Australian Government

Department of Education, Employment and Workplace Relations

ICASAS514A Perform integration tests

Release: 1

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Modification History

Release	Comments
Release 1	This Unit first released with *ICA11 Information and Communications Technology Training Package version 1.0*

Unit Descriptor

This unit describes the performance outcomes, skills and knowledge required to ensure that the components of the system operate together to the expected standard.

Application of the Unit

This unit applies to senior development staff responsible for ensuring that sub-systems function correctly when combined.

Licensing/Regulatory Information

No licensing, legislative, regulatory or certification requirements apply to this unit at the time of endorsement but users should confirm requirements with the relevant federal, state or territory authority.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Element	Performance Criteria
Elements describe the essential outcomes of a unit of competency.	*Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.*

Elements and Performance Criteria

1. Prepare for test	1.1 Prepare the ***test environment***
	1.2 Prepare the test scripts (online test) or test run (batch test) for running
	1.3 Review expected results against ***test and acceptance criteria***
	1.4 Confirm pre-existing modules and compile modification logs
	1.5 Perform static tests of each point of integration and verify correctness of arguments, positional parameters and return values in each integration suite
	1.6 Review results of earlier component testing and ensure critical issues are identified and taken into account
2. Conduct test	2.1 Select appropriate ***test tools***
	2.2 Run test scripts and document the results against ***software life cycle*** model
	2.3 Ensure that memory leakage, global name-space pollution and static variables are specifically addressed for each integration unit in line with test and acceptance criteria
	2.4 Follow and adopt integration standards where appropriate in line with ***quality benchmarks***
	2.5 Compare test results to requirements on completion of each integration component
3. Analyse and classify results	3.1 Summarise and classify test results and highlight areas of concern
	3.2 Compare the test results against the requirements and design specification and prepare report
	3.3 Notify operations of completion of the testing where appropriate
	3.4 Ensure attendees' details and comments are logged and signatures gained
	3.5 Schedule a feedback meeting to discuss report and possible next actions with stakeholders if necessary
	3.6 Ensure test reporting compliance with ***documentation and reporting*** standards

Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

Required skills

- communication skills to liaise with internal and external personnel on technical, operational and business-related matters
- literacy skills to:
  - interpret technical documentation
  - write reports in required formats
- numeracy skills to take test measurements, and interpret and evaluate results
- planning and organisational skills to:
  - coordinate the test process in liaison with others
  - plan, prioritise and monitor own work
- problem-solving and contingency-management skills to develop strategic review results of earlier unit testing and identify critical issues
- research skills to identify, analyse and evaluate broad features of system testing and best practice in system testing
- technical skills to:
  - analyse data related to analysis and evaluation
  - use programming skills in programming languages relevant to project.

Required knowledge

- at least two programming languages, with detailed knowledge of programming languages required by system
- automated test tools, with detailed knowledge of features and processes in some areas
- input and output requirements
- organisational practice and standards relating to integration testing
- system or application being tested
- testing techniques, with detailed knowledge of features and processes
- underlying test data.

Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Evidence of the ability to: • perform integration requirements for the units of the particular system • determine whether the units of the system operate according to requirement specifications • prepare reports in compliance with documentation and reporting standards.
Context of and specific resources for assessment	Assessment must ensure access to: • acceptance criteria • test plan • integration standards • requirements and design documents used in the analysis of the test • system or application suitable for testing • appropriate learning and assessment support when required • modified equipment for people with special needs.
Method of assessment	A range of assessment methods should be used to assess practical skills and knowledge. The following examples are appropriate for this unit: • direct observation of candidate conducting a test using appropriate test tools and integration standards in line with quality benchmarks and ensuring that components have passed the integration tests at the interface level between each component • verbal or written questioning of underpinning skills and knowledge of compiling, linking and loading components together • evaluation of report prepared by candidate outlining testing procedures and test results.
Guidance information for assessment	Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended, where appropriate. Assessment processes and techniques must be culturally appropriate, and suitable to the communication skill level, language, literacy and numeracy capacity of the candidate and the work being performed.

	Indigenous people and other people from a non-English speaking background may need additional support. In cases where practical assessment is used it should be combined with targeted questioning to assess required knowledge.

Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

Test environment may include:	• data • network or communications and other equipment • operating system • other support software • program libraries.

Test and acceptance criteria may relate to:	• type of test:
	  • cohesion
	  • efficiency
	  • functional.

Test tools may include:	• applications testing:
	  • Cyrano Suite
	  • DataShark
	  • Datatect
	  • preVue-C/S
	• code, unit and class testing:
	  • AssertMate
	  • BoundsChecker
	  • C-Cover
	  • CodeReview
	  • CodeWizard
	  • DeepCover
	  • FailSafe
	  • Hindsight
	  • Insure++
	  • JavaPureCheck
	  • JCAST
	  • Logiscope
	• stress load testing:
	  • Astra SiteManager
	  • Astra SiteTest
	  • automated test facilities
	  • AutoTester Web

	• e-Load • e-MONITO • E-TEST Suite • JavaLoad • LoadRunner.
Software life cycle may include:	• AS/NZS15271:1999 Guide for AS/NZS ISO/IEC 12207 Information technology - Software life cycle processes • AS/NZS ISO/IEC12207:1997 Information technology - Software life cycle processes.

Quality benchmarks may include:	• relevant quality standards:
	  • AS 3925.1-1994 Software quality assurance - Plans
	  • AS 4042-1992 Software configuration management plans
	  • AS 4043-1992 Software configuration management
	  • AS/NZS 14102:1998 Information technology - Guideline for evaluation and selection of CASE tools
	  • AS/NZS 4258:1994 Software user documentation process
	  • AS/NZS ISO/IEC 12207:1997 Information technology - Software life cycle processes
	• standards for software review, mainly developed by:
	  • Institute of Electrical and Electronics Engineers (IEEE)
	  • International Organization for Standardization (ISO)
	  • Software Engineering Institute (SEI)
	  • US Department of Defence (DoD) standards.
	Note: International and Australian standards are updated and changed on a regular basis. It is therefore important to check the Standards Australia website on a regular basis for new standards.

Documentation and reporting may include:	• ISO, International Electrotechnical Commission (IEC) and Australian Standards (AS) standards
	• templates for information gathering processes
	• various organisational approaches to:
	  • audit trails
	  • naming standards
	  • project-management templates
	  • report writing
	  • version control.

Unit Sector(s)

Systems administration and support