



Australian Government

ICTIOT502 Program IoT devices

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 program IoT (Internet of Things) devices and networks, including developing, programming and testing devices against predetermined specifications.

It applies to those in roles including software developers, programmers or network engineers, working as embedded systems engineers, IoT developers or senior software developers, and who have basic knowledge of electrical engineering.

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

Unit Sector

Internet of Things (IoT)

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. Identify IoT business requirements	1.1 Establish business needs for IoT devices and applications 1.2 Determine and document different environmental factors in which sensors and IoT devices will be deployed 1.3 Determine microcontroller application and IoT device output according to business needs 1.4 Select required language and hardware with required memory, power constraints and functions
2. Program IoT device	2.1 Select microcontroller and circuit boards according to IoT requirements 2.2 Program microcontroller according to technical specifications 2.3 Test microcontroller and identify and rectify faults as

	required 2.4 Identify and rectify recordings and measurements against environmental variables and specifications
3. Finalise programming activities	3.1 Document processes and outcomes of programming activities 3.2 Submit document to required personnel and seek and respond to feedback 3.3 Finalise and resubmit documentation as required

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
Numeracy	• Uses mathematical formulae to calculate required equipment, record measurements and determine response times
Oral communication	• Articulates information and requirements, using effective communication techniques and industry standard technical language intended for audience and environment
Reading	• Analyses technical, manufacturer and organisational documentation to determine and confirm job requirements
Writing	• Prepares required documentation expressing ideas requirements and recommendations for specific audiences according to organisational procedures
Planning and organising	• Uses a formal, logical planning processes together with an increasingly intuitive understanding of context
Problem solving	• Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Self-management	• Takes full responsibility for identifying and considering relevant organisational protocols and requirements • Uses systematic processes, setting goals, gathering required information and identifying and evaluating options against agreed criteria
Technology	• Demonstrates an understanding of principles, concepts, language and practices associated with the digital world

Unit Mapping Information

No equivalent unit. New unit.

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 ICTIOT502 Program IoT devices

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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:

- research, select and program at least one IoT device for at least two different environmental conditions.

In the course of the above, the candidate must:

- test IoT device function and environmental variables
- document programming processes and outcomes.

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:

- language used to program IoT devices
- laboratory tools including:
 - power supply
 - silla scope
 - spectrum analyser
 - signal generator
- schematic drawing documentation and reading tools
- principles of electricity, energy and electricity usage, as they relate to IoT devices
- principles and functions of sensors and wireless communication
- uses and features of microcontroller programming, microprocessors and microcontrollers
- basic principles of soldering and manufacturing processes and related electrical circuits
- basic mathematical equations, algebra, signal processing and statistics concepts and procedures
- operational procedures and safety checks for using power usage instruments
- different environments, contexts and its impact where IoT devices are used
- readings and standards of workplace electrical equipment range

- testing and troubleshooting methodologies and techniques.

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:

- tools, equipment, materials, hardware required to program IoT devices
- microcontroller and required text editor software
- technical and manufacturer documentation
- environment with different factors applicable for IoT use.

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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