

# Unit 7: Introduction to Databases

**Learning hours: 60**

**NQF level 2: BTEC First**

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## Description of unit

This unit aims to provide learners with an introduction to databases, what they are, how they work and their importance in business organisations.

Learners will have the opportunity to work from examples to see how a database is developed from which they can undertake their own database design. They should then produce documentation and an evaluation of the database.

This unit provides learners with the opportunity to gain key skills in the areas of communication and information technology.

<b>This is an externally assessed unit.</b>
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## Summary of learning outcomes

**To achieve this unit a learner must:**

- 1 Describe the **features and facilities of relational databases**
- 2 **Design a suitable database** to satisfy user needs
- 3 **Provide suitable documentation** to support the **database design**
- 4 **Evaluate the database.**

# Content

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## 1 Features and facilities of a relational database

*Components:* Database Management System (DBMS) and the database itself. Examples of commercial packages

*Relational database structure:* tables, records, fields, key fields

*Multiple tables:* concept of related tables and common fields to link them

*Facilities:* forms, queries, reports, sorting, calculating

*Case studies:* explore the use of databases in industry citing specific examples and facilities they provide for information provision

## 2 Design a suitable database

*Define tables:* meaningful names and acceptable fields, using text and numeric fields appropriately

*Forms for data entry:* appropriate labels and sequencing for data entry

*Sorting and searching:* sorting on one or more fields and simple, meaningful queries on one or more tables

*Reports:* on tables or queries; selection of appropriate layouts, labelling and titling

## 3 Provide documentation for the database design

*Documentation user manual:* design a user manual, giving guidance on purpose of database and forms for input and samples of reports

*Development log:* recording stages, table definitions, consideration of alternative designs

## 4 Evaluate the database

*Evaluation:* is the database fit for its purpose? What problems were encountered? Was it easy to use? What improvements would be made to the overall design?

## Assessment guidance

### This unit is externally assessed

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all of the learning outcomes for the unit. The criteria for a pass grade describe the level of achievement required to pass this unit.

<b>Grading criteria</b>		
<b>To achieve a pass grade the evidence must show that the learner is able to:</b>	<b>To achieve a merit grade the evidence must show that the learner is able to:</b>	<b>To achieve a distinction grade the evidence must show that the learner is able to:</b>
<ul style="list-style-type: none"> <li>understand the function of databases and the distinction between the DBMS and the database content</li> <li>design a basic relational database with several tables, and an input form; enter sufficient records to enable realistic data manipulation</li> <li>carry out useful sorts and generate suitably headed reports</li> <li>design and execute simple queries on the table and generate reports</li> <li>provide a basic evaluation of the database in terms of its meeting of a stated information need</li> <li>prepare a user guide which is easy to read and user friendly.</li> </ul>	<ul style="list-style-type: none"> <li>an analysis of the use of a databases in an example organisation</li> <li>good user friendly screen designs have been prepared to support the database design</li> <li>provide a detailed evaluation of the database to include benefits, limitations and improvements</li> <li>prepare a detailed user guide which is user friendly, well presented and fit for purpose.</li> </ul>	<ul style="list-style-type: none"> <li>detailed and comprehensive screen designs have been prepared with full justification as to their structure</li> <li>design a fully relational database which is user friendly and well structured. The database should include at least two tables and input forms</li> <li>design and execute queries which draw on information from both tables and generate reports making good use of design tools (design view) as well as the standard wizard.</li> </ul>

## Essential information for teachers

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### Delivery strategies

It is advised that the majority of this unit will be devoted to practical sessions of designing a database. To support this, lectures will need to focus on the basics of database design, the importance of key fields and the use of databases as a management information and storage tool.

The primary source of evidence will come from the design of the database. Secondary evidence will include the evaluation and supporting user guide.

### Assessment strategies

Learners should be assessed on their ability to understand the basic concepts of database design and apply this understanding to their own designs. Learners should also provide documentary evidence as to the workings of their design using screen layouts and instructions in the form of a log-book or user guide. Learners should be able to produce evidence to match the following criteria:

- describing the importance of databases as a storage and information management tool
- providing examples of database technology in organisations
- preparing templates of screen designs
- building a suitable database which meets the requirements of users
- providing documentary evidence to support the database design
- evaluating the database.

The form of assessment will be dictated by the IVA set tasks.

### Grade descriptions

#### Pass

To achieve a pass, learners should understand the basics of database design and apply these to their own flat-file design structure. Learners should be able to create simple screen designs and demonstrate an ability to use at least two tables a form and a report. To support the database learners should also provide an evaluation of the database and produce a basic user guide.

#### Merit

To achieve a merit, learners should be able to re-evaluate their own designs and provide good documentary support. Learners should also provide a thorough analysis of the use of databases in organisations. Learners should prepare user-friendly screen designs, forms and reports. A detailed evaluation of the database to include benefits, limitations and improvements should be provided in conjunction with a detailed user guide.

## **Distinction**

To achieve a distinction, learners should produce a relational database comprising two or more tables and using appropriate tools and techniques. Learners should also produce professional and appropriate documentation and evaluations of the design. The database design should include at least six tables, three forms and three reports, with full justification as to their structure. An extensive evaluation should be provided to include a critique of the database design and implementation stages.

## **Links**

This unit links with *Unit 2: Uses of IT* and *Unit 6: Communications and Organisations*.

## **Resources**

PC based system running appropriate database should be available. Microsoft Access, Lotus Approach, Claris FileMaker Pro and Corel Paradox are all suitable for this unit.

## **Suggested reading**

### **Textbooks**

Dowling, N — *Applying Software: Database Design and Management* (Letts Educational Ltd, 1998) ISBN: 1858053617

Richie, C — *Relational Database Principles* (Letts Educational Ltd, 1998)  
ISBN: 1858053633

## Key skills

Highlighted here are the key skills that have already been identified in the *Description of unit* section. Achievement of key skills is not a requirement of this qualification but it is encouraged. Suggestions of opportunities for the generation of level 2 key skills evidence are given here. Staff should check that learners have produced all the evidence required by part B of the key skills specifications when assessing this evidence. Learners may need to develop additional evidence elsewhere to fully meet the requirements of the key skills specifications.

<b>Communications level 2</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>describing the importance of databases as a storage and information management tool</li> <li>providing examples of database technology in organisations</li> <li>preparing templates of screen designs</li> <li>evaluating the database</li> <li>providing a user guide on how to work the database</li> </ul>	<p>C2.3 Write <b>two</b> different types of documents about straightforward subjects.</p> <p>One piece of writing should be an extended document and include at least <b>one</b> image.</p>
<b>Information technology level 2</b>	
<b>When learners are:</b>	<b>They should be able to develop the following key skills evidence:</b>
<ul style="list-style-type: none"> <li>preparing templates of screen designs</li> <li>building a suitable database which meets the requirements of users</li> </ul>	<p>IT2.3 Present combined information for <b>two</b> different purposes.</p> <p>Your work must include at least <b>one</b> example of text, <b>one</b> example of images and <b>one</b> example of numbers.</p>