Project Definition

* This document should contain an elucidation of the problem and the objectives of the project.
* The objectives stated here form a ‘contract’ and your final deliverable will be evaluated, in part, against these objectives.
* The deadline for submitting this document is **Friday noon in the first week of Block 4.**

**1.Student Name: Lunar-Skie Hackett**

**2.P-number: P2724211**

**3.Project Title: FPS Weapon Implementation and Animation Pipeline**

**4.Supervisor: Artur Machura**

**5.Introduction (max. 100 words):** This project will be a framework that a first-person shooter can be built with. It will include the tools to implement a variety of weapons with different functions, and the tools to apply animations that drive, or are driven by, gameplay based on the weapon the player is using.

**6.Aims (max. 100 words):** The project will explore the following:

* Animation in Blender
* Animation Pipeline from Blender to Unity via FBX
* Implementation of weapons driven by Scriptable Object data
* Viewmodel Animation systems for a First-Person Shooter in Unity
* Animations driven by gameplay events.
* Gameplay events driven by animations.

**7.Objectives (max. 200 words):** *A list of specific, measurable objectives. They specify all the work tasks to be undertaken to meet the stated aim. They will vary from project to project, as every project is different. Your final deliverable will be evaluated, in part, against these objectives.*

* Research viewmodel animators, common animation techniques and common workflows.
* Develop a technical design document to highlight the
* To implement the gameplay for, and to animate, a set of weapons, each with varying properties.
  + All weapons will have an equip, unequip, inspect and “quick melee” animation.
  + Ranged weapons will have a fire animation.
    - Ranged weapons can optionally have a single reload animation, or different ones that play at different ammunition amounts.
    - They will optionally be able to fire repeatedly, play an animation after firing, or require the user to “charge up” to shoot.
  + Melee weapons will have one or more attack animations
    - Melee weapons will also optionally have charged attacks, different attacks for primary or secondary input, or be able to block attacks.
* Design VFX for weapons to enhance the visuals.
* Design a User Interface to give more information to the player.

**8.Deliverables (max. 100 words):** *A list of your Project’s deliverables. Be specific. e.g. a vertical slice of a game with audio, combat system, inventory system, HUD, and cut scenes. Or a plug-in for an existing engine which adds X, Y, Z functionality. Include any relevant documentation (testing report, code documentation, etc) you expect to create.*

* Ethics Screening Checklist
* Project Definition
* Reference List
* Gantt Chart detailing project schedule
* Technical Design Document
* Vertical Slice for basic weapon function with simple animation (First Deliverable)
* Final Submission
  + Blender Source Files
  + A sufficiently developed FPS Framework, compiled to DLL(s).
  + Unity project containing the source files for the project and demo scene.
* PowerPoint Presentation for Viva

**9.Schedule of Activities:** *Having defined the tasks to be undertaken in the list of objectives, you need to prepare a Project Plan to show how you intend to carry them out. You can have a Gantt chart or text-based information related to your project plan.*

|  |  |
| --- | --- |
| Week | Tasks |
| 31/03/2025 (wk. 1) | Documentation Raycast job scheduling |
| 07/04/2025 (easter) | Basic weapon function |
| 14/04/2025 (easter) | Weapon planning and model sourcing, first weapon animations |
| 21/04/2025 (easter) | Test export pipeline, iterate on animation cleaning. |
| 28/04/2025 (wk. 2) | UI for weapons + Prototype deliverable |
| 05/05/2025 (wk. 3) | Build demo scene, finalise animation for demo weapon |
| 12/05/2025 (wk. 4) | Animation swapping & projectiles |
| 19/05/2025 (wk. 5) | animation-driven gameplay & visual effects |
| 26/05/2025 (wk. 6) | Unique firearm – bespoke reload and cycle animations |
| 02/06/2025 (wk. 7) | Polish + optimisation pass |

**10.Requirements:** *Specific Hardware or Software you will be using e.g. Unreal Engine, GitHub, Jira, HoloLens, Nintendo Dev Kit, Maya, Visual Studio, etc.*Unity 2022.3.29f1, Blender 4.2.8 (4.2 LTS Stable), GitHub (via Github Desktop), Visual Studio 2022

**11.Research Hypothesis:** N/A

**12.Student Signature:**

**13.Supervisor Signature:**

**14.Date:**