Programme Module

Introduction to Database

leading to

Level 3 QQI Component: Database 3N0550

Please note the following prior to using this programme module descriptor:

- This programme module can be delivered as a stand alone module or as part of the:
  1. **Level 3 QQI Certificate in General Learning 3M0874**
  2. **Level 3 QQI Certificate in Employability Skills 3M0935**
  3. **Level 3 QQI Certificate in Information and Communication Technologies 3M0877.**

- Upon successful completion of this programme module the learner will achieve 10 credits towards the Level 3 QQI Certificates in General Learning, Employability Skills or Information and Communication Technologies.
- The learner needs to accumulate a minimum of 60 credits in order to achieve the Level 3 QQI Certificates in General Learning or Employability Skills or Information and Communication Technologies.
- Teachers/tutors should familiarise themselves with the information contained in CDETB's programme descriptor for Everyday Living Skills, Skills for the Workplace or Introduction to Information and Communication Technologies prior to delivering this programme module.
- In delivering this programme module teachers/tutors will deliver class content in line with the Guidelines for Teaching and Learning included in this programme module.
- In assessing the learners, teachers/tutors will assess according to the information included in this programme module. Teachers/tutors are required to devise Assessment Brief/s for the Collection of Work and Skills Demonstrations.
- Where overlap is identified between the content of this programme module and one or more other programme module(s), teachers/tutors are encouraged to integrate the delivery of this content.
- Where there is an opportunity to facilitate the learners to produce one piece of assessment evidence which demonstrates the learning outcomes from more than one programme module, teachers/tutors are encouraged to integrate assessment.

Overview of the Programme Module

The Programme Module is structured as follows:

Section 1 to 8: contains important information for the teacher/tutor about the credit value, title, code, etc. of the programme module.

Section 9: details the learning outcomes prescribed for the programme module by QQI. These outcomes are set by QQI and cannot be changed in any way by the CDETB or individual teachers/tutors.

Section 10: outlines suggestions and guidelines for teaching the module. It contains useful information and ideas for teachers/tutors and can be helpful in clarifying learning outcomes.

Section 11: contains the relevant information in relation to the assessment of the module. As the teacher/tutor is the assessor of the work, this section is essential reading.

Section 11a specifically prescribes the way in which learners are required to present evidence for assessment.

Learner Marking Sheet: this is the marking sheet that must be attached to the assessment portfolio and signed by the teacher/tutor and the learner.

Programme Module	**Award**
1. Title of Programme Module Introduction to Database	**2. Component Name and Code** Level 3 Database 3N0550
3. Duration in Hours of Programme Module 100	**4. Credit Value** 10
5. Assessment Technique Collection of Work 60% Skills Demonstration 40%	**6. Specific Requirements** The learner must have access to a fully functioning computer with the appropriate software applications.

7. Aims of the Programme Module

This programme module aims to equip the learner with the knowledge, skills and competencies in database use and design and improve their ICT skills in general.

8. Objectives:

- to learn about databases, its uses and features
- to use database software to create, store, edit, and report on data
- to understand database organisation and benefits of searching databases
- to understand and explore the creation of forms to view and edit data
- to understand and explore the benefits of using reports to structure data to allow for efficient data analysis
- to appreciate the visual design and structure of a database including form and report design.

9. Learning Outcomes of Level 3 Database 3N0550

The learner will be able to:

1. outline the significance of database applications in terms of their common uses and features
2. explain rudimentary terminology associated with databases including tables, records, fields, simple data types, forms, queries and reports
3. use a database application to open an existing database, access a report, print a hardcopy of the report and exit the application
4. use the search function of a database application to locate information within a database file
5. create a simple query on an existing database, storing the query for future access
6. use the sort function within a database application to sort data in the order required
7. create a simple report on an existing database, printing the resultant output in hardcopy format, and storing the report for future access
8. create a simple form to populate a new database file with data
9. perform common record management tasks including adding a new record, modifying a record and deleting a record
10. produce a hardcopy database report taking all required steps including creating the database file, entering data, generating, saving and printing the report, and closing the database
11. apply appropriate health, safety and personal hygiene procedures when working in an ICT environment.

Delivery Strategies and Learning Activities

The programme module could be delivered through classroom-based learning activities, team work, group discussions, one-to-one tutorials, field trips, case studies, role play and other relevant activities. There are practical elements to this module requiring access to a range of materials, resources and equipment and the learner should be allocated adequate time and facilities to complete each task. All practical activities should exemplify safe working practices and reinforce standard health, safety and environmental concerns.

10. Guidelines for Teaching and Learning

Please note: the following guidelines suggest a sequence for the teaching of this module. In some cases, this may differ from the sequence of learning outcomes outlined in section 9.

Unit 1: Health and Safety Procedures

1. Health and Safety Procedures

- Discuss with the Learner the measures that can be taken to help create a healthy, safe and hygienic working environment when using computers, for example:
  - Ensure the appropriate positioning of monitor, keyboard and mouse
  - Ensure the appropriate positioning of the material being worked from
  - Ensure correct posture when sitting in front of a computer
  - Use an adjustable height chair
  - Ensure there is adequate light where work is being undertaken
  - Ensure there is adequate ventilation
  - Take frequent breaks away from the computer
  - Ensure that power cables are carefully placed so as not to be in the way of others
  - Ensure that power points are not overloaded
  - Place personal belongings such as bags out of the way of others when using the computer
  - Maintain all I.T. equipment appropriately and any equipment not working correctly should be removed until it is fixed
  - Do not consume any food or drink when around the computer
  - Clean the keyboard, mouse and other computer hardware elements regularly
  - Wash your hands before and after handling the keyboard or mouse.

- Facilitate the Learner to apply these measures when using the database application to create databases and reports, etc.

Unit 2: Database Use and Features

2. Databases Uses and Features

Explore with the learner the significance of using databases including the structure, organisation, searching, editing and reporting features. Explore different examples of databases that the learner may encounter in their everyday lives. Explain that these features are available in free open source databases, online databases and commercially purchased databases.

2.1 Explain the uses of Databases

- Databases are used to store data in a particular way to make it easy to produce useful information.
- Data is different to information in that one piece of data, for example, a surname, is useless on its own. When data is combined useful information is produced. For example, a surname, forename and PPS number combined tells you the name of an employee, etc.
- Databases are used in a wide variety of jobs and professions from administrative staff to accountants, retailers and so on.
- Examples include online telephone directory, ecommerce websites such as iTunes, Amazon, eBay, internet banking holding a database for your transactions and payments. A local take-away database for customer details and purchases, social welfare database, loyalty card database for a supermarket holding customer details, purchases and rewards.

2.2 Explain the common features of a database

- The inclusion of tools for opening existing files and saving files for re-use.
- The inclusion of tools for inserting, deleting data and spell checking (validating) data entered.
- The inclusion of tools for formatting data in terms of changing font styles, font sizes and applying

features such as bold, italic and underlining, applying data types.
- The inclusion of tools for copying, cutting and pasting data.
- The inclusion of tools for page (report) layout, page previewing and printing files.

Unit 3: Structure of a Database

3. Terminology

With the learner explain the terminology that is used when designing databases. Explore with the learner the different objects/parts that make up a database. Explain that these features are available in free open source databases, online databases and commercially purchased databases. Explain that databases are designed to suit an application ranging from a database of songs, performers, and albums, to retail databases using the same or similar software.

3.1 Structure of a Database

Explain that a database consists of many objects/parts, from basic to advanced, including fields, records, tables, forms, queries and reports.

- **Tables**
    - A table is the most important part of a database. The function of a table is to store data. A table is organised into columns and rows. Each column is called a field, with the field name located at the top of the column, for example, customer name. Each row is called a record. A record contains data that is related to each other, for example, a customer's name, address, phone number, combined together make a record.
    - Explain that each record should have a primary key or a unique identifier to identify each record. For example, a PPS number is a unique number that identifies each person or a Customer ID or an ID. Explain that a primary key is inserted automatically when you create a blank table. Explain that in this module the automatic primary key will be used.
    - Database designers can manipulate a table for example, to sort a table into alphabetical order or search a table to find a particular record or piece of data.

- **Forms**
    - A form is linked to a table in a database.
    - A form is used to view, edit and search data. A form is an important part of a database because it can be designed to catch data entry errors. For example, if a user is entering many records into a database sometimes mistakes are made, the user may enter a name into the address field. It is important to enter data into the correct field. If incorrect data is entered into a field a report or query will display incorrect information, the report or query may overlook the erroneous data. It is very important to maintain the integrity of the data so that correct information is displayed in reports or queries.
    - A simple form can display one record per view. An advanced form can display many records associated with a customer/employee.
    - Report buttons may also be on a form, allowing the database user to run reports. For example, an employee's timesheet may be produced on a report from the employee's record on the form. The user clicks on the button and a report runs.
    - Forms should be designed in a logical manner to allow for good data entry procedures.
    - Forms can be designed using colour, different text fonts/styles, images, etc.

- **Queries**
    - A query is used to search a database for records depending on certain criteria. For example, in a motor company's database – only display those customers that buy second hand cars in a query.
    - A query can be saved and reused. The results of a query will change depending on the data held in the database.

- **Reports**
    - Reports allow for a means of presenting data so that it can be easily interpreted. A report can be viewed on screen or can be printed.
    - In reports, data can be summarised, formatted and presented so that it is easily understood.
    - Totals and sub-totals can be calculated when the report is run. For example, the total of an invoice.

3.2 Using a database

Facilitate the learner to use database software to design a database to store and retrieve data. Facilitate the learner accessing a database application, for example, Microsoft Access, Open Office Base (Open Office – free open source software), etc.

- If using free open source software such as Open Office, demonstrate how to download the suite of software onto the learner's computers. The learner should be capable of doing this outside of the classroom environment.
- Open an existing database from a removable disk or folder on the local hard disk
    - The existing database must contain
        - one table
        - one form
        - at least two queries with three fields, with different data types (text, number, currency) and criteria (using symbols, =, <, >) set within the query
        - one report
    - *Ensure that the naming conventions tblTableName, frmFormName, qryQueryName and rptReportName are used in the existing database*
- Open an existing form in the database and navigate through the form to see all the records
- Sort the database using the form into alphabetical order in both ascending and descending order
- Search the database for data values using the form according to specification
- Run and print the existing queries on the database
- Run and print an existing report on the database
- Modify and save data in the database using a form
- Re-run and print the existing queries on the database. The learner should be able to identify the modified data
- Re-run and print the existing report on the database. The learner should be able to identify the modified data

3.3 Creating a new database

Create at least **5 databases** to include combinations of the following:

- Create a new table with **at least 5 fields**
- Explain the structure of designing a table in that data types must be specified for data. Explain at least three different data types from the range – text, number, currency, dates
    - Apply different data types
    - Save a form using a meaningful name and the naming convention **tblCustomer**. Putting the letters **tbl** in the name of the table makes it instantly recognisable as a table
- Create a form for **each** table created
    - Explain the structure of a form – header, body and footer
    - Explain the basic elements on a form – label, text box
    - Design the form logically
    - Demonstrate adjusting a form including
        - Modify the contents of a label
        - Move a label and text box
        - Resize a label and text box
    - Use the form to enter data into the table

- Sort the table using the form into ascending or descending order on a field(s)
- Search the table using the form to find specific data
- Add a new record(s) using the form
- Delete a record(s) using the form
- Edit a record(s) using the form
- Save a form using a meaningful name and the naming convention frmCustomer. Putting the letters **frm** in the name of the form makes it instantly recognisable as a form

- Create at least **three queries** according to specification.
  - Explain how a query is structured – field, criteria, sort
  - Add at least three fields to each query created to make the results meaningful
  - Create queries using different data types
  - Specify criteria for each of the queries, at least one for data/currency type number
    - Explain the symbols used in simple criteria
    - = equals a specific number
    - < less than a specific number
    - > greater than a specific number
  - Print the results of the query
  - Save the query for re-use using a meaningful name and the naming convention qryCustomer. Putting the letters **qry** in the name of the form makes it instantly recognisable as a query
  - Change data in the table and re-run the query and print the result
- Create at least **three simple reports** according to specification.
  - Explain the structure of a simple report – header, body and footer
  - Modify the report design in design view
    - Modify the contents of a label
    - Move a label and text box
    - Resize a label and text box
    - Change the font style, font size and colour of a label / text box
  - Print each report produced
  - Save each report produced using the naming convention rptCustomer Details. Putting the letters **rpt** in the name of the form makes it instantly recognisable as a report

11.a Specific Information Relating to the Assessment Techniques

The assessor (teacher/tutor) is required to devise Assessment Brief/s for the Collection of Work and Skills Demonstration. In devising the Assessment Brief/s, care should be taken to ensure that the learner is given the opportunity to show evidence of ALL learning outcomes. Each learner is required to work alone in completing the Collection of Work. There is no facility for this Collection of Work to be completed as a group.

Evidence that the learner has achieved the learning outcomes may take a variety of forms including tutor verification of the learner's contribution, learner worksheets, diagrams, cloze tests, multiple choice statements, visual presentation or other appropriate evidence in the form of written, oral, graphic, audio, visual or any combination of these. Any audio or visual evidence must be provided in a suitable format. All of the evidence must be retained in the learner's assessment portfolio.

Collection of Work	**60%**
The Collection of Work may be produced throughout the duration of this programme module. It must be clearly indicated where evidence covers more than one learning outcome.	
The learner will compile a Collection of Work to include a minimum of **5 databases** in digital and hard copy. In producing the databases for the Collection of Work, the learner should include evidence of tasks that demonstrate the following: **Databases** • Design of the database using suggested naming conventions **Tables** • Design of a table with application of different data types - **1 table per database** • Saving a table using suggested naming conventions **Forms** • Design of a form in a logical way - **at least 4 forms over 5 databases** • Saving of forms using suggested naming conventions • Data entered using the designed form with no errors • Sorting of the data using the form • Searching the data using the form • Addition and deletion of records using the form • Modification of data using the form **Queries** • Design of queries - **at least 3 queries over 5 databases** • Saving queries using suggested naming conventions • Running queries and printing results • Modifying data and re-running and re-printing of query results **Reports** • Design a report - **at least 3 reports over 5 databases** • Saving reports using suggested naming conventions • Modifying data and re-running and re-printing of report results	

In the Collection of Work the Learner will also include evidence of being able to:

- Outline the significance of using a database application
- Outline the common uses and features of a database application
- Explain the key terminology associated with database applications
- Distinguish between the different types of data entered into a database

Skills Demonstration	**40%**

The learner will complete one Skills Demonstration at appropriate intervals during the programme and will be allowed **45 minutes** to complete the demonstration. Evidence of the Skills Demonstrations must be included in the assessment portfolio. The evidence may be photographs, video, audio or digital evidence, or other appropriate evidence of the learner completing the tasks.

In carrying out the following Skills Demonstration, the learner will complete the following tasks:

Skills Demonstration

- Create one database and save it using suggested naming conventions
- Create a new table with at least 5 fields and 6 records using at least 3 different data types, to a given specification
- Create a new form based on the table and save it using suggested naming conventions
- Enter data into the table using the form
- Sort the table into alphabetical order on a specified field
- Add a specified record to a table
- Delete a specific record in a table
- Modify at least 4 specified data in a table
- Create a query to a given specification and save it using suggested naming conventions
- Create a simple report and save it using suggested naming conventions
- Print the report
- Close the database

All printouts must be signed by the learner.
The candidate must enter name and date of assessment on the assessment.

Evidence of this Skills Demonstration must include the completed file on an appropriate storage device and in print out form.

11.b Assessment - General Information – Database 3N0550

All instructions for the learner must be clearly outlined in an Assessment Brief.

Mapping Each Learning Outcome to an Assessment Technique	
Learning Outcome	**Assessment Technique**
1. Outline the significance of database applications in terms of their common uses and features.	Collection of Work
2. Explain rudimentary terminology associated with databases including tables, records, fields, simple data types, forms, queries and reports.	Collection of Work
3. Use a database application to open an existing database, access a report, print a hardcopy of the report and exit the application.	Collection of Work Skills Demonstration
4. Use the search function of a database application to locate information within a database file.	Collection of Work Skills Demonstration
5. Create a simple query on an existing database, storing the query for future access.	Collection of Work Skills Demonstration
6. Use the sort function within a database application to sort data in the order required.	Collection of Work Skills Demonstration
7. Create a simple report on an existing database, printing the resultant output in hardcopy format, and storing the report for future access.	Collection of Work Skills Demonstration
8. Create a simple form to populate a new database file with data.	Collection of Work Skills Demonstration
9. Perform common record management tasks including adding a new record, modifying a record and deleting a record.	Collection of Work Skills Demonstration
10. Produce a hardcopy database report taking all required steps including creating the database file, entering data, generating, saving and printing the report, and closing the database.	Collection of Work Skills Demonstration
11. Apply appropriate health, safety and personal hygiene procedures when working in an ICT environment.	Collection of Work

Grading

At Level 3 a learner is graded as Successful or Referred.

Successful means that ALL the learning outcomes from the Component Specification have been demonstrated to an appropriate standard in the learner's portfolio of assessment.

Referred means that the portfolio of assessment needs further work by the learner before s/he can demonstrate the standard and achieve certification from QQI.

Level 3 Database 3N0550	**Learner Marking Sheet**

Learner's Name: _____ Learner's PPSN: _____

Learners will be able to:	**Evidence of the following is included in the assessment portfolio:**	✓ **If present in portfolio**	**Please indicate where evidence is to be found**
1. Outline the significance of database applications in terms of their common uses and features.	• Outline the significance of using a database application • Outline common uses of a database application • Outline common features of a database application.		
2. Explain rudimentary terminology associated with databases including tables, records, fields, simple data types, forms, queries and reports.	Explain the following terminology: • Field • Record • Table • Data Types • Form • Query • Report.		
3. Use a database application to open an existing database, access a report, print a hardcopy of the report and exit the application.	• Open an existing database from a removable disk or from a local hard disk • Run a report • Print the report • Close the database.		
4. Use the search function of a database application to locate information within a database file.	• Open an existing database from a removable disk or from a local hard disk • Search the database using the search function on the form.		

5. Create a simple query on an existing database, storing the query for future access.	• Open an existing database from a removable disk or from a local hard disk • Create a query given specific criteria • Save a query using naming conventions.		
6. Use the sort function within a database application to sort data in the order required.	• Open an existing database from a removable disk or from a local hard disk • Sort the data into alphabetical order ascending and descending.		
7. Create a simple report on an existing database, printing the resultant output in hardcopy format, and storing the report for future access.	• Open an existing database from a removable disk or from a local hard disk • Create a simple report • Save the report using naming conventions • Print a hard copy of the report.		
8. Create a simple form to populate a new database file with data.	• Create a new database • Create a new table using at least three different types of data • Create a new form for the table • Enter data using the new form • Save the database, table and form using naming conventions.		
9. Perform common record management tasks including adding a new record, modifying a record and deleting a record.	• Navigate through records using a form • Add a new record(s) using a form • Delete a record(s) using a form • Modify a record(s) using a form.		
10. Produce a hardcopy database report taking all required steps including creating the database file, entering data, generating, saving and printing the report, and closing the database.	• Create a new database • Create a new table • Create a new form • Enter data using a form • Add a new record • Delete a record • Modify data • Sort the data using a form • Create a new query • Create a new report		

	• Save all using naming conventions • Print a hardcopy of a report.		
11. Apply appropriate health, safety and personal hygiene procedures when working in an ICT environment.	• Apply appropriate health procedures when working with a computer • Apply appropriate safety procedure when working with a computer • Apply appropriate personal hygiene procedures when working with a computer		

This is to state that the evidence presented in the attached portfolio is complete and is the work of the named learner.

Learner's Signature: _____ Date: _____

Assessor's Signature: _____ Date: _____

External Authenticator's Signature: _____ Date: _____