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| **Department of Games and Visual Effects** |

**ASSESSMENT DOCUMENT**

**Module code:** GAME30502

**Module title:** Fundamentals of Programming

**Assessment name:** Creating a Unity Game

**Assessment weight:** 50%

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| **Tutors:** |  |
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# Assignment Learning Outcomes

1. DEMONSTRATE KNOWLEDGE AND UNDERSTANDING OF CONCEPTS, PRINCIPLES AND THEORIES RELATING TO PROGRAMMING

(knowledge & Understanding)

1. DESIGN, IMPLEMENT, TEST AND DEMONSTRATE COMPUTER PROGRAMS USING APPROPRIATE TOOLS AND TECHNIQUES

(Problem solving, Application, Communication)

1. UNDERSTAND PROBLEM SOLVING TECHNIQUES RELATED TO SOFTWARE ENGINEERING

(knowledge & Understanding, Learning)

# The Assignment

## Design and Create a Unity game

Semester two of this module will require you to create a game in Unity. Additionally, you will need to produce a report explaining the design decisions you have made, and code strategies used to create a clean and bug free interactive implementation of your Unity game.

**Game created using Unity**

You’re required to build a game with at least one level using Unity that incorporates the following elements, components, and systems:

* A main menu screen:
  + This should be displayed before starting the game which offers at least 1 other menu screen that can be accessed from the main screen (credits, settings, guide etc.) and the ability to quit the application.
* An in-game HUD:
  + This should display appropriate player information such as health, score, lives etc.
* Appropriate use and implementation of input to control elements of the game
* Animation using the Animator
* Appropriate use of a camera
* Scenes are appropriately lit
* Appropriate usage of collision and collision events to facilitate gameplay
* AI appropriately used:
  + May be to present the player with opposition for instance
* At least 2 different Particle systems that are used at appropriate times:
  + This might be from killing enemies or collecting pickups etc
* Audio ambience / music and sounds effects played
* A win/loss condition that allows the player to complete or fail the level
* Level complete menu screen with back to main menu functionality
* Game over menu screen with back to main menu functionality and restart level functionality

## Report

This is a 1,000-word (+- 10%) report.

The below word limits are suggested if the report in its entirety is 1,000-words

Literature **must** be used throughout the report to demonstrate your research.

### Explanation of Game and Strategy 600-words:

A clear explanation of the game design and code strategies used to create a clean and bug free interactive implementation.

### Critical Evaluation 400-words:

A critical evaluation of the product and your learning experience. This should include:

* What you have learned.
* What went well / wrong.
* Challenges you have overcome.
* What you would do differently.

If you like you can use one of the below reflection methodologies to aid with this section.

* Kolb’s Experimental Learning Cycle
* Rolfe et al.’s Reflective Model
* Gibbs Reflective Cycle

### User Guide

A short user guide should be included within the appendix (this does not count towards the word limit).

# Milestones

There will be 2 milestones for this module, and you will have the opportunity to hand in your work at the end of milestone 1 to secure feedback and marks - you will be able to improve these marks when you submit for milestone 2.

## Milestone 1

If you complete all elements of this Milestone, you can obtain 30% of the module marks.

You should ideally have completed:

* Menu screen present – Only plays game – 5%
* Full navigation of the player or camera in game with additional controls such as Jump, sprint etc. – 5%
* Use of animator to run animation with no errors – 10%
* Collision fully set up in game – use of events to enhance gameplay experience – 10%

## Milestone 2

## Full assignment completion.

# Submissions

Milestone 1’s deadline is **11th March 2022 at 3pm.**

Milestone 2’s deadline is **13th May 2022 at 3pm.**

All work should be submitted to the Digital Academy Uploads system before the deadline. Any work submitted after the deadline will not be considered.

The report also needs to be submitted onto **Microsoft Teams**.

# Hand-in

1. Part completed Unity Game Project as detailed in Milestone 1.
2. Zip of your Unity Project folder.
3. Written report in **.docx** format.

# Summative Submission Rules

If you are required to compress your work, it must be in .zip format. A guide on how to do this can be found here - [Link](https://support.microsoft.com/en-gb/help/14200/windows-compress-uncompress-zip-files)

All work created should be done so using the same software version numbers as what is used in the University. This is to prevent any compatibility issues. If we are unable to open your work for this reason you will receive a mark of 0. You can find the full list of acceptable software versions in the FAQ - [Link](#_What_Software_Can).

# Module Feedback

Feedback on your performance is provided in a variety of ways – all the way through a module you will be receiving informal feedback on your performance, in your discussions with teaching staff in labs or tutorials for instance. Feedback should help you to self-assess your work as you progress through the module and help you to understand your subject better.

Feedback is not just the marks at the end of the module – it could be regular verbal advice about your work, perhaps as you develop a portfolio of work; comments made by tutors or fellow students in group discussions; or the written comments on your work.

You can expect to receive formal feedback on your assessed work no later than **20** **working** **days** after it has been submitted.

The feedback date for this module is approximately week ending **7th June 2022** but could be later as the 20 days of assessed work does not actually end till **14th June 2022**.

# Assessment Criteria

## Milestone 1 – Prototype Artefact 30%

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| Description | Total mark | Fail | 3rd | 2:2 | 2:1 | 1st |
| Main Screen | 5 | No Main screen present in game. | Main screen present but not useable. | Menu screen present – Only plays game. | Main screen present with ability to play and quit game. | Full working main menu screen at the start of the game that offers additional menu functionality. |
| Input Control | 5 | No input controls for camera or player. |  | Basic input to move player or camera around the game. |  | Full navigation of the player or camera in game with additional controls such as Jump, sprint etc. |
| Animation | 10 | No use of animation through animator. |  | Use of animation – plays with some errors and not at relevant times. |  | Use of animator to run animation with no errors. |
| Collision and Collision Events | 10 | No collision in game. | Only Rigidbody applied, no use of Collision Events. | Use of one of the collision events such as OnCollisionEnter(). | Use of one or more of the collision events such as OnCollisionEnter() or OnTriggerEnter(). | Collision fully set up in game – use of events to enhance gameplay experience. |

## Milestone 2 - Artefact 80% (This includes the 20% from Milestone 1)

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| Description | Total mark | Fail | 3rd | 2:2 | 2:1 | 1st |
| Main Screen | 5 | No Main screen present in game. | Main screen present but not useable. | Menu screen present – Only plays game. | Main screen present with ability to play and quit game. | Full working main menu screen at the start of the game that offers additional menu functionality. |
| In game HUD | 10 | No use of in game HUD | In game HUD present with minimal information. | In game HUD present with information relevant to game but not updatable. | In game HUD present with information relevant, only one set of data updatable. | Full working in game HUD that displays relevant information to the player. |
| Input Control | 5 | No input controls for camera or player. |  | Basic input to move player or camera around the game. |  | Full navigation of the player or camera in game with additional controls such as Jump, sprint etc. |
| Animation | 10 | No use of animation through animator. |  | Use of animation – plays with some errors and not at relevant times. |  | Use of animator to run animation with no errors. |
| Use of Camera | 10 | Standard Camera setup only. |  | Camera setup modified but can hamper experience during gameplay. |  | Appropriate use of camera relevant to game produced that enhances the gameplay experience. |
| Lighting | 5 | No additional lighting. Poor lit areas in game present. |  | Additional lighting in game, dark areas still present and/or lighting used is overpowering. |  | All areas of the game appropriately lit. Possible use of handheld lighting. |

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| Description | Total mark | Fail | 3rd | 2:2 | 2:1 | 1st |
| Collision and Collision Events | 10 | No collision in game. | Only Rigidbody applied, no use of Collision Events. | Use of one of the collision events such as OnCollisionEnter(). | Use of one or more of the collision events such as OnCollisionEnter() or OnTriggerEnter(). | Collision fully set up in game – use of events to enhance gameplay experience. |
| Use of AI | 20 | No use of AI in game. | AI attempted but can’t be fully explained in demonstration and not working. | AI attempted and explained in demonstration but not working fully. | AI working but not relevant for gameplay experience. | Simple AI on enemy character or game object setup and working as intended in game. |
| Use of Particle System | 10 | No use of Particle System. |  | Use of one particle system present within game. |  | Two different particle systems used in game at appropriate times. |
| Use of Audio | 5 | No Audio present in game. |  | Use of one audio instance within game. May or may not be at appropriate time. |  | Multiple audio instances present and used at the appropriate times. |
| Gameplay | 10 | Minimal gameplay – no pause or game over menu. No win/loss condition. |  | Level can be played through with either a game over or win screen present. |  | Full gameplay experience – Level complete screen, game over screen, restart screen and level fully navigational. |

## Report 20%

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| Learning Outcome | **90-100%** | **80-89%** | **70-79%** | **60-69%** | **50-59%** | **40-49%** | **30-39%** | **20-29%** | **Below 20%** |
| **Knowledge and Understanding**  **Learning Enquiry** | Exceptional answer demonstrating a highly detailed understanding of the issues and methodologies, concepts, theories and/or data and the link to with other fields of study; appreciation of the uncertainty, and limits of knowledge.  Exceptional presentation and evaluation of qualitative and  quantitative data. | An outstanding answer demonstrating a detailed understanding of the issues and methodologies, concepts, theories and/or data; awareness of the uncertainty of knowledge.  Excellent presentation and evaluation of qualitative and quantitative data. | Excellent knowledge and understanding of the issues and methodologies, concepts, theories and/or data and its inter- relationship with other subjects.  Very good presentation of qualitative and quantitative data. | Good knowledge and understanding of the issues and methodologies, concepts,  theories and/or data. Some understanding of limits of knowledge.  Good presentation and evaluation of qualitative and quantitative data. | Sound knowledge and understanding of the issues and methodologies, concepts, theories and/or data. May contain errors and/or discussion of irrelevant issues. Adequate presentation and evaluation of qualitative and quantitative data. | Satisfactory knowledge and understanding of the key issues raised by the question but some elements of knowledge missing. Limited presentation and evaluation of qualitative and quantitative data. | Unsatisfactory, but shows a limited grasp of some subject. Limited awareness of limits of knowledge, or ability to present, evaluate and interpret qualitative and quantitative data. | An attempt to answer the question, but without any significant grasp of material or appropriate skills. Minimal application of knowledge or use of information. | No answer or an answer which is  totally irrelevant or fundamentally wrong. Minimal or no evidence of learning. |
| **Analysis Application Problem Solving** | Independent thinking, rigorous argument and an impressive use of evidence.  Thorough and accurate analysis of subject with evidence of breadth and depth of study. Excellent application of theory to  problem. | Outstanding analysis displaying independent thought and strong, well- organised argument and highly competent application of evidence and theory to solve problems. | Excellent analysis displaying independent thought and strong and well- organised argument, competent application of evidence and theory to solve problems. | A very good analysis and well- organised argument, very well supported by evidence.  Evidence applied well to provide solution to problems. | Good analysis and argument, well supported by evidence. Good application of evidence and theory to solve problem. | Arguments and analysis adequate, accurate and supported by evidence, but may be superficial or limited.  Some application of evidence and theory to solve problem. | Argument and analysis may be illogical, irrelevant, or contradictory in places and/or unsupported by evidence.  Limited application of evidence and theory to solve problem. | Brief, irrelevant or deficient argument and analysis; unsubstantiated generalisations  . Little or no attempt to draw conclusions. Little or no attempt to apply evidence and theory to solve problem. | Absence of analysis and argument. No evidence of application of knowledge to solve problem. Or no answer offered. |

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| **Communication Reflection** | Exceptionally effective communication skills appropriate to the level of study, task, audience and discipline.  Exceptional demonstration of managing own learning and initiative, learning ability, qualities or skills necessary for  future study. | Extremely effective communication skills appropriate to the level of study, task, audience and discipline.  Excellent demonstration of managing own learning and initiative, learning ability, qualities or skills necessary for  future study. | Highly effective communication skills appropriate to the level of study, task, audience and discipline.  Extremely good demonstration of managing own learning and initiative, learning ability, qualities or skills necessary for future study. | Very effective communication skills appropriate to the level of study, task, audience and discipline.  Good demonstration of managing own learning and initiative, learning ability, qualities or skills necessary for future study. | Effective communication skills appropriate to the level of study, task, audience and discipline.  Some demonstration of learning ability necessary for future study. | Adequate communication skills appropriate to the level of study, task, audience and discipline but with evident weaknesses.  Adequate demonstration of learning ability necessary for future study. | Unsatisfactory communication skills appropriate to this level of study. Poor level of learning ability necessary for future study. | Some evidence of communication skills appropriate to this level of study. Limited or no evidence of managing own learning. | Limited or no evidence of the communication skills appropriate to this level of study.  Limited or no evidence of managing own learning. |

# Frequently Asked Questions

**Can I have an extension?**

Extensions can only be granted based on a learning support agreement (LSA). If you are entitled to an extension in accordance with you LSA, please contact the module leader to discuss extended deadlines.

**How many submissions am I allowed?**

You can submit as many times as you want before the deadline. However, only the latest submission submitted before the deadline will be taken into consideration.

## How do I access the Digital Academy Uploads?

You will be able to find this on the Teams or use the following [LINK](https://dar.staffs.ac.uk/apps/student/upload/2021/GAME30502/).

**How much help can I get on my assignment work?**

As the work need to be your own (see plagiarism), you must attempt the assignment without help from your tutors. Of course, you can ask to help you understand the assignment, in general, but the work produced must be entirely student work.

## I am falling behind on my studies, what should I do?

If you are struggling to keep up with the pace of the class, make sure you speak to your tutor / the module leader. Do not be scared to approach us – we are here to help.

## What is classed as Plagiarism?

All work submitted must be your own. If you have utilized something that is not your own work, you will have to reference it. We can only grade you on what is yours. Not doing so can have serious ramifications, read more about them here - [Link](https://www.staffs.ac.uk/legal/policies/Procedure-for-dealing-with-breaches-of-assessment.jsp).

## What software Can I Use?

* Windows PC
* Unity – Version 2020.1.4f1
* Visual Studio 2019
* Word Processor
* Video Capture/Editing Software
* Blackboard for resources
* Microsoft Teams for communication and resources
* OneDrive for backing up resources
* [GitHub](https://education.github.com/) for a more professional version control backup option