

GD2S02 Software Engineering For Games	Summative Assignment  Software Engineering Practice (SCRUM SDLC)	Week of Issue: <span>Week 1</span>
		Submission Dates: <div>Concept Pitch: Week 2 Pre-production Phase: Week 5 Alpha Build: Week 10 Beta Build: Week 13 Gold Build: Week 15 Product Presentation: Week 15</div>
<b>Overview of the Assessment</b> This assignment aims to utilize project based learning to help students understand, identify and use software engineering practices in a complete development cycle. For this component, we will use the Scrum project management framework.  Broadly, the assessment is based on the ability to follow Scrum processes over the entire development period of a game and your reflection on those processes. The success of this assessment is dependent not only on the end product but also on the processes followed to reach the goal. Therefore, a number of deliverables are required as proof of you having followed the required processes as explained in the following sections.		
<b>Product Requirements</b> The product developed through this assignment will be a game whose idea you will pitch as a team.  The game idea should be developed to accommodate the following requirements: <ul style="list-style-type: none"><li>Local multiplayer: cooperative and/or competitive.</li><li>Simple game play mechanics.</li><li>Single screen 2D arena</li><li>Clean and neat user interface</li></ul> The game should be developed in C++. You can use third party libraries if necessary but not any game engine.		
<b>Software Development Life Cycle</b>  There will be three main phases of development in the project. Each phase will follow a Scrum-based iterative and incremental approach and is outlined later in the brief.  To begin, you must self-organize yourself into a scrum team of 3-4 people. One person must be chosen as the Scrum Master. The Scrum Master role will start with the Pre-production phase and each team must change the Scrum Master at every sprint- this is to ensure that the onus of timely delivery is felt by each member of the team.		
<b>Phase 1 : Concept Phase</b> In this phase you will brainstorm ideas within your team to develop a high-level concept design document for the game you are going to develop. This phase will run as a single 1-week sprint. By the end of this sprint you will have a high-level understanding of the features of your proposed game. You should also have chosen the Scrum Master for the next sprint by the end of this phase.		

## Phase 2 : Pre-Production/Prototyping Phase

This is the research and design phase of the game. It starts after the proposals are pitched and game idea has been decided, then carries on as features are discussed, outlined, and prioritised as well as the frame of the game design is created. In this phase you will basically be exploring possible features of your game and experimenting with ideas before they are finalized for production. This phase will run as a single sprint of 3-weeks.

You should start this phase by writing a GDD - that will document the ideas you have brainstormed together as a team. The next step would be to create a Product Backlog based on the GDD. The items in the product backlog must have priorities and estimates attached to them. By the end of this sprint you should also have at least a few working components of the game; even though they may be working in isolation. The actual documents that need to be submitted are as outlined below.

- Game Design Document
  - The main design should be clear and main features should be listed.
  - This document is alive and keeps growing/changing during subsequent iterations.
  - Submission will include one game design document **per team**. The document must contain a table of authorship detailing the contribution of each member in the team.
- Technical Design Document
  - The main structure of the Document should be in place, features prioritised and main requirements fleshed out.
  - This document is also alive and keeps growing in each cycle with the newly designed components in each iteration.
  - Submission will include one technical design document **per team**.
- Product Backlog Sheet
  - The product backlog should list all identified work items written in the form of user stories.
  - The work items should also include priorities for each of them.
  - Submission will include one product backlog file **per team**.
- Alpha Sprint Backlog
  - The highest priority items from the product backlog should be moved to the Alpha sprint backlog.
  - These items should have estimates and a person assigned to them.
  - In addition, the acceptance criteria for these items should also be thought of and documented.
- Product Review
  - Source Code
  - Demo of the current state of the game.

**Phase 3 : Production/Development Phase**

This is the actual development phase of the game that is divided into three sprints: Alpha Sprint, a Beta Sprint and a Gold Sprint.

**Alpha Sprint :**

The alpha sprint will run for five weeks. At the end of this sprint the basic functionality of the game should have been implemented and the game should be playable, the game should be feature complete and the final assets added to it. Feature freeze will take place at the end of alpha phase. The deliverables from this sprint will include:

- The Updated Game Design Document
- The Updated Technical Design Document
- The Updated Product Backlog Sheet
- Beta Sprint Backlog
- Product Source & Release together with a Demo

**Beta Sprint:**

The beta sprint is the testing phase of development and will run for three weeks. The purpose of this sprint is to do in-house testing of the game. Assessment for this sprint will focus on testing and bug tracking documentation, along with metrics capture and reporting.

During the beta sprint, each individual will:

- Document testing performed and the results obtained from that
  - This should show evidence of end-to-end testing
  - Your scenario(s) should be outlined with expected results
  - Evidence of actual results should be provided where possible
- Submit a copy of details from bugs logged
  - This should be taken from your sprint/product backlogs (assuming that you are logging bugs as tasks in the backlog)
  - A good bug report contains the following information
    - An informative short description, consistent with other descriptions (e.g. you may use certain keywords in the description to help categorize bugs)
    - Details of what occurred
    - Details of what was expected
    - Details on how to reproduce the bug
- Submit a copy of details logged as a result of resolving bugs
  - At a minimum, the person who solved a bug should be recorded
  - Ideally, the root cause should be found and recorded
  - Good bug resolution tracking will contribute to metrics by being categorized down to the source and class of error

The deliverables from the beta sprint will include:

- The Game Design Document (with changes, if any)
- The Updated Technical Design Document
- The Updated Product Backlog Sheet
- Test Logs
- Gold Sprint Backlog
- Product Source & Release together with a Demo

**Gold Sprint:**

The gold sprint is for play-testing the game outside of the development environment and doing fixes to the product as required. This sprint will run for two weeks. Assessment for this sprint will focus on providing play-test reports and feedback as also the final demo of the game.

The deliverables from the gold sprint will include:

- The Play-test Feedback and Reports
- Product Source & Demo

### Journals and Burn-down Charts

To keep track of the productivity of the team as a whole and each individual member in the team, it is required that each person maintains a developer journal and burn-down charts as detailed below

- Developer Journal
  - Developer Journal is to be written weekly by **each team member**.
  - The submissions of these journals will be done at the end of each sprint starting with the pre-production phase.
  - The document should contain individual reflection on weekly tasks accomplished, backlog items addressed, individual and team progress (in general).
- Burn-Down Charts
  - Burn-down charts should be created by each individual in the team for each sprint.
  - Team burn-down charts should also be created for the whole project and submitted for each sprint.

### Product Review at milestones

A product review presentation will be held at each milestone following the submission.

This should be a very concise presentation to report on the progress of the product, lessons learned so far and actions in progress.

### Post Mortem

Each individual will write a post mortem analysis of the software engineering practices applied to the project.

Address the following areas:

- Reflections on software engineering approach and practices
  - Insight into process cycles, phases and software engineering tools employed
  - What went right, what went wrong
  - Software Engineering approaches for testing, verification and validation
- Personal review and reflections
- Team review and reflections

### Document Formatting Guidelines:

- The documents are to be in the form of an Adobe PDF document.
- The font must be Times New Roman point size twelve
- Use 1.5 line space
- Set the layout to be fully justified.
- The header must contain the author's name using left justification, and the footer must contain the page number using right justification.