



Australian Government

ICTPRG555 Implement Object Relational Mapping Framework for data persistence

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 implement an Object Relational Mapping (ORM) framework to map, retrieve and manage object persistence in any programming language.

The unit applies to those working as senior software developers, senior back end developers or full stack developers, and responsible for managing Information and Communications Technology (ICT) in small-to-large enterprises (SMEs).

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

Unit Sector

Programming

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. Establish ORM project	1.1 Confirm use, application and need for ORM framework according to business needs 1.2 Review, select and implement ORM framework according to business needs 1.3 Design, develop and build domain object model according to business needs 1.4 Review and select data persistence technology for data store 1.5 Create mapping between domain object model and selected data store

2. Retrieve and manipulate objects according to ORM framework	2.1 Instantiate single object in domain model and persist in data store according to ORM framework 2.2 Instantiate collection of objects in domain model and persist in data store according to ORM framework 2.3 Retrieve objects from data store 2.4 Update object and persist changes back to data store using ORM framework 2.5 Delete data in data store 2.6 Detach data and reattach data 2.7 Implement eager loading of related domain 2.8 Implement lazy loading of related domain objects
3. Manage transactions, concurrency and errors	3.1 Handle transaction commits and rollbacks effectively according to ORM framework and business needs 3.2 Handle data persistence and concurrency effectively according to ORM framework and business needs 3.3 Implement and confirm error-handling 3.4 Test and confirm transaction success according to business needs

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	Identifies and interprets technical material to determine and confirm job, business and systems requirements
Writing	Demonstrates sophisticated writing skills using specialised language, technical language and scripts and required conventions
Planning and organising	Researches, plans and sequences complex tasks, efficiently and effectively
Problem solving	- Applies systematic and analytical decision- making processes for complex and non-routine situations and bug code - Uses nuanced understanding of context to recognise anomalies and subtle deviations to normal expectations, focusing attention and remedying problems as they arise
Technology	- Uses complex scripts and tools required within complex systems, applications, operation systems, the internet and required software and hardware components - Uses cyber security procedures and techniques to maintain data security,

SKILL	DESCRIPTION
	and systems and application integrity

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 ICTPRG555 Implement Object Relational Mapping Framework for data persistence

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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:

- use ORM framework to handle at least two different transactions
- use ORM framework to manage data persistence to create, update, read and delete operation at least once
- use ORM framework to handle concurrency when working with data persistence
- confirm and use commands affecting at least two entities to the data source.

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:

- functions, features and uses of a database and selected data store
- language used in object-oriented (OO) programming
- different ORM framework methodologies, including:
 - database first methodology
 - object first methodology
- functions and features of an ORM framework
- testing techniques used for ORM framework
- functions and features of transactions, commits and rollbacks
- lazy and eager loading or persistent data objects
- function and use of concurrency
- testing processes for transaction success.

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:

- integrated development environment (IDE) required to use ORM frameworks
- the internet, including connectivity
- hardware, software and applications required for the performance evidence.

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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