**Faculty of Computing, Engineering & Media (CEM)**

**Coursework Brief 2022/2023**

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| **Module name:** | | Progressive Game Engines | | | | | | | |
| **Module code:** | | IMAT2103 | | | | | | | |
| **Title of the Assessment:** | | Develop a Windows Game using the Unreal  Engine | | | | | | | |
| **This coursework item is:** ***(delete as appropriate)*** | | | | Summative | | |  | | |
| **This summative coursework will be marked anonymously: *(delete as appropriate)*** | | | | | |  | | | No |
| **The learning outcomes that are assessed by this coursework are:**   1. Describe the quality assurance requirements for portability, usability, and certification. 2. Create, design, implement and deploy a mobile game. | | | | | | | | | |
| **This coursework is**: | | | Individual | | | | |  | |
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| **This coursework constitutes** 100% **of the overall module mark.** | | | | | | | | | |
| **Date Set:** | Friday 20th January 2023 (Week 16) | | | | | | | | |
| **Date & Time Due (the deadline):** | Monday 24 April 2023 at 12:00pm (Noon) (Week 30) | | | | | | | | |
| **In accordance with the University Assessment and Feedback Policy (**<https://www.dmu.ac.uk/about-dmu/quality-management-and-policy/academic-quality/learning-teaching-assessment/assessment-feedback-policy.aspx>), **your marked coursework and feedback will be available to you on:** | | | | | Monday 15th May 2023 | | | | |
| You should normally receive feedback on your coursework by **no later than 20 working days after the formal hand-in date,** provided that you have met the submission deadline    If for any reason this is not forthcoming by the due date your module leader will let you know why and when it can be expected. The Associate Professor Student Experience ([CEMstudentexperience@dmu.ac.uk](mailto:CEMstudentexperience@dmu.ac.uk)) should be informed of any issues relating to the return of marked coursework and feedback. | | | | | | | | | |
| **When completed you are required to submit your coursework via:**   1. Unreal Game Project Source: Text link to your publicly accessible GitHub project folder via Blackboard 2. Unreal Windows Game Executable: Uploaded to the Project link via Blackboard. (85%) 3. Video: uploaded to the Panopto link via Blackboard (15%) OR   Report: uploaded to the Turnitin link via Blackboard. (15%)  *See below for more details*  If you need any support or advice on completing this coursework, please visit the Student Matters tab on the CEM Blackboard shell. | | | | | | | | | |
| **Late submission of coursework** **policy:**    Late submissions will be processed in accordance with current University regulations (<https://www.dmu.ac.uk/about-dmu/quality-management-and-policy/academic-quality/academic-regulations-assessment-boards/academic-regs-assessment-board-homepage.aspx>) which state:   “*the time period during which a student may submit a piece of work late without authorisation and have the work capped at 40% [50% at PG level] if passed is****14 calendar days****. Work submitted unauthorised more than 14 calendar days after the original submission date will receive a mark of 0%.  These regulations apply to a student’s first attempt at coursework. Work submitted late without authorisation which constitutes reassessment of a previously failed piece of coursework will always receive a mark of 0%.”* | | | | | | | | | |
| **Academic Offences and Bad Academic Practices:**    These include plagiarism, cheating, collusion, copying work and reuse of your own work, poor referencing or the passing off of somebody else's ideas as your own. If you are in any doubt about what constitutes an academic offence or bad academic practice you must check with your tutor. Further information and details of how DSU can support you, if needed, is available at:    <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/academic-offences.aspx>    and    <http://www.dmu.ac.uk/dmu-students/the-student-gateway/academic-support-office/bad-academic-practice.aspx> | | | | | | | | | |
| **Tasks to be undertaken:**   1. Construction of an **Unreal Engine Windows Game** to be developed using the skills and knowledge obtained from the module. 2. Should include at least the **Five Basic Techniques** (*see below*) and the **Three Advanced Techniques** (*see below*) to be incorporated into the design and development of the game. 3. A **Technical Design Document (TDD)** stating the **development** of the game, the **five basic techniques** and the **three** **advanced** **techniques**, and **critically** **evaluating** **performance**.   *See below for more details* | | | | | | | | | |
| **Deliverables to be submitted for assessment:**   1. Unity **Engine Game Project Source files.** 2. **Windows Game Executable.** 3. A 3 to 5-minute **video gameplay demonstration** (15%) OR   A 3 to 5-page **Technical Design Document (TDD)** **report**. (15%) | | | | | | | | | |
| **How the work will be marked:**  Using the outlined matrix and feedback returned electronically.  *See below for more details and matrix* | | | | | | | | | |
| **Module leader/tutor name:** | | Carlos Bott | | | | | | | |
| **Contact details:** | | [carlos.bott@dmu.ac.uk](mailto:carlos.bott@dmu.ac.uk) | | | | | | | |

Should you need any further information or advice please email [cemadvicecentre@dmu.ac.uk](mailto:cemadvicecentre@dmu.ac.uk)

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| Assignment – Develop a Windows Game using the Unreal Engine |

**Your task**

In this course we have learned about the design and implementation of games using the **Unreal Engine** game engine for a **Windows** Build (x64).

As part of this, we looked at the unique **considerations** and **techniques** for the development of games for Windows under this game engine environment.

You must think about the genre of the game that you want to implement in Unreal Engine there is no theme, though it must use the Third-Person Shooter (TPS) Template.

This could be a racing game, a traditional Arena-based shooting game, a spaceship or flying game or any other game type that uses the Unreal Engine Third-Person Shooter Template as a base.

You must prepare a short 1 paragraph narrative for the game.

The outline of that narrative is structured around **Advanced** **Techniques** employed in Developing a Windows Game using the Unreal Engine.

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| **Basic Techniques [required] include:** |

1. *User HUD, including a Main Menu and Level Launcher*
2. *Third-Person Camera*
3. *Level with BSP Geometry*
4. *User Pickups*
5. *Game Instance Class*

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| **Advanced Techniques [pick any three of these] include:** |

1. *Environment Interaction and Collision.*
2. *User interface and HUD.*
3. *Physics and Collisions Techniques*
4. *Multiple Levels and Level-Design*
5. *Mesh Optimization Techniques.*
6. *Multiple Camera Techniques.*
7. *Scene Lighting.*
8. *Materials and Texturing.*

* *Audio*
* *Particle Systems*

Your task for this assignment will be a game that is appropriately designed and implemented for Windows. As part of the submission, you should incorporate the **five Basic techniques** and at least **three Advanced Techniques** (from the list above), with an appropriate level of complexity.

**Make sure that your project is Unreal Engine 4.27.2 (See Further Information below).**

The length of the game is not as important; however, you must demonstrate at minimum **one** **game level and your game and the implementation of basic and** **advanced techniques** through a video demonstration due Week 30. This demonstration should be no longer than three to five minutes.

In addition to the demonstration, you should also submit a written **Technical Design Document**. The report should three to five pages. It should address the key themes of your game and discuss how you developed your work, including the basic and advanced techniques.

It must refer to the implementation of your basic techniques and chosen **advanced techniques**.

Unreal Engine 4.27.2 is the course tool; however, you can use free models and assets from other courses, or those free from the Unreal Marketplace, free sound libraries or TurboSquid, as part of your submission. You must clearly state in your report any assets used from **Marketplace** or elsewhere. You may be use paid assets or engine plug-ins. You should not write any c++ for this module.

***Remember:***

***Components/Assets /Blueprints of the project which are you marked on (based on the mark scheme) must be your own.***

***Submitting: Monday 24 April 2023 @ 12:00 (noon) (Week 30).***

**Unreal Project GitHub link:**

* Submission of the GitHub link through the project submission link via Blackboard. This will contain your **Unreal Engine** **project source code**.

**Unreal Project Executable:**

* Submissionthrough the project submission link via Blackboard. Please make sure your Unreal project contains your Build Directory (**EXE** and Support Files) .

**TDD Report (3 to 5 pages) or Video Demonstration (3 to 5 minutes)**

* TDD Report: Submission through the **Turnitin** link via Blackboard.
* **Video Demonstration**. Submission through Panopto link via Blackboard.

Please make sure of the following:

* Make sure that your project is **Unreal Engine 4.27.2**
* It contains your full **project**. (GitHub)
* It contains your Build Directory (Blackboard)
* It is on the correct **platform** (**Windows X64**)
* It contains your **blueprints** and **assets**
* **Double check your GitHub repository before submission**

*Once submitted, the project will not undergo:*

* Building project executable
* Cooking the Project, Baking the Lighting, or Re-importing the Shaders.
* Switching Unreal versions
* Switching platforms
* Searching for missing assets
* Your submission will be marks ***as is***.

*If you have issues uploading:*

Only the GitHub link should be provided as the Blackboard attachment TXT File. **DO NOT email the link**. The last modified date in the GitHub Repository **MUST** be before the deadline, otherwise it will be classed as late.

**NOTES:**

Make sure you use the UNREAL Project Type when initially setting up the Project Repository, so the Intermediate files are NOT pushed to the Repository.

The Project Repository **README** File should contain a short description of the project, along with your student P-Number.

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|  | **0 - 29% FAIL** | **30 - 39%**  **FAIL** | **40 - 49%**  **PASS (3rd)** | **50 - 59%**  **GOOD (LOWER 2nd)** | **60-69%**  **VERY GOOD (UPPER 2nd)** | **70 – 100%**  **EXCELLENT (1st)** |
| ***Gameplay and Basic Techniques***  **(20)** | No or very little *gameplay or basic techniques* implemented. Did not use the expected Unreal TPS Template. | Minor attempt to include *gameplay*, very incomplete implementation of basic techniques. Only used the expected Unreal TPS Template for basic gameplay. | Some attempt to include good *Gameplay* elements, but incomplete implementation of basic techniques. | Overall decent *Gameplay*, but a with only a basic techniques implementation. | Good *Gameplay*, however, a lack of innovation, or good basic techniques integration with *Windows* format, prevented obtaining a higher mark. | Excellent use of *Gameplay* elements and basic techniques. Excellent integration with *Windows* format. |
| **Implementation and integration of *Advanced Techniques* (30)** | No explicit use of *Advanced Techniques*. | Minor and limited use of the *Advanced Techniques* | Some limited use of the *Advanced Techniques* (less than three). | Overall decent use of *Advanced Techniques* (at least three implemented effectively) | Good use *of Advanced Techniques* (at least three), but limited integration. | Excellent use of *Advanced Techniques*, including effective synthesis of *Techniques*, with vision outlined in report. |
| ***Regular Program Progress* (10) – consisting of:**  **- GitHub Repository (5)**  **- Stand-up Meeting (5)** | No public GitHub repository present for the project files. (10)  No participation during the weekly stand-up meeting held during the lab section. (5) | Public GitHub repository available, very little commits to the repository (no or very limited commits during the allocated project time allocated for project work).  Basic participation during the weekly stand-up meeting held during the lab section. | Public GitHub repository available, very few commits to the repository during the allocated project time allocated for project work, spread out during this time).  Fair participation during the weekly stand-up meeting held during the lab section. | Public GitHub repository available, good commit history to your repository during the allocated project time allocated for project work, spread out during this time).  Good participation during the weekly stand-up meeting held during the lab section. | Public GitHub repository available, very good commit history to your repository during the allocated project time allocated for project work, spread out during this time).  Very Good participation during the weekly stand-up meeting held during the lab section. | Public GitHub repository available, excellent commit history to your repository during the allocated project time allocated for project work, spread out during this time). One or more code Branches created, merged and used.  Excellent participation during the weekly stand-up meeting held during the lab section. |
| ***Blueprint* Code**  **(25)** | No use of *Blueprint* Code or did not compile. | Minor attempt was made to follow the Code examples in Labs, no comments, or partially incomplete code. | Some attempt was made to follow the Code examples in Labs, no comments, or partially incomplete code. | A reasonable use of *Blueprint* Code, but not much understanding outside what was done in Labs, or limited commenting. | Overall, a good use of *Blueprint* Code, attempts at innovation, but minor consistency issues. | Excellent use of *Blueprint* Code, with an effective use of comments and high-level of innovation. |
| **Written Report**  **(Technical Design Document)**  **(15)** | No or very poor report. | No clear vision or incorporation of the report. | A minor attempt however lacks descriptions, critical analysis of implantation and structure. Poor grammar and/or expression problems. | A reasonable attempt at a report with some descriptions, critical analysis of implantation and structure. Some grammar and/or expression problems | Overall, a good attempt at a report with good descriptions, critical analysis of implantation and structure but minor grammar and/or expression problems. | Excellent report with excellent descriptions, critical analysis of implemention and structure with excellent use of grammar, formatting and clarity of expression. |

**Coursework Marking Scheme**