# CS 2053: Final Report Template

## Winter 2021

Please fill in your answers to the questions below. The main goal of this report is to make sure that the instructor is able to assess all aspects of your project and the at nothing is missed. Additionally, a few feedback questions will help us organize the course in the future.

**Current Group Members: Alexandre Moreira de Carvalho, Deon Best**

**GitHub Project URL: https://github.com/CS-2053-Winter-2021/course-project-2d-DeonBest**

## **Game Design Requirements**

*Describe in the following sections how your game meets/supports each of the following project requirements:*

* 1. **Story Telling.** The game should contain storytelling with audio or text narration.

The game contains text narration. The context of the story is told in text when the player starts a new game. The story advances in each level through dialogues in the game screen. When the player completes all the levels, then the victory screen tells the end of the story.

* 1. **The number of levels**. The game should be a multi-level/scene game with 2N scenes (where N is the number of teammates). How many levels do you have and what do they represent.

The game includes 4 playable scenes.

* Scene 1: The player defends the system against the invasion.
* Scene 2: The player faces a powerful ship that is leading the attack (boss).
* Scene 3: The player attacks the planet of the enemies.
* Scene 4: The player attacks the mothership (boss).

## **Game Programming Requirements**

*Describe in the following sections how your game meets/supports each of the following project requirements (what parts of the game and how it was provided):*

The project and resulting game must include the following game programming technologies:

* 1. **Sound** (note that if your game did not contain sound because of limitations in the lab computers, please comment on this here).

The game includes sound effects and music in all of the scenes, both playable and not playable (such as title scene and user interfaces).

* 1. **Physics**

Physics is used more directly in Scene 3 in the asteroid field. The asteroids use bounce material and the mass is set based on the size of the asteroid. Physics is used in the collisions between asteroids to create unpredictable asteroid movement and to challenge the player.

* 1. **Cameras: should have dynamic (or multiple)**

As discussed in the meeting with the professor, we are utilizing a scrollable background to simulate a dynamic camera.

* 1. **User Interface** (menu).

User interface is used throughout the game. We have a title scene, credits, game over and victory scenes composed of interactable ui elements. The playable scenes have a HUD to display score.

* 1. **AI:** AI game objects must have state-based behaviours and involve pathfinding. Note that for this point, you can use those provided by the game engine/platform which you will use for the project development and/or write your own.We removed the requirement for AI, but if you have some AI in your project, you may describe it here.

The mothership (boss in Scene 4) was created using a state machine. Transitions are triggered based on the amount of health available. When the ship is entering the scene, it is in the INVULNERABLE state. After entering, it switches to the Firing cannons state and the cannons are triggered to shoot at the player. When the health is at 75%, the ship changes the state extend the carriers. At 50% health it switches to the last state, where it loses its cannons and start sending kamikaze ships from the carriers.

Pathfinding is used in the kamikaze ships. The ships follow the player using the 2D pathfinding library, until they are destroyed.

## Describe what parts of the game you attempted to build or wanted to build, but were unable to

*Distinguish between the parts you were unable to implement, but would have satisfied a project requirement, from parts that you wanted to add additionally to improve gameplay or play experience.*

We attempted to implement a typewriting text animation, but we were unable to do it. The animation consisted of making the text in the dialogues to appears in sequence, as if they were being typed.

One other thing we wanted to build is more complex bullet patterns, however doing this proved to be fairly difficult, so we relied on using more basic bullet patterns in unique ways, such as adding negative acceleration to them.

## **How successful were you?**

## *Provide a description about how successful you were in creating a 'good' game with this project. There is no right or wrong answers, this is to help you reflect on your experience.*

We were quite successful creating the game we envisioned. However, we did put a lot of work into it, and probably spent way too much time. We were lucky to find quality assets that helped us to create an interesting game.

## **Describe how you were able to work remotely with your team or individually.**

*Did you have any challenges? What worked well? Would you do something differently in the future?*

Working remotely was challenging, specially at the beginning of the project, because many files had to be changed to accomplish a task. This made Github conflicts to happen quite often, but we managed to overcome it. It started to work better when we stopped pushing directly to master and used branches with pull requests instead.

## **Describe what external/third-party resources (or asset packs) you used**

*Please describe what third-party resources/scripts/objects/music/sprites/etc. you used, what functionality/features they provide and how you used them? Please provide urls for important libraries/assets, but leave out simple sprites and sound/music files.*

No libraries were used in the game. From all the asset packs we only utilized images, sprites, sounds and music.

* 2d space kit by Brett Gregory <https://assetstore.unity.com/packages/2d/environments/2d-space-kit-27662>

This pack provided most of the sprites used in the game. We utilized the spaceship sprites, the asteroid sprites, the planets sprites, a couple of background images, some missiles sprites, and some particles sprites.

* Sci fi background pack by GalefireRPG

<https://galefirerpg.itch.io/scifi-backgrounds>

We used some background images from this pack.

* Sci fi interface frames by Yemelyan k. <https://assetstore.unity.com/packages/2d/gui/icons/sci-fi-interface-frames-10747>

We used this as the HUD.

* Inspirational Music Pack Vol. 2 and vol. 4

<https://jdbartist.itch.io/inspirational-music-pack-vol-2>

* Sound effects

<https://assetstore.unity.com/packages/audio/sound-fx/universal-sound-fx-17256>