

**COMHAIRLE NÁISIÚNTA NA
gCÁILÍOCHTAÍ GAIRMOIDEACHAIS**

**NATIONAL COUNCIL FOR
VOCATIONAL AWARDS**



PILOT

Consultative Draft Module Descriptor

Relational Database

Level 3 C30147

December 1998

1	Title	Relational Database
2	Code	C30147
3	Level	3
4	Value	5 credits
5	Purpose	This module has been developed to further the learner's knowledge of modern database systems and to equip the learner with the ability to design, implement and maintain Relational Database systems. This module is an elective module on the National Vocational Certificate Networks and Software Systems at level 3.
6	Preferred Entry Level	National Vocational Certificate Level 2 or equivalent.
7	Special Requirements	The candidate must have successfully completed the NCVA module Database Methods (B20012) or its equivalent.
8	General Aims	<p><i>This module aims to enable the learner to:</i></p> <p>8.1 understand database architecture</p> <p>8.2 understand and use systematic data analysis techniques</p> <p>8.3 design, implement and maintain a Relational Database.</p>
9	Units	<p>Unit 1 Database Architecture</p> <p>Unit 2 Data Analysis and Normalisation</p> <p>Unit 3 Relational Database Development Environment</p>

10 Specific Learning Outcomes

Unit 1 Database Architecture

The learner should be able to:

- 10.1.1** describe a range of methods of storing and accessing data, i.e. stand-alone and integrated systems
- 10.1.2** identify problems associated with stand alone and integrated systems
- 10.1.3** describe in detail a database architecture model to include:
- views
 - conceptual schemas
 - physical architecture
- 10.1.4** explain the terms:
- data redundancy
 - data independence
 - data integrity
- 10.1.5** explain the need for, and relevance of, data security
- 10.1.6** explain the difference between conceptual (logical) and physical views of data
- 10.1.7** describe the main characteristics of the following:
- Hierarchical database model
 - Network database model
 - Relational database model
- 10.1.8** discuss the limitations of the Hierarchical and Network models in relation to constructing queries
- 10.1.9** explain how the Relational Database model overcomes the limitations discussed in 10.1.8 above
- 10.1.10** identify the functions and capabilities of a Data Base Management System (DBMS), to include:
- the Data Dictionary
 - Data Description Languages
 - Data Manipulation Languages
 - the role of the Database Administrator
- 10.1.11** identify the database lifecycle as the five phases of
- (i) requirements analysis
 - (ii) data modelling
 - (iii) design and implementation
 - (iv) testing
 - (v) maintenance

Unit 2 Data Analysis and Normalisation

The learner should be able to:

- 10.2.1 define the terms: entity, attributes and relationship
- 10.2.2 identify common entities, their attributes and their relationships
- 10.2.3 use document analysis and other techniques to identify entities in a given data processing system
- 10.2.4 identify relationships as being 1:1, 1:M, M:1, and M:N
- 10.2.5 identify entities and their relationships for a given data processing system, using an entity-entity matrix
- 10.2.6 display entities and their relationships using Entity-Relationship diagrams
- 10.2.7 construct tables from Entity-Relationship diagrams
- 10.2.8 map entity-relationships to relational tables
- 10.2.9 explain the need for normalisation
- 10.2.10 explain the following:
 - first normal form
 - second normal form
 - third normal form
- 10.2.11 normalise a given set of tables up to and including third normal form
- 10.2.12 explain the term SQL.

Unit 3 Relational Database Development Environment

The learner should be able to:

- 10.3.1 use the *Select From* statement
- 10.3.2 use conditions to construct queries
- 10.3.3 construct queries using the boolean operators *and*, *or* and *not*
- 10.3.4 use the *Order* command in a query
- 10.3.5 use multiple table queries
- 10.3.6 create union queries

10.3.7	insert, update and delete records
10.3.8	use indexing to optimise database queries
10.3.9	analyse a set of requirements
10.3.10	develop an E-R diagram from a set of requirements
10.3.11	construct unnormalised tables from E-R requirements
10.3.12	normalise tables
10.3.13	develop the database resulting from completion of 10.3.9-10.3.12 above.

11 Assessment

	Summary	Project	60%
		Written Examination	40%
11.1	Technique	Project	
	Mode	Centre-based with external moderation by NCVA.	
	Weighting	60%	
	Format	<p>The Project is to be based on Units 2 and 3. It must include a project report describing the design of the database and a working implementation. Candidates should design and implement a database to solve a given set of requirements using a relational database system. The set of requirements must include:</p> <ul style="list-style-type: none"> • the specification of a user interface • a problem which will require a minimum of three tables • recommendations for specific reports based on multiple tables 	
11.2	Technique	Written Examination	
	Mode	Centre-based with external moderation by NCVA.	
	Weighting	40%	
	Duration	2 hours	
	Format	<p>Section A (40 marks) One question based on all units.</p>	

Section B (60 marks)

Three structured questions.

Two questions to be answered.

All questions carry equal marks.

**12 Performance
Criteria**

12.1 Project

The performance criteria for each component of the project are detailed in the accompanying Individual Candidate Marking Sheets.

**12.2 Written
Examination**

The tutor must devise an examination paper and outline marking sheet. These must be made available to the external examiner.

13 Grading

Pass	50 - 64%
Merit	65 - 79%
Distinction	80 - 100%

Individual Candidate Marking Sheet 1		Relational Database C30147 Project Weighting 60%
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Candidate Name: _____ **NCVA Exam. No.:** _____

School/Centre: _____ **Roll No:** _____

Performance Criteria	Maximum Mark	Candidate Mark
Project Design		
Aim and description of the problem and the proposed solution	5	
E-R diagram including relationships	10	
Normalised tables, identifying Primary key fields	15	
Screen and report design	10	
Data Dictionary	10	
Project Implementation		
System works and is an effective solution	10	
Tables with primary key field and relationships created	10	
Data entry screens and reports	10	
Data Search	5	
Macros	10	
Front End menu	5	
Total	100	
WEIGHED TOTAL (= TOTAL X 0.6)	60%	

Teacher's Signature: _____ **Date:** _____

External Examiner's Signature: _____ **Date:** _____

Individual Candidate Marking Sheet 2		Relational Database C30147 Written Examination Weighting 40%
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Candidate Name: _____ **NCVA Exam. No.:** _____

School/Centre: _____ **Roll No:** _____

Performance Criteria	Maximum Mark	Candidate Mark
Section A		
Question 1	40	
Section B Answer any two questions		
Question (...)	30	
Question (...)	30	
Total	100	
WEIGHED TOTAL (= TOTAL X 0.4)	40%	

Teacher's Signature: _____ **Date:** _____

External Examiner's Signature: _____ **Date:** _____

