

## Assignment brief – QCF BTEC

<b>Qualification</b>		<b>Unit number and title</b>	
<b>BTEC Level 3 Extended Diploma for IT Practitioners</b>		<b>Unit 18 Database Design</b>	
<b>Student name</b>		<b>Assessor name</b>	
<b>Date issued</b>	<b>Hand in deadline</b>	<b>Submitted on</b>	
23 <sup>rd</sup> September 2016	18 <sup>th</sup> November 2016		

<b>Assignment number and title</b>	Database Design and Implementation
<p>In this assessment you will have opportunities to provide evidence against the following criteria. Indicate the page numbers where the evidence can be found.</p>	

Criteria reference	To achieve the criteria, the evidence must show that the student is able to:	Task number
P1	explain the features of a relational database	
P2	design a relational database for a specified user need	
P3	create and populate a database	
P4	create features in data entry forms to ensure validity and integrity of data	
P5	perform queries using multiple tables and multiple criteria	
P6	include an advanced feature in a database design	
P7	test a relational database	
M1	explain referential integrity and the purpose of primary keys in building the relationships between tables	

M2	import data from an external source	
M3	export data to an external source	
M4	implement an automated function.	
D1	discuss how potential errors in the design and construction of a database can be avoided	
D2	evaluate a database against the specified user need	



## STUDENT ASSESSMENT SUBMISSION AND DECLARATION

When submitting evidence for assessment, each student must sign a declaration confirming that the work is their own.

Student name:		Assessor name:	
Issue date:	Submission date:	Submitted on:	
Programme: <b>BTEC Level 3 Extended Diploma in IT</b>			
Unit number and title: <b>Unit 18 Database Design</b>			
Assignment number and title: <b>Database Design and Implementation</b>			

Please list the evidence submitted for each task. Indicate the page numbers where the evidence can be found or describe the nature of the evidence (e.g. video, illustration).

Task ref.	Evidence submitted	Page numbers or description
Additional comments to the Assessor:		
<p><b>Student declaration</b></p> <p>I certify that the evidence submitted for this assignment is my own. I have clearly referenced any sources used in the work. I understand that false declaration is a form of malpractice.</p> <p style="display: flex; justify-content: space-between; margin-top: 20px;"> <span>Student signature:</span> <span>Date:</span> </p>		



ASSESSMENT RECORD SHEET (QCF Level 3)					
Programme	BTEC Level 3 Extended Diploma in IT		Student name		
Assignment number & title	Database Design and Implementation		Assessor name	Raj Singh	
Unit number & title	Unit 18 Database Design		Target learning outcomes		
Issue date	23 <sup>rd</sup> September 2016		Deadline date	18 <sup>th</sup> November 2016	Submission date
First Submission					
Target criteria Ref.	Criteria	Criteria achieved? (Yes / No)	Assessment comments		
P1	Explain the features of a relational database				
P2	Design a relational database for a specified user need				
P3	Create and populate a database				
P4	create features in data entry forms to ensure validity and integrity of data				
P5	Perform queries using multiple tables and multiple criteria				

P6	Include an advanced feature in a database design		
P7	Test a relational database		
M1	Explain referential integrity and the purpose of primary keys in building the relationships between tables		
M2	Import data from an external source		
M3	Export data to an external source		
M4	Implement an automated function.		
D1	Discuss how potential errors in the design and construction of a database can be avoided		
D2	Evaluate a database against the specified user need		
General comments (including comments on spelling, grammar and punctuation)			

<b>Assessor declaration</b>	I certify that the evidence submitted for this assignment is the student's own. The student has clearly referenced any sources used in the work. I understand that false declaration is a form of malpractice.		
Assessor signature		Date	
Student comments			
Student signature		Date	





# Assignment brief

<b>Unit no. &amp; title</b>	<b>Unit 18 Database Design</b>
<b>Assignment no. &amp; title</b>	Database Design and Implementation

## The purpose of this assignment is to:

- Understand the components of computer systems.
- Be able to recommend computer systems for a business purpose.

The purpose of this assignment is to:

To enable learners to understand the features of relational databases and develop the skills necessary to design, create, populate and test a relational database incorporating advanced features.

## Scenario

Mia's sandwich shop has just expanded due to popular demand. She is planning to open a further three shops. The shops' proprietor Mia Baggio has decided that in order for her business to expand further a computerised system is required to manage all the shops' orders. She has heard something about databases but she has no idea what they are or how they will benefit her business.

Mia currently stores all regular orders in an Excel spreadsheet. She finds the spreadsheet difficult to use and keeps having to type in the same data for each customer order, which has led to data entry errors. The spreadsheet doesn't effectively retrieve information to resolve the various issues that occur and does not offer her any reporting facilities for printing off documents such as invoices and outstanding payments. The spreadsheet will be provided to you for further analysis.

You are an IT student who visits Mia's sandwich shop on a regular basis, she has told you about her situation and you have offered your help in developing database software to deal with Mia's shop orders. In return you will receive free sandwiches for life.

### Mia's current spreadsheet records the following information:

- Order Number
- Date of Order
- Customer ID
- Customer Name
- Customer Address
- Customer Postcode
- Customer Contact Number
- Delivery Address
- Delivery Postcode
- Delivery Date
- Delivery Time
- Sandwich Code
- Sandwich Description
- Sandwich Price
- Sandwich Quantity
- LineTotal
- Total Price
- Order Paid (Tick box)
- Shop ID
- Shop Location
- Staff ID
- Staff Name

After a meeting with Mia the following requirements have been outlined:

### **Input requirements**

The following forms will be required:

- **Customer form**
- **Order form**
- **Shop form**
- **Sandwich form**
- **Switchboard** (This should be used to enable the user to open all forms, reports and queries that have been created)

It is important that the details are captured accurately and that good use is made of validation on all forms.

### **Output requirements**

The following reports will be required:

- **Outstanding payments** – this report displays all orders that still require payment  
  
This will display all order details including: company name, address, contact number, order ID, order date, order paid, sandwich description, sandwich price and total cost
- **Invoice** – this report displays an invoice for a particular customer  
  
This will display all order details including: company name, address, contact number, order ID, order date, sandwich ID, sandwich description, sandwich price, discount and total cost.

**NOTE: 10% discount is given to the customers when they spend over £50**

Both of these reports must be designed in accordance with the requirements.

### **Design requirements**

A consistency of styling must be employed in order to create a professional image and to help users interact with the system. Consistency must extend to at least the following:

- Layout inc. forms, reports and use of logos etc.
- Colours
- Naming of tables and fields

### **Task 1 (P1, M1, D1)**

In order to help Mia understand the purpose and the benefits of relational databases, write a report that will contain the following:

- An explanation of the main features of relational databases and the benefits they bring to an organisation. You will need to include an explanation of how the structure of relational databases can provide efficiencies in data storage, the elimination of data redundancy and the ease by which information can be extracted from the underlying data. **(P1)**
- Explain with examples, the concept of Referential Integrity as it applies to relational databases and how, by using primary and foreign key relationships, the integrity of a database can be maintained. **(M1)**
- A discussion into a range of common errors that may occur in the design and implementation of a relational database. Within this discussion, you will need to explain the impact that these errors could have on the integrity of data and the users. You will also need to state how these errors can be avoided. **(D1)**

### **Task 2a (P2)**

Using the information supplied in the scenario and functional requirements design a database containing at least 5 tables. You will need to provide documentary evidence that demonstrates that you have:

- Carried out the normalisation process to 3<sup>rd</sup> Normal form and have identified at least 5 entities.
- Produced an Entity Relationship Diagram (ERD)
- Created a data dictionary that contains information about all the fields required for each table. The data dictionary should identify the data types and sizes for each field, the primary and foreign identified during the normalisation and any input validation required i.e. input masks, validation rules etc

### **Task 2b (P3)**

Implement your designs using MS Access by creating a set of tables (min 5 tables) that have referential integrity enforced through primary/foreign key relationships to allow cascade updating and deletion of linked records. Evidence this task by taking screen shots of the design interfaces of the completed database tables and the Entity Relationship Diagram supplied by MS Access

### **Task 2c (M2)**

Using Mia's spreadsheet, import all the data from the spreadsheet into the relevant tables. You will need to document each step of the importation process

### **Task 3a (P4)**

Design and implement all the forms that have been outlined in the requirements taking care to ensure consistency. Show how you have implemented any validation rules, input masks and dropdown boxes you identified in the design stage.

You will also need to create an input for customer orders that contains at least one sub-form (ideally 2 sub-forms)

### **Task 3b (M4)**

To avoid users leaving records incomplete, use VBA code on at least one of the forms to perform a presence check on all the fields to ensure that they are not left blank. If a field is left blank you will need to draw attention to this field by highlighting it and displaying an error message. Evidence this task by taking screen shots of the VBA code and interfaces, with annotations.

### **Task 4 (P5)**

Create all queries that are required from the output specification. In addition, design and implement the queries below to enable the user to retrieve the following information:

- Customer Records
- Customer Orders
  
- Most popular sandwich this year
- Least popular sandwich

### **Task 5a (P2), (P6)**

Design and implement all the reports that have been outlined in the requirements taking care to ensure consistency in line with your form designs.

### **Task 5b (P6)**

Ensure consistency in design requirements as per the scenario

- Layout of forms and reports
- Use of logos (forms and reports)

- Naming of tables and fields
- Presentation, i.e. logos

In addition, you need demonstrate the use of an advanced feature. You are required to add buttons to each of the forms for navigation purposes. An observation record provided to you by your tutor will be used as evidence for this task.

### Task 6 (M3)

Design and implement a promotional letter in MS Word that will be sent to all Mia's customers advertising the fact that her stores now provide cakes and a variety of mouth-watering pastries. This letter will need to make use of Word's Mail Merge feature to obtain all the customers' details from MS Access. You will need to make sure that the letter's template is professionally presented.

### Task 7 (P7)

Once you have completed the database, you will need to make sure that the database is working correctly. You are required to create a test plan (see **Figure one**) that tests the main database functionality.

Any test failures should be corrected and annotated using screen shots in a test log.

#### Figure One Test Plan

Tester:

Test Location:            Test Date:

Test No:	Purpose:	Test Data:	Expected Result:	Actual Result:	Pass/Fail:

### Task 8 (D2)

Write a report that examines the completed database and produce a detailed evaluation of how the finished product meets all the user needs and requirements as stated in the original assignment brief.

#### Submission

1. Sign the cover sheet.
2. Make sure your work has page numbers and the header with your Edexcel Registration No, your course and your name.
3. Include Content Page, Bibliography and use Headings within the main body.
4. Cross-reference page numbers on Assignment's sheet 2.
5. Put the work in a plastic wallet/s.

**N.B.** Keep back-up copies

**Sources of information**

www.databasedev.co.uk

Hernandez M – *Database Design for Mere Mortals: A Hands-on Guide to Relational Database Design, 2nd Edition* (Addison Wesley, 2003) ISBN 0201752840

Kroenke D – *Database Concepts, 2nd Edition* (Prentice Hall, 2004) ISBN 0131451413

Ritchie C – *Relational Database Principles* (Thomson Learning, 2002) ISBN 0826457134

**Please ensure all evidence is printed and submitted.**