Australian Government

ICTGAM509 Design interactive 3-D applications for scientific and mathematical modelling

Release: 1

ICTGAM509 Design interactive 3-D applications for scientific and mathematical modelling

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 1.0.

Application

This unit describes the skills and knowledge required to design interactive 3-D applications for scientific and mathematical modelling.

It applies to individuals with object-oriented programming skills working in any industrial context that requires 3-D computer simulation of a well-defined environment, system or set of relationships.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Game development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1. Determine and confirm business expectations and needs	1.1 Apply skills to determine business requirements and verify the accuracy of the information gathered 1.2 Determine the critical environmental, systemic relationships that require simulation in a 3-D environment 1.3 Identify critical data sources required by simulations or modelling 1.4 Document critical environmental, systemic relationships and data sources that require simulation in a 3-D environment
2. Design an interactive	2.1 Use prototyping tools to provide proof of concept for

ELEMENT	PERFORMANCE CRITERIA
3-D application for scientific or mathematical modelling	environmental and systemic relationships 2.2 Identify technologies and platforms suitable for the deployment of scientific or mathematical modelling 2.3 Apply object-oriented programming principles to design classes and algorithms to support scientific or mathematical modelling in an interactive 3-D environment
3. Design a 3-D environment that simulates a scientific or mathematical model	3.1 Select appropriate visual representation for elements of a 3-D scientific or mathematical model 3.2 Analyse required interaction between user and a 3-D environment 3.3 Design a graphical user interface (GUI) to support required interaction between use and a 3-D environment
4. Develop procedures to test a scientific or mathematical model	4.1 Develop testing procedures and standards that verify modelling integrity writing, 4.2 Document testing procedures and standards that verify modelling integrity

Foundation Skills

This section describes language, literacy, numeracy and employment skills incorporated in the performance criteria that are required for competent performance.

Skill	Performance Criteria	Description
Reading	1.1, 1.2	• Interprets, analyses and comprehends instructions, briefs, technical and conceptual information to inform job requirements.
Writing	1.4, 2.3, 4.1, 4.2	• Writes and customises precise code using specialised language, industry-approved coding techniques, and programming practices • Verifies modelling integrity, by documenting testing procedures that explore expected results, parallel processing and test data
Numeracy	2.2, 2.3, 3.3, 4.1, 4.2	• Uses whole numbers, decimals and percentages when manipulating measurement, scale, ratio, coordinates, colour, shading, and other variables during application phase • Designs complex algorithms

Get the work done	1.1-1.4, 2.1-2.3, 3.1-3.3, 4.1, 4.2	• Plans, organises and completes work according to defined requirements and schedules taking responsibility for decisions, and sequencing tasks to achieve efficient outcomes • Takes responsibility for decisions regarding end-product evaluation, data integrity and management • Understands the purposes and uses key features of specific digital systems and tools, and operates them effectively to complete development tasks

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTGAM509 Design interactive 3-D applications for scientific and mathematical modelling	ICAGAM509A Design interactive 3-D applications for scientific and mathematical modelling	Updated to meet Standards for Training Packages	Equivalent unit

Links

Companion Volume implementation guides are found in VETNet - https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2