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| **Qualification details** | | | |
| **Training Package Code and Title:** | **ICT - Information and Communications Technology (Release 7.0)** | | |
| **Qualification National Code and Title:** | ICT40120 Certificate IV in Information Technology (Gaming Development) | **State code:** | BFF9 |
| **Training Package Code and Title:** | **CUA - Creative Arts and Culture Training Package (Release 5.1)** | | |
| **Qualification National Code and Title:** | CUA41220 Certificate IV in Screen and Media (Animation, Gaming, and Visual Effects) | **State code:** | BGS2 |

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| **Assessment Title** | **AT05 Knowledge Theory Questions** | | |
| **Unit National Code & Title** | ICTGAM420 Produce interactive games (Release 1) | | |
| ICTGAM421 Identify and apply games design and game play principles (Release 1) | | |
| **Date Due** | **Session 18** | **Date Received** |  |

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| **Student Name** | Richard Pountney | **Student ID** |  |
| **Student Declaration** | I declare that the evidence submitted is my own work:  RBP  ………………………………………….. | | |

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| **Assessor Name** | **Joshua Ferguson** | | | |
| **Assessment Decision** | Satisfactory | | Not Yet Satisfactory | |
| **Assessor Signature** |  | | **Date** |  |
| **Is student eligible for reassessment (Re-sit)?** | No | Yes | **Reassessment Date:** |  |

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| **Feedback to student** | | | |
| *Via Blackboard (LMS) – Please check [Grade] section.* | | | |
| **Feedback from student** | | | |
| *Via Blackboard (LMS) – Please use [Comment] section during submission.* | | | |
| **Student signature** |  | **Date** |  |

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| **Assessment Instructions** |

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| **TO THE ASSESSOR** | |
| Type of Assessment | *Written Knowledge Questions* |
| Duration of Assessment | *8 sessions (session 11 – session 18)* |
| Location of Assessment | *Classroom, at home* |
| Conditions | *Skills in this unit must be demonstrated in a workplace or simulated environment where the conditions are typical of those in a working environment in this industry.*  *This includes access to:*   * *project briefs* * *applicable organisational documentation* * *game-production assets* * *technical specifications* * *game production testing and trialling tools* * *industry standard game-engine software and development tools* * *required industry-standard hardware, software and peripheral devices* * *the internet* * *required hardware and software required in researching games and the games industry*   *Learners are required to complete the required tasks and submit the required evidence electronically via Blackboard.* |
| Elements and Criteria | As detailed in the assessment plan.  You are required to make sure that all students meet the elements, performance criteria and foundation skill items as outlined in the provided checklist. |

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| **TO THE STUDENT** | |
| Purpose of Assessment | You are required to show you have knowledge of:   * basic programming techniques that may be used for interactive game development * game engine capabilities and constraints * industry standard game-play hardware and software products * technical constraints hardware and software impose on design and development * risk and critical path management, applicable to interactive game development * game production testing and trialling process * the process of evaluating game prototypes from technical, design and game play perspectives * industry standards and organisational guidelines applicable to game production * game-production assets and issues with asset integration * 3-D digital model design techniques * procedures and processes in game development * industry standard game-play hardware and software products * technical constraints hardware and software impose on design and development * industry and organisational requirements   You are required to meet the elements, performance criteria and foundation skill items as outlined. |
| Allowable Materials | Blackboard (Topic by topic) will include the following: Weekly Readings, Class notes, and Weekly Activities.  Internet resources must be recorded as references for the assessment. |
| Required Resources | *Computer with:*   * *Internet Access* * *Word processing software* * *Access to Learning Management System (LMS)* |
| Reasonable Adjustment | In some circumstances, adjustments to assessments may be made for you. If you require support for literacy and numeracy issues; support for hearing, sight or mobility issues; change to assessment times/venues; use of special or adaptive technology; considerations relating to age, gender and cultural beliefs; format of assessment materials; or presence of a scribe you need to inform your lecturer. |
| Assessment Submission | *All activities must be attempted.*  *Use of research tools and peers in formulating answers are acceptable – but work submitted must be your own work and must not be plagiarised.*  *Final files and documentation are to be uploaded to the appropriate area in the Blackboard course created for this unit.*  *If you are marked as NYS (Not Yet Satisfactory) on your first attempt, you will be provided with another opportunity to re-attempt the assessment.* |
| Project contents | This project consists of the following tasks:   * Answer all provided questions |

**Instructions**

Answer the following series of questions to the best of your ability. Ensure to provide answers for all questions before submitting the assessment.

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| **Questions** | | | | | | | |
| **Question 1 –** Describe the following techniques as they apply to the design of digital 3-D models. | | | | | | | |
| ***Sculpting*** | | | | | Sculpting is more of an organic technique that uses brushes with influence areas, you can also put more detail. After sculpting it is best to remesh or retopology, so the model isn’t using too many resources. | | |
| ***Sub-division*** | | | | | Subdivision is a technique that adds extra geometry between edges, vertices & faces. | | |
| ***Boolean*** | | | | | Boolean techniques are operations that are used to combine different shapes together. | | |
| ***Procedural*** | | | | | This technique uses a tool that generates an object that has some parameters for you to use & for it to follow to generate the object. There are many procedural tools that you can use, which are focused on specific objects like; rocks, trees, plants & so on. | | |
| ***Photogrammetry*** | | | | | This technique makes use of a camera & photographs of an object from all angles. The images will need to be put into a program that interprets them to generate a 3D representation of the object. This also can generate the textures & UV maps in the process. You may need to do remesh or retopology. | | |
| **Question 2 –** Identify 3 different industry-standard game engines. | | | | | | | |
| ***1.*** | Unity | | | | | | |
| ***2.*** | Unreal Engine | | | | | | |
| ***3.*** | Godo | | | | | | |
| **Question 3 –** Identify and briefly describe at least 3 different types of industry-standard devices that may be used as platforms for gaming. | | | | | | | |
| ***1.*** | PC | | | | | | |
| ***2.*** | Console (e.g., PlayStation, Xbox, Switch) | | | | | | |
| ***3.*** | Mobile | | | | | | |
| **Question 4 –** Describe the capabilities of the following components of game engine software in developing video games. | | | | | | | |
| ***Rendering engine*** | | | | | | This is the engine that handles the visuals in a game engine. | |
| ***Physics engine*** | | | | | | This is the engine that handles the actions & the physics behind those actions. | |
| ***Audio engine*** | | | | | | This is the engine that handles all the sounds in the game engine. | |
| **Question 5 –** Consider anddescribe 2 technical constraints of game engine software on the design and development of video games. *You may use the game engine you have been learning in this course to provide context for your answer.* | | | | | | | |
| ***1.*** | The capabilities of the game engine itself | | | | | | |
| ***2.*** | The programming language | | | | | | |
| **Question 6 –** Consider and describe 2 technical constraints of relevant hardware on the design and development of video games. | | | | | | | |
| ***1.*** | GPU | | | | | | |
| ***2.*** | CPU or Ram | | | | | | |
| **Question 7 –** Describe industry requirements as well as the procedures and processes that take place during each of the following phases of the production cycle for a video game. | | | | | | | |
| ***Pre-production*** | | | | This is the planning stage of production. This is when the GDD & Narrative is meant to be worked on to set a baseline. | | | |
| ***Alpha*** | | | | The game should be in development now. Assets are being made. | | | |
| ***Beta*** | | | | Can have testers play the game | | | |
| ***Gold-master*** | | | | The game should be at version 1.0 because the game should be considered complete. | | | |
| **Question 8 –** Describe the standards for each of the following industry roles as they apply to video game production. | | | | | | | |
| ***Designer*** | | | | They do the asset designs | | | |
| ***Programmer*** | | | | They make the scripts | | | |
| ***Artist*** | | | | They do the art | | | |
| ***Sound designer*** | | | | They design the audio | | | |
| ***Producer*** | | | | They put everything together | | | |
| **Question 9 –** Describe how to manage each of the following risks as an independent interactive game developer. | | | | | | | |
| ***Unclear vision*** | | | | If you have ideas just jot them down because that might give you a direction to go. You could also just do random model designing because that could give you an idea of a game you could make. You could also just do some programming practice or learning. | | | |
| ***Lack of budget*** | | | | Do a kick starter for the game to earn the budget & start a community to follow the development. | | | |
| ***Data loss*** | | | | Make sure you have backups &or two copies each on different storage devices. | | | |
| **Question 10 –** Describe the characteristics of each listed file format. Explain the type of game assets they are associated with, and identify potential asset integration issues. | | | | | | | |
| ***.JPG*** | | Lossy, Image Asset. | | | | | |
| ***.PNG*** | | Lossless, Image Asset. | | | | | |
| ***.FBX*** | | 3D model & Animation Asset. | | | | | |
| ***.BLEND*** | | This is a Blender file format. 3D model & Animation Asset. | | | | | |
| ***.WAV*** | | Lossless, Audio Asset. | | | | | |
| ***.MP3*** | | Lossy, Audio Asset. There is added blank space with the file at the start & end of the Audio. | | | | | |
| **Question 11 –** Describe how the following basic programming techniques can be used for developing interactive video games. | | | | | | | |
| ***Variables*** | | | | | | Are for storing information that can be referenced & manipulated by the program. They also let you label the data by letting you name it. | |
| ***Methods*** | | | | | | A Method is like a container for a program that can only run when it is called upon at any time. | |
| ***Classes*** | | | | | | A Class is like a constructor for the object or a blueprint of sorts. It is also like a container for all the programming for an object. | |
| ***Collections*** | | | | | | Collections are used to store, retrieve, manipulate & communicate aggregate data. | |
| ***Selection patterns*** | | | | | | Selection patterns go through some yes-no decisions to get to the end. | |
| ***Iteration patterns*** | | | | | | Iteration patterns are a design pattern. It is what allows the ability to traverse collections. | |
| ***Arithmetic*** | | | | | | This is the operators that allow the use of mathematic equations & to change values without needing to completely overwrite the original value. | |
| **Question 12 –** Describe the following testing processes as they apply to video game production. | | | | | | | |
| ***Functionality Testing*** | | | | | | | This tests the functionality of the scripts/programs, & the controls. |
| ***Compatibility Testing*** | | | | | | | This is to test what the game can run on & what can be used for the controls (like Gamepads(controllers), keyboard&mouse, touch screen) |
| ***Play Testing*** | | | | | | | This is testing via playing the game. Normally you would get people to play the game while you watch & see if there are any problems or bugs that happen. |
| **Question 13 –** Describe how to evaluate a video game prototype from the following perspectives. | | | | | | | |
| ***Technical*** | | | You would evaluate the programs/scripts by seeing how they communicate with each other, how messy it looks & if there could be any adjustments to them. | | | | |
| ***Design*** | | | You would evaluate how the game looks by seeing if there are models & textures being used, colour variation & if it all fits with the theme that the game is planned to be. | | | | |
| ***Gameplay*** | | | You would be evaluating how the game flows, what works, & how things function. | | | | |