, suggestions, courses of action.	5	4	3	2	1
Built on or extended others' proposals.	5	4	3	2	1
Expressed support for other team members' opinions or ideas.	5	4	3	2	1
Disagreement with other team members' opinions or ideas was respectful.	5	4	3	2	1
Accepted or negotiated when other team members disagreed with his/her ideas.	5	4	3	2	1
Invited views or opinions from team members not actively participating in the discussion.	5	4	3	2	1

Based on your responses to the above questions, assign an overall rating you think is the fairest assessment of the team member's contribution to the overall project from the following options:

Excellent	Very Good	Satisfactory	Average	Marginal	Deficient	Unsatisfactory	Superficial	No Show
100%	95%	85%	75%	50%	25%	15%	5%	0%

4.1 Scale

Each criteria should be evaluated on a scale of 0 to 5, with 5 being the highest score and 0 being the worst. Please use the following descriptions of each level as guidance.

Excellent Consistently carried more than his/her fair share of the workload. They rarely relied on others and were often an individual on whom others relied.

Very Good Consistently did what he/she was supposed to do, very well prepared and cooperative. Demonstrated a high degree of skill. Made few minor mistakes. Occasionally relied on others, but consistently contributed to the success of their peers.

Satisfactory Usually did what he/she was supposed to do, acceptably prepared and cooperative. Demonstrated reasonable competence. They sometimes made mistakes, but recovered from them, learned from them, and did not make the same mistake again. Relied on others at the beginning, but by the end of the project were contributing as an equal.

Average Often did what he/she was supposed to do, minimally prepared and cooperative. Did not volunteer for additional activities or to assist their team members who might have been over-committed.

Marginal Sometimes failed to show up or complete assignments, rarely prepared. Did not demonstrate competence. Made frequent mistakes, sometimes learning from them, sometimes not. Relied heavily on others at the beginning but were able to gradually improve their own skills although they never contributed an equal share to the success of the project.

Deficient Often failed to show up or complete assignments, rarely prepared. They often made mistakes but did not learn from them. They relied heavily on others and did not try to improve their own skills.

Unsatisfactory Consistently failed to show up or complete assignments, unprepared. They were disruptive to the team. They made mistakes and failed to learn from them assuming they even tried at all. They relied heavily on others and made no attempt to improve their own skills.

Superficial Practically no participation. Shows up at the last minute looking to help in the hopes of improving their peer evaluation score.

No Show No participation at all.

5 Frequently Asked Questions

Here are some recurring questions about the class and my responses to them.

Q: I'm not a strong coder so I'm not sure how much help I'll be as a developer.

A: Your team members need to recognize that not everyone has the same skill set, or even the same goals for the class. If you're not a strong coder, you'll need to be realistic during sprint planning when you commit to the tasks you'll be able to complete. You can also look for other ways to contribute, for example as a tester or a user experience designer. Perhaps you'd prefer to play the role of the project manager or Scrum Master. There are many ways to contribute, but each team member must play some kind of technical role, so try to zero in on what you're strengths are and look for ways to stretch yourself.

Q: Why should my grade depend on other people?

A: This one comes up during every group project and it always strikes me as arrogant. Why shouldn't your grade depend on other people? Contrary to the popular narrative in this country, your success is rarely due only to your own efforts. We all receive help from others constantly. The wise person recognizes that and does not take more credit than is their due. This is one of the reasons that you have the ability to provide a peer evaluation at the end of each sprint. That's your means to hold your group mates accountable to their commitments and to the team, and for them to do the same to you.

Q: Why is so much of my grade dependent on my peers' evaluations of me?

A: Because how you conduct yourself on any project will have a significant impact on your team's ability to deliver quality software. It will also have a significant impact on your career. In the professional world you're going to receive feedback at least once a year (to which salary adjustments and bonuses are often tied) and in some organizations it's much more frequent than that. If you're used to such feedback, then this won't cause you any grief. If you're not used to such feedback, then this is a good chance for you to experience it. So, if you're a conscientious, well-meaning participant in your team's effort to complete the project, you'll likely do well. If you're an overbearing, colossal, PITA with whom no one wants to work, you're going to have a rough time, not just in class, but in life.

Q: Why are you making it harder to collaborate by including DL students in the in-class groups and vice versa?

A: All you need to do is look at the how businesses have shifted to a work-from-home approach for business continuity during the Coronavirus pandemic to have your answer. If that's not convincing enough, then consider that many organizations have outsourced at least part of their development to countries that do not share USA timezones. This is great experience for folks who haven't worked with a distributed group to get a chance to do so. Look at this as an opportunity to practice and hone your skills in working with distributed teams. You should make sure that your adjustments to the Scrum framework are inclusive of those individuals. For example, if you're having an in-person meeting, try to find a way to allow your remote team members participate via Skype or Hangouts or some such.

Q: I'm unconvinced. Other than because it's required, is there anything positive I can take away from this group work?

A: Absolutely. Consider this. The world is a small place and Chicagoland is even smaller. It's entirely possible that you will encounter people from this class in some professional capacity in the future. You have an opportunity to leave a good impression. People will remember you if you're a good team member. They'll also remember you if you're not.

If you're at a more senior point in your career, this is chance for you to meet and mentor some great engineers that you might want to hire one day. If you're an engineer, you may find people working for companies or on projects that sound interesting to you.

In short, use this class not just as an opportunity to hone your skills, but as an opportunity to network as well.
