CSC301H5 - Introduction to Software Engineering

Final Project

University of Toronto, MississaugaCampus
Winter 2023
Due: Jan 27th 11:59 PM

Sprint 0

PREFACE

This course, unlike other courses, has a major component based on teamwork using Agile methodologies. Agile will be taught in the course. You will be taught in a timely manner all concepts necessary to manage a software project using Agile.

For this project, you need to work on teams of minimum 5 students and maximum 7 students. **Please start forming your teams quickly. Before joining a team, please do consider the following and choose wisely:**

- Once you join a team, you will work in this team for the rest of the semester. There is no option to go back and create/join another team. In the extreme case, if the need for this arises, keep in mind that you will lose the mark for the components of the project that have been due before the date you created/joined a new team.
- Keep in mind that the evaluation scheme has been built around the concept that everyone should contribute approximately equal amounts of work toward the project. If some members of the team will underperform, this will affect the quality of the work for the whole team.
- Additionally, different students have different objectives. Some people simply want just to pass the course. Some people want to earn 100%. Some may aim for something in between. Please select a team whose members have goals similar to yours. Keep in mind, the evaluation scheme does not favour heroic individuals who want to earn 100% by doing all the work themselves. This course aims to educate you to work in a team. So your best bet to earn a good grade in the project is to motivate members of your team to put in an effort comparable to your effort.

DECLARING YOUR TEAM

The following must be done by Jan 27th at midnight to declare your group.

- **Think of a name for your product!** After finding team members, you should discuss initial ideas and agree upon a name.
- **Register your team repo on Github.** The name should match your project. **Do not use placeholder names** like “cscc01-project” or “csc301group”.

- **Declare your team members on team.md** which you need to put in your team project's repository folder `doc/sprint0`.
- **Create a Trello** to track your tickets.
- **Register and join your team on GitHub Classroom** to create and access your project repository.

The deadline will be enforced by checking the initial commit date and time on the file `doc/sprint0/team.md` and your Trello sign up. Any delay in declaring your team, will delay the whole process and impact your grade on the sprint0.

Important: Standup Meetings

Standup meetings must be conducted in the official CSC301 discord server, where your TAs may join to provide mentorship and advice.

Your team can also create a separate discord chat or server to manage your project and include an invitation for us at the bottom of team.md. We have also included a template server you can use for your project (https://discord.gg/FnsngABMdc).

Important: Discord Links

If you are including a discord link in your team.md file, please make sure your discord invite link is valid and is set to NOT EXPIRE. When you generate an invite link, click the 'Edit Invite Link' option to change the settings.

Template for your Team.md

Use this markdown template to make your team.md file. Markdown will autoformat the file into a neat table. Please use your utoronto email.

```
| Full Name | UTORID | Student ID | Email | Best Way to Contact | Discord Username
|
|-----------|--------|------------|-------|---------------------|------------------
|
|           |        |            |       |                     |
|
|           |        |            |       |                     |
|
|           |        |            |       |                     |
|
|           |        |            |       |                     |
|
|           |        |            |       |                     |
|


...
```

```
**Discord Chat/Server Invite :** [insert link here]
```

Example:

```
|John Smit |smitj1 |1001234567 |j.smith@mail.utoronto.ca |6471234567 |jsmith#1234 |
```

Also keep in mind, in your team.md you MUST include some contact method that your team can use to quickly contact you (phone number, whatsapp, etc) in case you become unresponsive at key moments, hurting you and your team's marks. We understand that sharing personal info is not preferred by some people, but here we are in a work environment. Also, your repos are private so no one but your teammates and instructors can see your personal information. Instructors and TAs will NOT use it to contact you. The only way we will contact you is your school email.

FINAL PROJECT STAGES

The Final Project is **45% of your final grade**. As such, this project will be completed in phases, and it does include a presentation and a peer evaluation component. Two key requirements are:

- Your solution must conform one of the following software architecture patterns:
  - MVC: https://en.wikipedia.org/wiki/Model-view-controller
  - Microservices: https://martinfowler.com/articles/microservices.html
  - Three-tiered architecture: https://www.linuxjournal.com/article/3508
  - *Architectural patterns will be covered in lecture notes in the first few weeks.*
- Your solution must be produced using some kind of full stack (MEAN, MERN, etc). The reason for that requirement is that your solution must include a back end, front end, and software that connects both front end and back end. See here: https://www.w3schools.com/whatis/whatis_fullstack.asp

PHASES AND DEADLINES

- **Sprint 0:** Start the project by identifying key objectives of the project.
  - Weight: 18% of your **final project** mark.
  - Due date: Jan 27th 11:59pm, on Github.
- **Sprint 1:** Complete Sprint 1.
  - Weight: 18% of your **final project** mark.
  - Due date: Feb 10th 11:59pm on Github.
  - Software presentations: During tutorials of that week.
  - Peer evaluations due on Quercus @ Feb 10th 11:59pm.
- **Sprint 2:** Complete Sprint 2.
  - Weight: 18% of your **final project** mark.
  - Due date: Mar 3rd 11:59pm on Github.
  - Software presentations: During tutorials of that week.
  - Peer evaluations due on Quercus @ Mar 3rd 11:59pm.
- **Sprint 3:** Complete Sprint 3.
  - Weight: 18% of your **final project** mark.
  - Due date: Mar 17th 11:59pm on Github.
  - Software presentations: During tutorials of that week.
  - Peer evaluations due on Quercus @ Mar 17th 11:59pm.
- **Sprint 4:** Complete Sprint 4.
  - Weight: 18% of your **final project** mark.
  - Due date: Mar 31st 11:59pm on Github.
  - Software presentations: During tutorials of that week.
  - Peer evaluations due on Quercus @ Nov 19th 11:59pm.
- **Project Presentation.** Release 1 of your Software.
  - Weight: 10% of your **final project** mark.
  - You are allowed to implement small bug fixes, but not entire features.
  - Date: TBD (sometime between Mar 31st and Apr 6th)
  - Project presentations: Held on Zoom. A detailed schedule and signups will be posted later in the course.

DELIVERABLES FOR SPRINT 0

All deliverables should be submitted to the team repo, under '`doc/sprint0`'.

proposal.md

- Short document (2-5 minute read)
- Identifies project objectives including key users, key use cases, and key usage scenarios
- Also includes market sizing analysis: how big the addressable market is and who you're targeting in various stages of release. This can and should go above and beyond what you are building during this course.
- **You will be marked on the novelty, realism, and business potential of your project. We're looking for *new* ideas that your team could potentially continue to work on after this semester finishes. Mimicking a well-known project (e.g. a UTM course calendar) may be penalised.**
- Intended audience:
  - Your instructors and TAs. We expect to get a good understanding of your planned project, based on this document alone.
  - Your team. You should use this document in the next phase(s), when deciding how to prioritise work
- This article contains useful tips on writing your proposal: https://articles.uie.com/short_form_creative_brief/

Important: Early Submission

proposal.md will be worth 10% of your final project mark (of the 18% allocated to sprint 0, the other 8% will be split between the files listed below). In other words, a majority of your sprint 0 mark will be based on your proposal.md. Therefore, you should spend a good amount of time doing research and coming up with an original, feasible, creative project idea. Any proposal.md files that are on github by Jan 20th will receive a round of feedback, so if you wish to get feedback before the final submission, be sure to upload your first draft to github by 11:59pm, Jan 20th. No late submissions for first drafts will be given feedback. IF YOU WANT YOUR FIRST DRAFT GRADED, INDICATE ON YOUR TEAM.MD FILE BY JAN 20TH, 11:59 "We want our first draft graded".

team.md

- See the above instructions on how to fill out team.md
- Use the GitHub Classroom invite link found on the course website to register your team

- Register your team on Trello and include the link in your team.md for your instructors
- Commit and push team.md latest by **Jan 20th** (a week before the other files)

team-contract.pdf

Prepare and sign a team contract. Sample contract is provided on the course website

competition.md

- Short document (2-5 min’ read)
- Identifies existing products (and possibly provide URLs) that solve the same (or similar) problem as yours.
    - How is your product different?
    - If your product is better for specific users and/or specific scenarios,
        - Who are the users and/or what are the scenarios?
        - Why do you think the competitors didn’t focus on these users and/or scenarios? And, what would it take from them to do so?

personas.pdf

- 2-3 personas
- Personas are detailed descriptions of the key users you mentioned in your summary.md
- The personas must be prepared in PDF format. Each persona must be written on an individual page.
- The format should follow: http://www.agilemodeling.com/artifacts/personas.htm

Product Backlog: PB.md

- Identify the most important user stories.
- You should have around 20. Enough to give us (and you) a good sense of the scope of the project. If you have less than 20 but feel like the size of your user stories justifies it, please reach out to a TA to confirm.
- As a guideline: a user story (usually) corresponds to a feature in your project.
- Each user story must obey the format stated in the lecture and it must also contain the criteria of satisfaction. For this stage, there is no need to estimate user stories.
- Additionally, all stories in PB.md need to be recorded on Trello.
- **PB must be ready by January 27 so you can start Sprint 1.**

Setup

- You should create the initial foundation for your project, so that when Sprint 1 begins you can immediately start developing features.
- Work should be completed to show connectivity between your model, view, and controller

- Example: clicking a button or form that creates an object in a database

User Experience/User Interface

- An artefact that gives a visual indication of how you imagine the user interface of your system will implement the key scenarios listed in your short form creative brief.
- Focus on the logical flow of the application and the user's experience while going through the key scenario(s), don't worry about ”making things pretty” or getting the widgets exactly right.
- Use mockups, storyboards, wireframes, fake command-line sessions, etc.
- Feel free to use any tools that are best fit for your designs. As long as it is easy for the TAs to evaluate and understand your software/product.
  - Storyboarding: http://www.storyboardthat.com/
  - Interface designs: https://www.figma.com/

Your definition of done: done.md

- The whole team needs to agree as to what ”done” means for the features you will implement. • We have standard and additional definitions of done.
- Note the definition of done applies to all user stories.

Process: process.md

- Short document (2-5 min read)
- Reflect on how your team worked together.
- Here are a few questions that can guide you
- How did you organise the team? Which tools did you use, if any?
- How did you make decisions?
- How did you define priority and/or points of user stories? How many rounds of voting (on average) did you need to come to a consensus for the point estimate?
- How frequently did you meet?
- What lessons should you take forward to the next phase?

Documentation: README.md

- A good README.md is required for all software projects to assist with on-boarding contributors. At minimum, your README should have the following sections - however feel free to expand upon it!
- Motivation: provide a short detailed description of the motivation behind the project: what is it, what problem(s) does it solve, and why it exists.
- Installation: provide a list of required tools/programs to run your project, and a procedure for how to build and run your project.
- Contribution: describe the process for contributing to your project.
  - Do you use git flow?
  - What do you name your branches?
  - Do you use github issues or another ticketing website?
  - Do you use pull requests?
- Resources:
  - https://www.makeareadme.com/
  - https://blog.bitsrc.io/how-to-write-beautiful-and-meaningful-readme-md-for-your-next-project-897045e3f991
  - Look at open source Github repositories and study their process!

A NOTE ABOUT EVALUATION

This phase of the project is very different from other CS courses, so we thought we should make a few extra notes.

- The deliverables may seem ”light”, but require a lot of thinking.
  - The main point is to articulate the value of your project.
  - This phase is crucial to the success of your project. It will be difficult to ”go back and fix it” later during the term.
  - The evaluation will be based (more or less evenly) on presentation and content
- Presentation
  - Clear and concise writing
  - If you can convey the same information with fewer words, that’s great.
  - Good use of diagrams, links, visuals and other tools
- Content
  - It needs to make sense
  - Must answer the questions to the questions posed in the above deliverables.

- Your project idea should be well thought out and realistic

Please refer to the marking scheme for full mark breakdown details.