



Australian Government

ICTPRG547 Apply advanced programming skills in another language

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 6.0.

Application

This unit describes the skills and knowledge required to undertake advanced level programming tasks using another programming language. The language may be an object-oriented language.

It applies to software developers who are required to program code.

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

Unit Sector

Programming and software development

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Code advanced data structures and algorithms	1.1 Design and document dynamic data structures according to programming task requirements 1.2 Implement dynamic data structures, including double-linked lists and binary trees for coding 1.3 Code using hashing techniques according to programming requirements 1.4 Code sorting algorithm using programming techniques 1.5 Code advanced searching techniques for use with complex data structures
2. Write application and use third-party libraries	2.1 Use features of enable inter-process language communication through one mechanism

ELEMENT	PERFORMANCE CRITERIA
	2.2 Use features of language for operating system 'signals' to be captured and responded to 2.3 Use third-party library in construction of an application according to programming techniques 2.4 Write application to work within graphical user interface (GUI) computer environment
3. Debug and test code	3.1 Use integrated development environment (IDE) debugging facilities to debug according to software requirements 3.2 Detect and resolve errors of syntactical, logical and design origin 3.3 Design and document required tests 3.4 Undertake limited testing of produced code and confirm that it complies with technical requirements 3.5 Document the test results
4. Create application	4.1 Develop and document solution according to debugging test results 4.2 Design and document algorithm and construct, and test application according to techniques 4.3 Submit documents to required personnel and seek and respond to feedback according to organisational policies and procedures

Foundation Skills

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

SKILL	DESCRIPTION
Learning	Monitors outcomes of decisions and results and identifies key concepts and principles that may be adaptable in the future
Oral communication	Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	Interprets, and critically analyses, complex texts and applies the required strategies to construct meaning from complex texts
Writing	- Prepares complex workplace documentation detailing processes and outcomes using required structure, layout and technical programming language - Writes and edits code and technical data in a logical manner using

SKILL	DESCRIPTION
	required syntax
Planning and organising	• Accepts responsibility for planning and sequencing complex tasks and workload, negotiating key aspects with others, including required capabilities, efficiencies and effectiveness
Problem solving	• Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying, and evaluating, options against the agreed criteria • Uses analytical processes to decide on a course of action, establishing the criteria for deciding between options
Self-management	• Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Understands the key principles and concepts, underpinning the design and operation of digital systems and tools

Unit Mapping Information

Supersedes and is equivalent to ICTPRG523 Apply advanced programming skills in another language.

Links

Companion Volume Implementation Guide is found on VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2>

Assessment Requirements for ICTPRG547 Apply advanced programming skills in another language

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Performance Evidence

The candidate must demonstrate the ability to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including evidence of the ability to:

- design and build at least one advanced application program according to a design document
- code at least one sorting algorithm
- apply at least two different techniques to optimise code.

In the course of the above, the candidate must:

- design and write code using dynamic data structures
- write code using hashing techniques, sorting algorithms and advanced searching techniques
- use language features that enable inter-process communication and responses to operating system signals
- use third-party libraries in the construction of an application, including referencing third-party documentation
- evaluate and document debugging test processes and outcomes
- test and debug code and resolve errors of a syntactical, logical and design origin.

Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements, performance criteria and foundation skills of this unit, including knowledge of:

- programming languages applicable to applying advanced programming skills in another language
- languages required for a GUI environment
- developing large-scale applications applicable to applying advanced programming skills in another language
- procedures for programming with complex data structures

- procedures for using a third-party supplied library for standard programming features.

Assessment 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:

- software development environment required to apply advanced programming skills in another language
- technical and design documentation
- organisational deliverables
- integrated development environment (IDE).

Assessors of this unit must satisfy the requirements for assessors in applicable vocational education and training legislation, frameworks and/or standards.

Links

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