Title	**Design, create, operate, and test a relational database to address an organisational information system need**		
Level	**4**	**Credits**	**5**

Purpose	People credited with this unit standard are able to: design a relational database to address an organisational information system need; and create, operate and test a relational database for organisational use. This unit standard has been developed primarily for assessment within programmes leading to the New Zealand Certificate in Information Technology Essentials (Level 4) [Ref: 2594], and the New Zealand Certificate in Computing (Advanced User) (Level 4) [Ref: 2593].

Classification	Computing > Generic Computing

Available grade	Achieved

Guidance Information

1 Recommended skills and knowledge:
Unit 29787, *Produce and use a relational database to provide a solution for organisational use*, or demonstrate equivalent knowledge and skills.

2 Assessment, where applicable, will be conducted in and for the context of real or realistic situations and/or settings, and be relevant to current and/or emerging practice. For the purposes of this unit standard the organisation must be authentic and may include the learner's assessor, real clients, family members, or other learners. The assessor may gather evidence over time from a range of scenarios rather than using one assessment where the learner has to demonstrate all of the required skills. The assessment context for this unit standard must be suitable to meet the criteria for level 4 in the NZQF Level Descriptors, which are available by searching for "level descriptors" at www.nzqa.govt.nz.

3 Any proprietary or open-source database software may be used for assessment provided it includes the features, or their equivalents, specified in the range statements.

4 A brief will be supplied to the learner, either as part of the learner's employment (in the case of workplace assessment) or in response to a set task. Unformatted data files may also be provided. A *brief* is defined as a clear description of both the desirable outcomes sought and the constraints to be met by the solution, and will include meeting appropriate legal, ethical and moral considerations. The brief must clearly identify the outcomes required from the database, against which the success or otherwise of the database application can be assessed.

The brief will include the target users; the specification which includes the system's purpose and functionality, entities (normalised for the purpose), data entry requirements (input forms), and update/output requirements (queries, and reports).

The learner will devise the attributes and data validation requirements from the functionality requirements.

A design outlines how the requirements of the brief will be realised and may be written and/or graphic. The database design must include a minimum of three tables (each concerning a single subject or topic); relationships between tables indicated via appropriate foreign keys; records that incorporate necessary fields and data types (e.g. text, numeric, currency, memo/long text date/time, auto-number, yes/no); queries, forms and reports to input and output information to and from multiple tables.

5 Definitions

Database Management System (DBMS) refers to a program (or suite of programs) that enables users to create, store, modify, access and extract data from a data repository, commonly referred to as a database. The DBMS has many features including multi-user access/updates, control of data redundancy, maintenance of data security and integrity, audit trails, and transaction processing.

Information Systems (IS) refers to the discipline which studies or informs the design, development, implementation, operation, and maintenance of an information system. An information system is a complementary collection of hardware and software that people and organisations use to collect, filter, process, create and distribute data, with the aim of supporting operations, management and decision-making.

Objects refer to anything defined in a database that is used to store, manipulate, display or reference data. Database objects may include tables, views, queries, reports, clusters, sequences, indexes, stored procedures, synonyms.

Organisation refers to the context the relational database is designed to operate in (e.g. businesses, clubs, not-for-profit organisations). It does not define or limit the situations in which assessment evidence may be gathered.

A *relational database* is a collection of data sets organised by tables, records (rows), and columns (attributes), which are structured to recognise relationships between the stored data categories. Management of and access to the stored data is via a database management system (DBMS).

Summaries refer to totals that are printed in a report at the end of a group, or section, or the entire report. These may count records within the group or section, or calculate a total for a numeric field, as appropriate to the purpose.

A testing plan lists various scenarios that should be executed against the application, and includes the initial state (database records), functions (queries, forms and reports) and features that need to be tested (buttons, links, navigation, displayed messages, error handling), data to be input, and the expected outcome for each test.

6 Legislation relevant to this unit standard includes but is not limited to the:
Copyright Act 1994
Copyright (New Technologies) Amendment Act 2008
Harmful Digital Communications Act 2015
Health and Safety at Work Act 2015
Privacy Act 2020
Unsolicited Electronic Messages Act 2007
and any subsequent amendments.
Current legislation and regulations can be accessed at http://legislation.govt.nz.

Outcomes and performance criteria

Outcome 1

Design a relational database to address an organisational information system need.

Performance criteria

1.1 Database objects are designed according to the requirements of the brief, and named using a systematic naming convention.

Range attributes (fields) for tables, forms, queries, reports;
field design may include but is not limited to – data types, formats, size, validation rules, formulas.

1.2 The selection of keys that enable both the unique identification of records and relationships between tables to be created, are included in the database table design.

Range keys include but are not limited to – primary key, candidate keys, foreign keys;
relationships include – one-to-one, one-to-many, and many-to-many.

1.3 Concepts for the user interface are included in the design, according to the needs of the organisation, requirements of the brief and capability of the database.

Range includes but is not limited to – layout of the menu structure, forms and reports, validation, restricting input data with dropdown lists.

1.4 A testing plan is developed for the database application that covers all aspects of the brief.

Range database integrity, functionality and display of forms, queries, reports.

Outcome 2

Create, operate and test a relational database for organisational use.

Performance criteria

2.1 Database tables are created in accordance with the design and constraints of the target database management system.

Range includes but is not limited to – validation rules, naming of objects, relationships between tables.

2.2 The database is queried to assemble data from multiple tables according to the needs of the organisation.

Range includes queries to – calculate results from existing data; select data; assemble data from multiple tables; summarise data; modify, delete or insert data.

2.3 Forms are created to facilitate data entry in accordance with the design.

Range includes but is not limited to – creating and applying three controls for forms, such as option boxes, check boxes, combo boxes, list boxes, text boxes; validation rules; dropdown lists; buttons.

2.4 Reports are created using data from multiple tables.

Range a minimum of two reports that include – title and column headings; the sorting and grouping of data; summaries.

2.5 The finished database is tested in accordance with the testing plan, and verified as fit for purpose in terms of meeting the brief and organisational requirements.

Range includes – outcomes documented, modifications made where needed.

Replacement information	This unit standard replaced unit standard 18742.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	19 January 2017	31 December 2024
Review	2	28 April 2022	N/A

Consent and Moderation Requirements (CMR) reference	0099

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Toi Mai Workforce Development Council qualifications@toimai.nz if you wish to suggest changes to the content of this unit standard.