



Australian Government

UEEIC0010 Develop and test code for microcontroller devices

Release: 1

UEEIC0010 Develop and test code for microcontroller devices

Modification History

Release 1. This is the first release of this unit of competency in the UEE Electrotechnology Training Package.

Application

This unit involves the skills and knowledge required to develop and test structured programming instructions for microcontroller devices at a fundamental level.

It includes microcontroller device code architecture and programming fundamentals, writing and testing specified instructions, and documenting development activities.

In this unit, the term ‘micro’ refers to microcontrollers, however, competency in the unit can be achieved using microprocessors.

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

Pre-requisite Unit

Not applicable

Competency Field

Instrumentation & Control

Unit Sector

Electrotechnology

Elements and Performance Criteria

ELEMENTS

Elements describe the essential outcomes.

1 Identify microcontroller device code to specifications

PERFORMANCE CRITERIA

Performance criteria describe the performance needed to demonstrate achievement of the element.

- 1.1 Work health and safety (WHS)/occupational health and safety (OHS) processes and workplace procedures for a given work area are obtained and applied
- 1.2 Hazards are identified, WHS/OHS risks assessed, and

	control measures and workplace procedures are implemented in preparation for work
	1.3 Scope of specification to be developed is determined from job performance requirements and in consultation with relevant person/s
	1.4 Activities are planned to meet scheduled timelines in consultation with person/s involved on the worksite
	1.5 Appropriate development kit and software are selected in accordance with specified requirements and required performance standards
	1.6 Strategies are implemented to ensure programming is in accordance with relevant industry standards/protocols
2 Develop microcontroller device code to specifications	2.1 WHS/OHS risk control measures and workplace procedures for carrying out work are followed
	2.2 Microcontroller functions and features are applied to developing microcontroller device code specifications
	2.3 Structure and syntax are applied to developing program specification for target microcontroller function
	2.4 Key features of the assembler programming language are identified and applied to develop and test microcontroller device solutions
	2.5 Approaches to issues/problems are analysed to provide most effective solutions
	2.6 Quality of work is monitored in accordance with performance agreement/specification and/or workplace procedures or relevant industry standards
3 Test and document microcontroller device code to the required application	3.1 Testing workplace procedures are developed to analyse code developed
	3.2 Problems, faults and bugs are identified and rectified to ensure specification in the creation of the code is met
	3.3 Intermediate and final work reports are written in accordance with relevant industry standards and presented to appropriate person/s

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

Range is restricted to essential operating conditions and any other variables essential to the work environment.

Non-essential conditions may be found in the UEE Electrotechnology Training Package Companion Volume Implementation Guide.

Developing and testing code for microcontroller devices must include at least three of the following:

- selecting an appropriate micro for a given task
- setting up and using basic input/output (I/O) functions
- using assembler/simulator software packages to debug program
- finding system fault/s

Unit Mapping Information

This unit replaces and is equivalent to UEENEEI156A Develop and test code for microcontroller devices.

Links

Companion Volume implementation guides are found in VETNet - -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b8a8f136-5421-4ce1-92e0-2b50341431b6>

Assessment Requirements for UEEIC0010 Develop and test code for microcontroller devices

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions on at least two separate occasions and include:

- applying relevant work health and safety (WHS)/occupational health and safety (OHS) requirements, including:
 - workplace procedures and practices
 - using of risk control measures
- developing and testing structured programming instructions for microcontroller device
- dealing with unplanned events/situations in accordance with workplace procedures in a manner that minimises risk to personnel and equipment
- developing testing procedures/protocols
- identifying problems and bugs/faults in program
- rectifying problems and bugs/faults in program in accordance with workplace procedures
- using all key features of an appropriate assembler language
- writing and presenting work reports to relevant industry standards and protocols.

Knowledge Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy all of the requirements of the elements, performance criteria and range of conditions and include knowledge of:

- fundamental structured programming instructions for microcontroller device
- memory organisation, operation and addressing methods
- microcontroller architecture
- microcontroller control system programming methods
- microcontroller devices testing protocols
- microcontroller programmer's model
- microcontroller programming terms
- relevant industry programming standards, environment and protocols
- relevant job safety assessments or risk mitigation processes
- relevant manufacturer specifications

- relevant programming language fundamentals
- relevant WHS/OHS legislated requirements
- relevant workplace documentation
- relevant workplace policies and procedures.

Assessment Conditions

Assessors must hold credentials specified within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must satisfy the Principles of Assessment and Rules of Evidence and all regulatory requirements included within the Standards for Registered Training Organisations current at the time of assessment.

Assessment must occur in suitable workplace operational situations where it is appropriate to do so; where this is not appropriate, assessment must occur in suitable simulated workplace operational situations that replicate workplace conditions.

Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

Resources for assessment must include access to:

- a range of relevant exercises, case studies and/or simulations
- relevant and appropriate materials, tools, facilities and equipment currently used in industry
- resources that reflect current industry practices in relation to developing and testing code for microcontroller devices
- applicable documentation, including workplace procedures, equipment specifications, regulations, codes of practice and operation manuals.

Links

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