

Marking Guide / Model Answers (Assessor)

ICTGAM533 — Create complex 3-D interactive games

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Marking guide (assessor use only)

This document contains model answers and decision rules. It is for assessor use only and must not be released to students.

E1 Knowledge Questions — Prepare to create game (knowledge questions · E1)

Item	Question / task	Benchmark answer / decision rule	Maps to
E1-WQ1	Explain the games-development process from brief to publication, using correct industry terminology (e.g. pre-production, prototype/beta, alpha, gold master, milestone). Describe what happens in each phase.	Answer must sequence at least pre-production, production/prototype, testing (beta), and release phases, correctly use at least four terms in context, and explain the purpose of each phase. Reject answers that merely list terms without explaining their role.	1.1, KE3
E1-WQ2	For a specified 3-D game concept, explain how you would identify the game production assets required to meet creative, production and technical requirements. Give examples of asset categories and how a technical specification drives asset requirements.	Must link creative/production/technical requirements to concrete asset categories (models, textures, audio, scripts, animations) and show how the tech spec constrains asset count/format. Diploma depth: analysis of trade-offs, not a list.	1.2, KE8
E1-WQ3	Explain common asset formats used in 3-D game production and the integration issues that arise when importing assets into a game engine. Why must formats be discussed with relevant personnel before production begins?	Must name relevant formats (e.g. FBX/OBJ/glTF for models, PNG/TGA for textures, WAV/OGG for audio) and describe integration issues (scale, pivot, UV, compression, naming conventions, pipeline compatibility) and justify early stakeholder discussion. Reject format lists with no integration analysis.	1.3, KE9
E1-WQ4	Describe production and testing scheduling techniques suitable for a 16-week game project, and explain how you would determine the sequence for developing a beta-version prototype and monitor progress against the schedule.	Must explain a scheduling technique (Gantt/milestones/sprints), describe dependency-based sequencing toward a testable beta, and give at least two progress-monitoring strategies (milestone reviews, burndown, status reports). Diploma depth: justify why the sequence supports early play testing.	1.4, 1.5, 1.6, KE4

Item	Question / task	Benchmark answer / decision rule	Maps to
E1-WQ5	Explain risk and critical-path management techniques and how they apply to keeping a game production on schedule. Give an example of identifying a critical path and a risk mitigation for a game project.	Must define critical path, identify how it constrains the schedule, and describe risk identification/assessment/mitigation with a game-relevant example. Reject generic definitions with no application.	1.6, KE6
E1-WQ-KE7	Explain / describe: technical constraints that hardware imposes on:	Response demonstrates the knowledge evidence "KE7".	KE7

E1 Project — Plan the game production (project (submitted evidence) · E1)

Portfolio evidence you must submit:

- Project brief acknowledgement referencing organisational procedures
- Asset requirements register (assets mapped to creative/production/technical specs)
- Asset format and integration decisions record (with personnel consultation notes)
- Beta prototype development sequence plan
- Production and testing schedule (Gantt/milestone chart)
- Progress-monitoring strategy statement

Item	Question / task	Benchmark answer / decision rule	Maps to
E1-PROJ1	Obtain the project brief and required documents/organisational procedures and submit an acknowledgement showing you have reviewed them.	Learner submits/references the brief and org procedures and demonstrates understanding of scope and constraints. Missing brief or procedures = not satisfactory.	1.1, PE6, KE3
E1-PROJ2	Produce an asset requirements register identifying all game production assets needed to meet the creative, production and technical specifications.	Register maps each required asset to specific creative/production/technical requirements; complete coverage of the brief; formats indicated. Reject partial or unmapped registers.	1.2, PE6, KE8, KE9
E1-PROJ3	Document decisions on asset formats and integration issues, including notes of discussion with required personnel.	Shows formats chosen with integration rationale and evidence of consultation. Reject undocumented consultation.	1.3, PE7, KE9
E1-PROJ4	Submit a beta-prototype development sequence plan showing the order of build toward a testable prototype.	Sequence is dependency-aware and leads to a playable beta; justified. Reject arbitrary ordering.	1.4, PE5, KE4
E1-PROJ5	Create a production and testing schedule and a strategy for monitoring progress against it.	Schedule fits 16-week window with milestones; monitoring strategy names techniques and review points and addresses critical path/risk. Reject schedules with no monitoring mechanism.	1.5, 1.6, PE5, KE4, KE6

E2 Knowledge Questions — Evaluate game-engine software and tools (knowledge questions · E2)

Item	Question / task	Benchmark answer / decision rule	Maps to
E2-WQ1	Compare at least two industry-standard game engines, explaining their capabilities and constraints for creating complex 3-D interactive games.	Must name real engines (e.g. Unity, Unreal, Godot) and compare capabilities/constraints (rendering, scripting, platform export, licensing, asset pipeline). Diploma depth: reasoned comparison, not feature lists.	2.1, KE2
E2-WQ2	Explain the key features of game-play hardware and software products that must be assessed when matching an engine to a specified game concept and play requirements.	Must relate hardware/software features (target devices, GPU/CPU, input/controllers, OS/browser support) to engine capability and the game concept. Reject generic hardware descriptions with no linkage to selection.	2.2, KE5
E2-WQ3	Explain the technical constraints hardware imposes on (a) graphics requirements, (b) code development, and (c) creative visual design, and how these constraints inform engine and tool selection.	Must address all three: graphics (poly/texture/framerate limits), code (memory/processing/API limits), creative visual design (fidelity vs performance trade-offs) — each tied to hardware. Missing any of the three = not satisfactory.	2.2, 2.3, KE7.1, KE7.2, KE7.3

E2 Project — Select the game engine and tools (project (submitted evidence) · E2)

Portfolio evidence you must submit:

- Game-engine and tools evaluation report (options reviewed and assessed against the concept)
- Selection recommendation with personnel consultation record
- Confirmed engine and development tools selection statement

Item	Question / task	Benchmark answer / decision rule	Maps to
E2-PROJ1	Produce an evaluation report identifying and reviewing a range of industry-standard game engines and development tools available.	At least three engines/tool sets reviewed with sources; coverage of relevant options. Reject single-option 'evaluations'.	2.1, PE4, KE2, KE5
E2-PROJ2	Assess the reviewed software and tools against your specified game concept and play requirements and record considerations discussed with required personnel.	Assessment criteria tied to concept/play requirements and technical constraints; consultation documented; selection confirmed to meet outcomes. Reject unjustified selection.	2.2, 2.3, PE4, PE7, KE2, KE7.1, KE7.2, KE7.3
E2-PROJ3	Submit a statement confirming the selected game-engine software and development tools.	Clear selection stated, consistent with the evaluation and confirmed outcomes. Reject selection inconsistent with the assessment.	2.4, PE4, KE2

E3 Knowledge Questions — Prepare required assets (knowledge questions · E3)

Item	Question / task	Benchmark answer / decision rule	Maps to
E3-WQ1	Explain how a shared project environment supports team collaboration on game assets, and describe methods (e.g. version control, asset servers) for sharing project assets among team members.	Must explain benefits of shared environment and describe at least one concrete collaboration/versioning mechanism and its risks (merge conflicts, integrity). Reject vague 'use a shared folder' with no rationale.	3.1, KE3
E3-WQ2	Explain the attributes of visual assets that matter for a game project relative to the chosen game engine (e.g. poly count, texture resolution, UV mapping, LODs, formats), and how these attributes must be customised for the engine.	Must relate asset attributes to engine capability/constraints and explain customisation to fit the engine and game design. Diploma depth: trade-off between fidelity and performance.	3.2, 3.4, KE9, KE2
E3-WQ3	Explain the creative, production and technical requirements involved in creating or acquiring visual assets for a 3-D game, including hardware constraints on graphics and creative visual design.	Must address create-vs-acquire decision, creative/production/technical requirements, and hardware constraints on graphics and creative visual design. Reject answers ignoring hardware constraints.	3.3, KE8, KE7.1, KE7.3

E3 Project — Prepare and customise game assets (project (submitted evidence) · E3)

Portfolio evidence you must submit:

- Configured shared project environment evidence (repository/asset-sharing setup with screenshots)
- Asset attribute review document (assets checked against game-engine requirements)
- Created or acquired visual asset set for the game
- Customised asset files/settings aligned to game design and chosen engine

Item	Question / task	Benchmark answer / decision rule	Maps to
E3-PROJ1	Establish and evidence a project environment supporting sharing of project assets produced by team members.	Working shared environment demonstrated (repo/asset server) enabling multi-user asset sharing. Reject non-shared local-only setups.	3.1, PE7, PE4, KE3
E3-PROJ2	Review and document the attributes of assets required in the project relative to the game engine.	Attributes documented per asset against engine requirements; complete for required assets. Reject undocumented reviews.	3.2, PE6, KE2, KE9
E3-PROJ3	Create or acquire the visual assets required for the game project.	Asset set covers the requirements register; sources documented for acquired assets; shows original/innovative creative work. Reject incomplete asset sets. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	3.3, PE3, PE1, KE8

Item	Question / task	Benchmark answer / decision rule	Maps to
E3-PROJ4	Customise asset attributes according to the game design and chosen game engine and submit the customised assets.	Assets imported and adjusted (scale, format, optimisation) to function in the engine and match the design. Reject assets not engine-ready. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	3.4, PE1, PE4, KE2, KE9, KE7.1

E4 Knowledge Questions — Use game-engine software and development tools

(knowledge questions · E4)

Item	Question / task	Benchmark answer / decision rule	Maps to
E4-WQ1	Explain basic programming techniques and language used in game development, including how scripts/code are created, modified or accessed to combine assets and drive game-play elements.	Must use correct programming concepts (variables, functions, events, control flow) and explain how code binds assets and behaviours in an engine. Diploma depth: applied example, not recall.	4.1, KE1
E4-WQ2	Explain how you create and check game-play elements against creative and technical requirements, including technical constraints hardware imposes on code development.	Must link game-play element creation to creative/technical requirements and address hardware/code constraints (performance, memory). Reject answers with no constraint analysis.	4.2, KE8, KE7.2
E4-WQ3	Explain how you test and run a game prototype as a presentation and confirm that sequences meet creative, production and technical requirements.	Must describe a repeatable test/run process, presentation setup, and criteria for confirming sequences meet all three requirement types. Reject vague 'just play it' answers.	4.3, KE3, KE8

E4 Project — Build and run the game prototype (project (submitted evidence) · E4)

Portfolio evidence you must submit:

- Scripts/code files that combine assets and drive game-play
- Working beta prototype build (engine project files or exported build)
- Game-play elements checklist against creative and technical requirements
- Prototype presentation run recording/screencast confirming sequences

Item	Question / task	Benchmark answer / decision rule	Maps to
E4-PROJ1	Create, modify or access scripts or code and combine assets to produce functioning game-play.	Code demonstrably combines assets and produces working behaviour; readable and appropriate techniques. Reject non-functioning or trivial scripts. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	4.1, PE1, PE4, KE1, KE2

Item	Question / task	Benchmark answer / decision rule	Maps to
E4-PROJ2	Create and check game-play elements according to creative and technical requirements.	Game-play elements built and verified against a checklist tied to the brief; requirements met. Reject unchecked elements. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	4.2, PE1, PE3, KE8, KE7.2
E4-PROJ3	Test and run the game prototype as a presentation and confirm sequences meet creative, production and technical requirements.	Recorded run shows the prototype operating; sequences confirmed against all three requirement types. Reject builds that fail to run. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	4.3, PE1, PE5, KE3, KE8

E5 Knowledge Questions — Evaluate game prototype (knowledge questions · E5)

Item	Question / task	Benchmark answer / decision rule	Maps to
E5-WQ1	Explain a variety of strategies for game trialling and testing (e.g. functional testing, usability/user trials, playtesting, cross-device testing) and when each is appropriate.	Must describe at least three distinct testing strategies and their appropriate use, including user trials. Reject a single method presented as the whole answer.	5.4, 5.5, KE3
E5-WQ2	Explain how you evaluate a prototype against criteria for a creative and user-friendly product, and how feedback from required personnel and user trials is gathered and analysed.	Must define evaluation criteria (creativity, usability, meeting brief), and describe feedback collection and analysis methods. Diploma depth: how conflicting feedback is reconciled.	5.1, 5.2, 5.5, KE8
E5-WQ3	Explain how required changes are discussed and agreed, and how endorsement is confirmed before developing the prototype into a complete product.	Must describe change negotiation, agreement/sign-off, and endorsement processes, maintaining integrity of the design brief. Reject answers ignoring stakeholder agreement.	5.3, 5.6, KE3

E5 Project — Evaluate and endorse the prototype (project (submitted evidence) · E5)

Portfolio evidence you must submit:

- Prototype demonstration record with feedback captured from required personnel
- Prototype evaluation report against creative and user-friendly criteria
- Agreed changes register (discussed and endorsed)
- User trial plan and results with feedback analysis
- Endorsement/sign-off record to proceed to complete product

Item	Question / task	Benchmark answer / decision rule	Maps to
E5-PROJ1	Demonstrate the initial prototype to required personnel and capture their feedback.	Demonstration evidenced with feedback recorded from named personnel. Reject undocumented demos.	5.1, PE7, PE2, KE3

Item	Question / task	Benchmark answer / decision rule	Maps to
E5-PROJ2	Evaluate the prototype against criteria including achievement of a creative and user-friendly product.	Evaluation report scores/assesses against defined criteria with evidence. Reject unsupported claims.	5.2, PE2, PE6, KE8
E5-PROJ3	Discuss and agree required changes with required personnel and record them.	Changes register shows discussion, agreement and rationale. Reject unilateral change lists.	5.3, PE7, KE3
E5-PROJ4	Assist in tests and user trials as required, and evaluate the feedback from those user trials.	Trial plan, participation evidence and analysis of trial feedback provided; strategies varied. Reject trials with no analysis.	5.4, 5.5, PE2, KE3, KE8
E5-PROJ5	Confirm endorsement from required personnel to develop the prototype into a complete product.	Documented endorsement/sign-off obtained prior to full development. Reject self-endorsement.	5.6, PE7, PE6, KE3

E6 Knowledge Questions — Transform prototype into final publication (knowledge questions · E6)

Item	Question / task	Benchmark answer / decision rule	Maps to
E6-WQ1	Explain how you integrate all game elements per specifications and make final checks confirming sequences conform to the navigation design.	Must describe integration approach, final QA checks and how navigation-design conformance is verified. Reject answers with no verification step.	6.2, 6.3, KE8, KE3
E6-WQ2	Compare different controller designs required for different devices, and explain how you confirm functionality across at least two browsers and at least two digital devices.	Must compare controller/input designs across device types and describe a cross-browser/cross-device test approach with pass criteria. Reject single-device answers.	6.3, KE5, KE7.2
E6-WQ3	Explain the process for obtaining final sign-off and assembling the final publication for distribution according to organisational procedures.	Must describe sign-off gate and build/packaging/distribution steps aligned to org procedures. Reject answers ignoring sign-off or org procedures.	6.4, 6.5, KE3

E6 Project — Deliver the final publication (project (submitted evidence) · E6)

Portfolio evidence you must submit:

- Change implementation record (changes from user trials applied)
- Fully integrated complete 3-D interactive game build
- Final checks and navigation conformance report
- Controller design comparison for the target devices
- Cross-browser/cross-device functionality test results (2+ browsers, 2+ devices)
- Final sign-off record from required personnel
- Assembled final publication package for distribution

Item	Question / task	Benchmark answer / decision rule	Maps to
E6-PROJ1	Make the required changes indicated by user trials.	Trial-indicated changes implemented and traceable to the changes register. Reject unaddressed trial findings. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	6.1, PE1, PE2, KE8
E6-PROJ2	Integrate all game elements as required by specifications and make final checks confirming sequences conform to the navigation design.	Integrated build meets specifications; navigation conformance checked and documented. Reject builds with broken navigation. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	6.2, 6.3, PE1, PE6, KE8, KE3
E6-PROJ3	Compare the controller designs required for your target devices and confirm functionality on at least two browsers and at least two digital devices.	Controller comparison provided; documented functional tests pass on 2+ browsers and 2+ devices. Reject fewer than two of either. Sufficiency: the Performance Evidence requires this two different browsers; two different digital — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS; Occasion 2 — Date: ____ S / NYS.	6.3, PE8, PE9, PE2, KE5, KE7.2
E6-PROJ4	Obtain final sign-off from required personnel and assemble the final publication for distribution according to organisational procedures.	Documented final sign-off obtained; publication package assembled per org procedures. Reject distribution without sign-off. Sufficiency: the Performance Evidence requires this on at least one occasion — evidence must be recorded for each occasion/subject separately. Record each occasion separately: Occasion 1 — Date: ____ S / NYS.	6.4, 6.5, PE1, PE5, PE7, KE3

Decision rules

- Mark each item **Satisfactory (S)** or **Not Yet Satisfactory (NYS)** against the benchmark above.
- An activity is judged **Satisfactory** only when *all* of its items are Satisfactory.
- The unit is judged **Competent** only when all activities — including any observation — are Satisfactory, gathered under the assessment conditions specified for the unit.
- Where a response is close but incomplete, provide feedback and offer reassessment in line with the principles of assessment.