



Australian Government

ICTPRG532 Apply advanced object-oriented language skills

Release: 1

ICTPRG532 Apply advanced object-oriented language skills

Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 4.0.

Application

This unit describes the skills and knowledge required to undertake advanced programming tasks using object-oriented programming languages in the development of large-sized applications.

It applies to individuals who are programmers producing complex object-oriented programming in the development of large-sized applications.

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. Plan application implementation	1.1 Plan implementation of application according to system specifications 1.2 Present implementation plan to user and negotiate to reach agreement
2. Implement the application design	2.1 Prepare version control system according to implementation plan 2.2 Develop application according to implementation plan, system specifications and organisational code conventions 2.3 Document application according to organisational documentation conventions

3. Test the application	3.1 Develop tests to determine application logic and syntax satisfies system specifications 3.2 Perform testing on application to determine application satisfies system specifications and address variances 3.3 Document tests according to organisational documentation conventions
4. Hand over the application to the user	4.1 Review application against system specifications and address variances 4.2 Present the application to the user and obtain user acceptance

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

Skill	Description
Reading	Interprets and critically analyses complex texts and applies appropriate strategies to construct meaning from complex standards and guidelines documents
Writing	- Displays knowledge of structure and layout, employing broad vocabulary, grammatical structure and conventions appropriate to text when creating program documentation and documenting tests and test results - Communicates complex relationships between ideas and information, matching the style of writing to the purpose and audience, and displays a knowledge of structure and layout, employing a broad vocabulary, grammatical structure, and the conventions appropriate to text
Numeracy	Selects from, and applies, an expanding range of mathematical and problem-solving strategies
Get the work done	- Accepts responsibility for planning and sequencing complex tasks and workload, taking into account capabilities, efficiencies and effectiveness - Uses systematic, analytical processes in complex, non-routine situations, setting goals, gathering relevant information, and identifying and evaluating options against agreed criteria - Uses analytical processes to decide on a course of action, establishing criteria for deciding between options - Understands key principles and concepts underpinning the design and operation of digital systems and tools

Unit Mapping Information

Code and title current version	Code and title previous version	Comments	Equivalence status
ICTPRG532 Apply advanced object-oriented language skills	ICTPRG501 Apply advanced object-oriented language skills	Edits to elements 1–4 and assessment requirements to clarify intent.	Equivalent unit

Links

Companion Volume Implementation Guides are available from VETNet -

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

Assessment Requirements for ICTPRG532 Apply advanced object-oriented language skills

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Performance Evidence

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

- Plan, implement, test, and handover one application, using two object-oriented languages, including the ability to:
 - implement nested classes
 - design and implement dynamic data structures including a doubly linked list and a binary tree
 - design and implement a data structure utilising a hash function
 - compare three sorting algorithms
 - select and implement a sorting algorithm and a comparator
 - compare three search algorithms
 - select and implement a search algorithm
 - implement two inter-process communication mechanisms
 - select and implement a search algorithm
 - implement a graphical user interface with:
 - drag and drop
 - help files
 - 2D graphics
 - utilise an architectural framework and third party library
 - implement a client-server application including data transfers
 - create tests and debug an application
 - document code
 - utilise a version control system for code and documentation management
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Knowledge Evidence

The candidate must be able to demonstrate knowledge to complete the tasks outlined in the elements and performance criteria of this unit. This includes:

- Architectural framework for web-enabled application development
- Inter-process communication mechanisms
- Development methodologies for large-size applications
- Testing techniques as applied to distributed application development
- Design patterns
- Graphical user interface design principles
- Client-server model
- Dynamic data structures and associated space and time complexities
- Hash functions and data structures using hash functions and associated space and time complexities
- Sorting algorithms and associated time complexities
- Search algorithms and associated time complexities
- Programming language features and syntax
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Assessment Conditions

Skills must be demonstrated in a workplace or simulated environment where conditions are typical of those in an ICT working environment or ICT workplace. This includes:

- Database management system (DBMS)
- Networked computers
- Integrated development environment
- Debugging tools
- System specifications including problem descriptions
- Organisational code conventions
- Organisational documentation conventions
- Individual user
- Access to third party libraries and related documentation
- Access to architectural frameworks and related documentation
- Access to version control system

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

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