SIT151 - Assessment 4

Game Development & Implementation

Worth: 40% of your unit grade

Due: Friday, Week 11, by 8pm AEST

Introduction

In this assessment task you will individually design and develop components for a video game. In this assessment you may use either the Unreal Engine 5 or Unity 2021 game engines. The classes and workshops will focus on Unreal Engine 5 but you may discuss either engine with the teaching staff.

You will first need to complete the instructions to create the base game covered in the weekly development tasks in the workshops. The creation of this base game will take place during the first half of the trimester. You then need to design and develop chosen additional features as described below.

Tasks

Implementation

For this assessment task, you must first complete the base game you have created using the Unreal/Unity tutorials. Time is allocated as part of the workshops for this, but you are advised to work ahead by following the instructions provided. From this base game, you will need to expand it by choosing at least **4 features** from the **Features** section below in this document to add to your **own base game** in Unreal/Unity.

Each component has 2 listed features with a description of the feature's requirements. This means you could choose to complete:

- Both (2) features for 2 components (2 components * 2 features = 4 features)
  OR
- 1 feature each for 4 different components (4 components * 1 feature each = 4 features)
  OR
- Any combination of the above to equal at least 4 features.

You may develop more than 4 features, in which event your best 4 will be counted towards your grade.

You are encouraged to **be as creative as possible** in your solutions, with **higher marks awarded for interesting and innovative solutions** that go beyond the specific skills taught in your practical Unreal/Unity tutorials.

A great way to create interesting and creative implementations of the components is to think about how they can become more dynamic or reactive to other game objects and components in a way that will surprise the player or encourage more varied gameplay.

If there is a feature not listed below you would like to include in your game, please contact the Unit Chair via email to discuss so you can receive approval for your idea to be counted as a graded feature in your game. This is to ensure the scope of your feature idea(s) are appropriate.

Your tutor will be happy to hear your ideas and provide guidance and feedback on your features. You are also encouraged to discuss your ideas and find solutions to development challenges with your peers both in workshops and in the discussion forum in the unit site.

However, you must be the only one to have access to your individual game files and implement your solutions. ***DO NOT SHARE YOUR UNREAL GAME FILES WITH ANY OTHER STUDENT***. Note that sharing game files with others or using someone else's work may be regarded as plagiarism or collusion, and is a breach of the Deakin Academic Integrity Policy. Note that the project files do include a record of when and where you worked on the project and this may be used to verify that you: completed the tutorials from the given starting project, and that you made regular progress

from the start of the trimester. Removal of these files from the project, or projects created only within a few days of the assessment deadline may be disqualified from marking (exceptional circumstances should be discussed with the unit chair).

If you do use any external resources to develop your game features, then make sure that you:

1. Include them in the list of references in your submission. This means any resource, including art assets, instructions on a web page or video, or blueprint/script fragments.
2. Describe clearly what you added, since you will only be given credit for what **you** contributed.

Failure to acknowledge sources will result in a score of 0 for that feature when it is discovered, with an additional penalty for wasting the marker's time.

Bonus marks may be awarded in the event of particularly innovative or transformative work; however total assignment marks cannot exceed 40 points.

Development Documentation

To better demonstrate the purpose and development process of your features, you must also provide a development document that describes the way in which your design and implementation satisfied the brief of each of your 4 (or more) chosen features from the Features table later in this document. ***A template will be provided in the unit site***. For each feature, you must provide:

- **Description** of your design and implementation of the feature.
- **Reasoning** for your choices and how your design fulfils the feature description in a creative or interesting way.
- **Screenshots** of the relevant blueprints/scripts used, **together with an explanation** of how they work. Hint: comments in your project files are a very good idea.

Gameplay Video

A short (<2 minute) **screen-capture video of your game in Unreal/Unity** demonstrating the features functioning ***and*** showing the blueprints/scripts.

- Choice of screen-capture recording software is up to you. We suggest using OBS Studio.
- The video should be solely focused on demonstrating your new features and their blueprints/scripts. You can edit this together however you wish to cut unnecessary footage if required.
- While you may wish to add voice-over, labels or captions remember this is not a promotional trailer and should only require minimal editing.
- Please upload your video to DeakinAir (video.deakin.edu.au), check and set the permissions in 'Publish' to 'unlisted' and provide the access URL in your submission.

Submission

Your submission to the Assessment 4 submission folder in the unit site must contain the following 3 items:

- An **archive (zip file) of your Unreal/Unity project**.
    - Ensure you test this prior to submission to avoid any missing files. Your archive should simply be a zip of the entire project directory of your Unreal/Unity game. This will automatically include all meta data required to validate your efforts throughout the trimester.
- Your **development document** as a PDF or Microsoft Word document (.doc or .docx).
- Your **gameplay video** as a URL link with your submission. This can be provided as a text 'comment' on your submission.

Features

Choose 4 features total from any combination of components.

COMPONENT	FEATURES AND REQUIREMENTS - you must complete *at least* 4 features in total!
NEW ENEMY Add a new enemy to the game (this could be a boss enemy).	***FEATURE 1:*** Enemy must move in an **interesting** way different than the existing enemy. ***FEATURE 2:*** Enemy must react to being attacked by the player in an **unique** way different from the existing enemy.
SPECIAL WEAPON Add a second weapon for the player.	***FEATURE 1:*** Special weapon must be able to attack and damage or destroy enemies in a unique way **different** from the standard weapon. ***FEATURE 2:*** Special weapon must use limited or recharging ammo, preventing continuous use.
POWER-UP Add a collectible power-up.	***FEATURE 1:*** Power-up must be able to be collected by the player for use at a later time or in certain states. ***FEATURE 2:*** Power-up must enhance player abilities in an interesting way that adds **variety** to gameplay.
ENVIRONMENTAL HAZARD Add an environmental hazard as an additional challenge.	***FEATURE 1:*** Environmental hazard must **hinder** the player in some way, encouraging the player to avoid it. ***FEATURE 2:*** The environmental hazard must appear / start and disappear / end so it is **not present for the entirety** of play.
ENEMY WAVES Add a structured spawning system for enemies.	***FEATURE 1:*** Enemies must spawn in a wave-based system that waits until all enemies of a wave are destroyed before commencing the new wave. ***FEATURE 2:*** Enemy spawn points and behaviour must be varied and unique between waves (***not just random spawn points***).
VICTORY CONDITION Add a victory condition state for the player to win the game.	***FEATURE 1:*** The game must end when the player achieves a certain challenging game state (try and think **creatively**). ***FEATURE 2:*** The player must have real-time feedback during play that provides an indication of how close they are to successfully achieving the victory condition.
DYNAMIC DIFFICULTY ADJUSTMENT Add a system to regulate challenge in the game.	***FEATURE 1:*** The game must evaluate player performance in real-time and judge whether the challenge is too easy, difficult or just right for the player. ***FEATURE 2:*** The game must adjust the sources of challenge in response to this evaluation to better balance challenge to player skill.
CONTENT TRANSFORMATION Overhaul the look and sound of the game.	***FEATURE 1:*** Replace the **visual and audio assets** including characters, objects and sound effects or music with assets you have created or sourced online yourself (try and think **creatively such as changing the setting or theme of the game,** and **reference any online sources in your development document**). ***FEATURE 2:*** Create a new, more detailed or interesting HUD (heads-up display) including images and dynamic elements.

PRESENTATION AND CONTEXT Provide a more complete game experience with menus or story.	***FEATURE 1:*** Include a narrative/story told in-game. This could take the form of cut-scenes, dialogue, comic book-style image panels or more. Note that this should be included before, after or during gameplay inside Unreal Engine. ***FEATURE 2:*** Add a menu system to the game such as a main menu to begin the game (with an appropriate background, game logo, etc) and/or pause menu.
VISUAL AND AUDIO FEEDBACK Make use of Unreal's visual and audio features to provide more exciting and dynamic visual and audio feedback.	***FEATURE 1:*** Add enhanced **dynamic** visual effects for in-game feedback such as particle effects, camera shake, camera lens effects (chromatic aberration, vignette, etc) that trigger for in-game. Note that some of these may require the use of a "perspective" camera mode rather than our default "orthographic" camera. ***FEATURE 2***: Use enhanced dynamic audio features for your sound effects, music, ambient sounds, etc such as attenuation and reverb effects.

IMPORTANT: As explained previously, **should you wish to include one or more features not on this list** that you would like to count towards your 4 feature additions, please contact the Unit Chair via email for approval to ensure the feature(s) are appropriate in scope.

Marking Rubric

The following rubric will be used when marking and providing feedback from your Assessment 4. The Unit Learning Objective (ULO) criteria that you need to address in your submission is listed in the left-hand column. The level to which you have achieved each criteria will be marked on the corresponding column for your 4 chosen features (10 points per feature). In the event you wish to include more than 4 features, all will be marked but only the 4 highest-scoring will count towards the final assignment grade for a maximum of 40 marks. Feedback on all submitted material will be provided in the rubric.

Please review the tables below to assist you with your assignment.

UNIT LEARNING OUTCOMES	**FAIL** **0-4 POINTS**	**PASS** **5 POINTS**	**CREDIT** **6 POINTS**	**DISTINCTION** **7 POINTS**	**HIGH DISTINCTION** **8-10 POINTS**
ULO1: Investigate computer game designs and articulate their effectiveness using evidence. **ULO2**: Design and develop computer game components and incorporate that into a game. **ULO3**: Employ the terminology used for computer game design and development to communicate ideas and concepts in a professional manner.	Feature is absent or only partially present with major issues. Feature may not fully satisfy the requirements. Documentation (including blueprint screenshots and video) of feature may be absent or missing significant information. Component may not be present in project archive or may not be functional.	Both feature implementation in project file and documentation are present. Feature is present and functional but may have some issues, bugs or inefficiencies. The feature requirements are generally fulfilled but the chosen design may be very simplistic and lacking creativity and inventiveness. Documentation (including blueprint screenshots and video) covers the major required content with some omissions, or unclear points or issues.	Both feature implementation in project file and documentation are present. Feature is present and functional with few issues or bugs and sound logic. The feature requirements are fulfilled but the chosen design may be somewhat simplistic or lacking creativity and inventiveness. Documentation (including blueprint screenshots and video) covers the required content with some minor omissions, or unclear points or issues. Appropriate terminology is used throughout.	Both feature implementation in project file and documentation are present. Feature is present and functional with effective logic and very few issues or bugs. Some evidence of engine or logic features beyond what has been covered in class tutorials. The feature requirements are fulfilled with evidence of creativity and inventiveness in the chosen design. Documentation (including blueprint screenshots and video) covers all required content in good detail. Polished presentation and appropriate terminology is used throughout.	Both feature implementation in project file and documentation are present. Feature is present and functional with excellent logic and robustness. Evidence of engine or logic features beyond what has been covered in class tutorials. The feature requirements are fulfilled with clear evidence of creativity and inventiveness in the chosen design. Documentation (including blueprint screenshots and video) covers all required content thoroughly with excellent detail. Professional presentation and appropriate terminology is used throughout.
YOUR 4 CHOSEN FEATURES Feature 1					
Feature 2					
Feature 3					
Feature 4					
OVERALL ASSIGNMENT TOTAL (max: 40 points)	**<20 points**	**20 to 23 points**	**24 to 27 points**	**28 to 31 points**	**32 to 40 points**