Australian Government

Department of Education, Employment and Workplace Relations

ICAWEB425A Apply structured query language to extract and manipulate data

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 produce structured query language (SQL) statements to work with server-side scripts enabling web designers to interact with web server databases.

Application of the Unit

This unit applies to web designers responsible for creating server-side interaction with dynamic web pages using SQL as a means of communicating with the database.

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. Identify SQL requirements from the specification documentation	1.1 Determine information to be used from ***database*** 1.2 Identify tables that hold this information 1.3 Identify primary keys in these tables 1.4 Identify relationships between these tables, including foreign keys
2. Create a relational database	2.1 Create tables in a database using ***SQL statements*** 2.2 Identify primary and foreign keys for database table 2.3 ***Manipulate data*** in a database using SQL statements 2.4 Query the database using SQL statements 2.5 Write SQL statements to retrieve information from database
3. Test SQL results	3.1 Construct test data to test SQL statements 3.2 Construct expected results to verify SQL statements 3.3 Verify result of the constructed SQL statements against expected results

Required Skills and Knowledge

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

Required skills

- analytical skills to determine the elements of the SQL statement
- communication skills to:
  - document the code
  - understand the client requirements
- learning skills to research encountered problems independently
- literacy skills to create an SQL statement using syntax
- planning and organisational skills to write an SQL statement that is cross-browser compatible
- problem-solving skills to translate the required outcomes from the database into SQL statements
- technical skills to:
  - apply programming concepts
  - integrate SQL statements into a variety of server-side languages.

Required knowledge

- features and application of:
  - aggregate functions:
    - MIN
    - MAX
    - SUM
    - AVG
    - COUNT
    - COUNT(*)
  - clause:
    - GROUP BY
    - HAVING
    - ORDER BY
  - dates and times
  - SQL data types
  - numbers
  - text
  - SQL syntax:
    - SELECT
    - FROM
    - WHERE
    - LIKE
    - DISTINCT
    - CREATE

    - ALTER TABLE
    - INSERT INTO
    - UPDATE
    - DELETE
    - DROP
- combining condition and Boolean operators:
    - IN and BETWEEN conditional operators
    - mathematical operators
- table joins.

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 use SQL to: • create databases and tables • query one or more tables to provide required data • add, modify and delete records from tables • drop databases and tables.
Context of and specific resources for assessment	Assessment must ensure access to: • development environment • server access • database server • appropriate learning and assessment support when required. Where applicable, physical resources should include equipment modified 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: • verbal or written questioning to assess candidate's knowledge of SQL statements and procedures • review of project-based SQL application prepared by candidate.
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.

Database may include:	• Access • Informix • Microsoft Structured Query Language (MS SQL) • MySQL • Oracle • Postgre • Sybase.
SQL statements may include:	• aggregate functions • conditions and Boolean operators • conditional operators • mathematical operators • table joins.
Manipulating data may include:	• creating tables and rows • deleting tables and rows • adding and altering data • retrieving data.

Unit Sector(s)

Web