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| Course: BSc Computing | Module Code: CO2301  Module Title: Games Development 1 |
| Assessment Title: Unreal Game Development | **Type of assessment**: 3D Game |
| This assessment is worth 70% of the overall module mark. | |

**HOW, WHEN, AND WHERE TO SUBMIT:**

The assessment release date is: 14/10/2024.

The assessment deadline date and time is: **21/02/2025 at 1pm Cyprus time.**

You should aim to submit your assessment in advance of the deadline.

Feedback will be provided by: 14/03/2025.

Note: If you have any valid mitigating circumstances that mean you cannot meet an assessment submission deadline and you wish to request an extension, you will need to apply online, via [MyUCLan](https://my.uclan.ac.uk/BANP/twbkwbis.P_WWWLogin) with your evidence **prior to the deadline**. Further information on Mitigating Circumstances via [this link.](https://msuclanac.sharepoint.com/sites/CyprusStudentHub/SitePages/Mitigating-Circumstances.aspx)

**SUBMISSION DETAILS**

1. Before submission make sure you have made a backup of your project.

2. Delete the following folders from your project (These can all be recreated by UE5 and Visual Studio):

* Intermediate
* Saved
* .vs
* Binaries

3. Add the completed assignment coversheet into your project folder

4. Zip the remaining files in your project into a single .zip file and submit via the ‘Project Files’ link on Blackboard

5. You must record a video demo of your game of between **5 and 10 minutes** in length showcasing how it has met the requirements you have implemented. This should be submitted via the ‘submit video demo’ link on Blackboard. A YouTube link is acceptable if the video file size is too large.

Read this guidance carefully, and any questions, please discuss with your Module Leader. Good luck!

**Additional Support available**:

All links are available through the online [Student Hub](https://msuclanac.sharepoint.com/sites/CyprusStudentHub/SitePages/Support.aspx)

1. Academic support for this assessment will be provided by contacting the Module Leader – **Louis Nisiotis** [LNisiotis@uclan.ac.uk](mailto:LNisiotis@uclan.ac.uk)
2. Our **Library resources** link can be found in the [library area](https://msuclanac.sharepoint.com/sites/CyprusStudentHub/SitePages/Library.aspx) of the Student Hub or via your subject librarian at [CyprusLibrary@uclan.ac.uk](mailto:CyprusLibrary@uclan.ac.uk)
3. For help with Turnitin, see [Blackboard and Turnitin Support](https://portal.uclan.ac.uk/ultra/institution-page) on the Student Hub
4. If you have a disability, specific learning difficulty, long-term health or mental health condition, and not yet advised us, or would like to review your support, **Student Support Officers (cyprusstudentsupport@uclancyprus.ac.cy)** can assist with reasonable adjustments and support. To find out more, you can visit the **Student Support Service** page of the [Student Hub](https://msuclanac.sharepoint.com/sites/CyprusStudentHub/SitePages/Support.aspx). You can also call +357 24694026 or +357 24694108 or +357 24694073.
5. For mental health and wellbeing support, please complete our [online referral form](https://www.uclancyprus.ac.cy/the-psychological-wellbeing-and-counselling-centre/) or email the Psychological Wellbeing and Counselling Centre at UCLan Cyprus at wellbeing@uclancyprus.ac.cy.
6. For any other support queries, please contact **Student Support** via CyprusStudentSupport@uclan.ac.uk.
7. For consideration of Academic Integrity, please refer to detailed guidelines in our [policy document](https://www.uclan.ac.uk/assets/student-contracts/2023-24/academic-integrity-policy-2324.pdf) . All assessed work should be genuinely your own work, and all resources fully cited.
8. For advice on the use of Artificial Intelligence, please refer to [Categories of AI tools](https://msuclanac.sharepoint.com/sites/StudentStudySkills/SitePages/Using-Artificial-Intelligence-tools-in-assessment.aspx) guidance.

**For this assignment, you are not permitted to use any category of AI tools.**

**PREPARING FOR YOUR ASSIGNMENT.**

Before completing the assessment, you should ensure you are up to date with all of the practical lab exercises on Blackboard. These exercises are designed to give you working with the tools and techniques required to complete the assignment. Refer to the Module Information Pack to understand the Learning Outcomes and Marking Criteria.

**THE BRIEF/INSTRUCTIONS**

You are to create a third person shooter style mini game prototype using C++ and the Unreal Engine 5. The exact nature of the core gameplay/mechanics you choose to implement is flexible, but there is an expectation that your game should contain the following requirements (For detailed marking, see the attached marking scheme document on Blackboard):

## 40% Requirements:

1. At least 3 Screens E.g. Title/Win/Lose/Gameplay Screen
2. A C++ Pawn class that the player is able to move around the level
3. A C++ Actor class that the player is able to shoot / interact with
4. Implemented Collision handling between actors (OnActorHit or OnComponentHit)
5. Implemented Basic Enemy AI E.g. enemy movement.
6. A C++ GameMode class that implements Basic Game Rules E.g. Increasing Challenge, score keeping, Win/Lose Conditions, etc.
7. Implemented in-game Sound
8. Gameplay implements a 3rd person view using Camera and SpringArm components created in C++

## 50% Requirements:

1. Appropriate use of Property and Function Specifiers for use in Blueprint Subclasses
2. Implemented a basic heads up display (HUD) E.g. displaying health and/or ammunition
3. A C++ PlayerController class (E.g. to Initialize the HUD)
4. Use of the UGameplayStatics::ApplyDamage method to deal damage to an actor
5. Use of the UProjectileComponent to launch projectile actors (that will deal damage to an opponent)
6. Implemented an in-game timer(s) in C++
7. Game responds to Trigger Events (Eg. OnActorBeginOverlap or OnComponentBeginOverlap)

## 60% Requirements:

1. Assignment uses Source Control and is integrated into your Unreal Project E.g. Github
2. Included destructible mesh actors in your level that can be damaged/destroyed by the player
3. Implements Appropriate use of Physics Forces (E.g. Impulse, Radial Impulse, Force)
4. a C++ AIPlayerController class
5. Implemented Pathfinding (E.g. Using Navmesh Bounds Volume)
6. Implemented a basic Behavior Tree / Blackboard system E.g. to move between waypoints on a level

## 70% Requirements:

1. Behavior tree allows enemies to chase players
2. Behavior tree allows enemies to attack players from range
3. Implemented Raycasting (Line Tracing)
4. Custom Written (in C++) Behavior Tree Services and Behavior Tree Tasks
5. Mini Map using SceneCaptureComponent/RenderTarget

**For this assignment, you are not permitted to use any category of AI tools.**

**LEARNING OUTCOMES ASSESSED**

1. Explain the theoretical underpinnings of algorithms and techniques specific to artificial intelligence.

2. Implement artificial intelligence algorithms.

3. Apply a systematic approach to games development from specification to implementation.

4. Develop software using game-specific tools and environments

Note: LO1 Evidenced through Code Comments/Demo

**ASSESSMENT CRITERIA**

***for 40% you must Implement:***

All of the 40% Criteria

Code is reasonably commented.

**for 50% you must implement (in addition to the above):**

At least 6 50% Requirements

Appropriate Coding style/naming conventions

**for 60% you must implement (in addition to the above):**

At least 5 60% Requirements

Well considered gameplay mechanics

Mini game is generally bug free.

**for 70% you must implement (in addition to the above):**

At least 4 70%+ Requirements

Mini game is bug free.

**For 85%+ you must implement (in addition to the above):**

ALL 40,50,60% and 70% Requirements

Mini game is well polished.

**Note*:*** *If you are unable to complete a lower level requirement, but are able to complete a higher level requirement in it’s place, you are recommended to do so, as we may be able to take this into account when marking your work.*

**Reflecting on Feedback: how to improve.**

From the feedback you receive, you should understand:

* The grade you achieved
* The best features of your work
* Areas you may not have fully understood
* Areas you are doing well but could develop your understanding.
* What you can do to improve in the future - feedforward

Next Steps:

* List the steps have you taken to respond to previous feedback.
* Summarise your achievements
* Evaluate where you need to improve here (keep handy for future work):

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