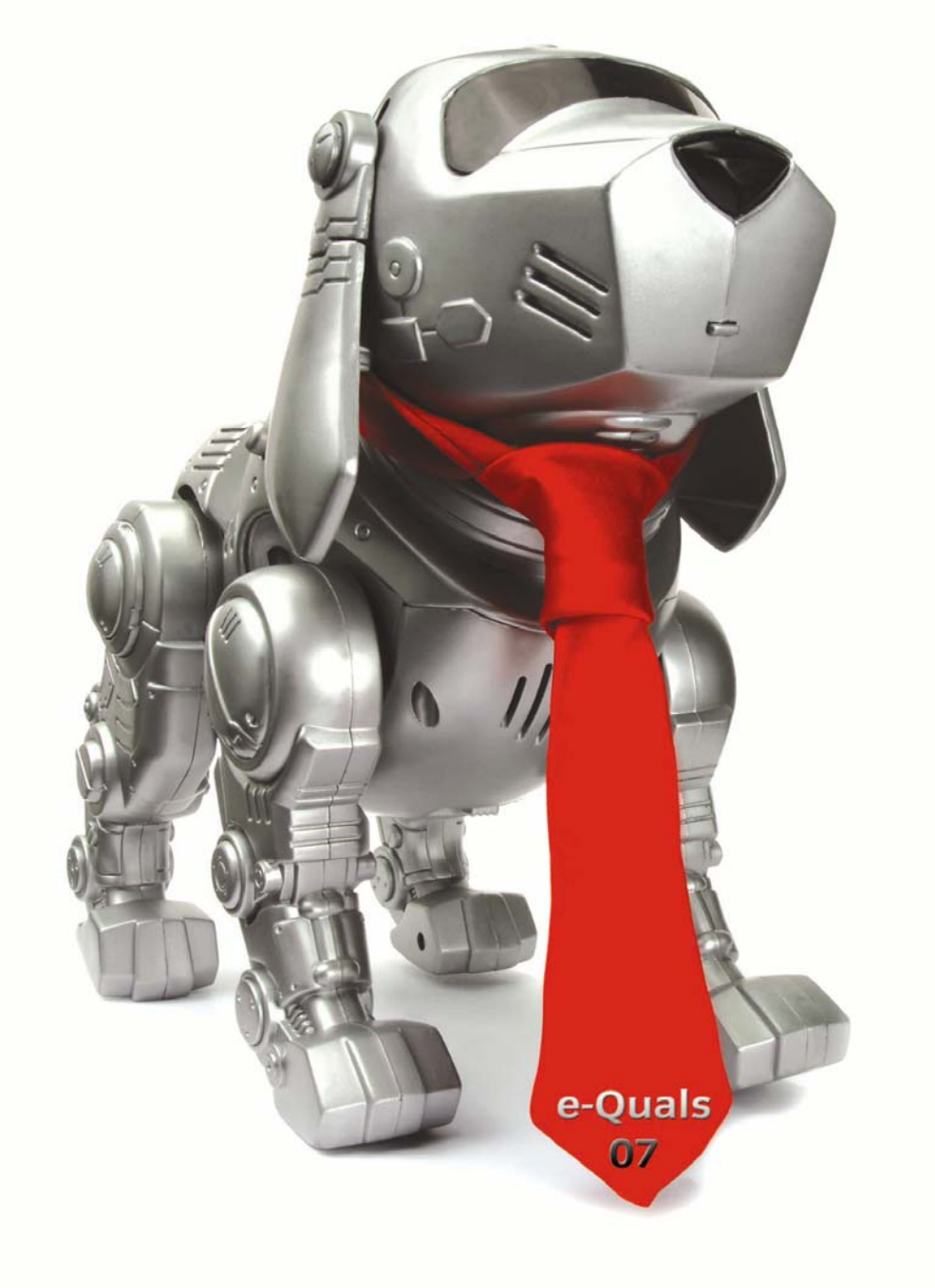
Level 3 Develop software using Visual Basic.NET (7266/7267-307)

e-Quals
Assignment guide for Candidates
Assignment B

www.cityandguilds.com/e-quals07
November 2008
Version 2.0



About City & Guilds
City & Guilds is the UK's leading provider of vocational qualifications, offering over 500 awards across a wide range of industries, and progressing from entry level to the highest levels of professional achievement. With over 8500 centres in 100 countries, City & Guilds is recognised by employers worldwide for providing qualifications that offer proof of the skills they need to get the job done.

City & Guilds Group
The City & Guilds Group includes City & Guilds, ILM (the Institute of Leadership & Management) which provides management qualifications, learning materials and membership services, NPTC which offers land-based qualifications and membership services, and HAB (the Hospitality Awarding Body). City & Guilds also manages the Engineering Council Examinations on behalf of the Engineering Council.

Equal opportunities
City & Guilds fully supports the principle of equal opportunities and we are committed to satisfying this principle in all our activities and published material. A copy of our equal opportunities policy statement is available on the City & Guilds website.

Copyright
The content of this document is, unless otherwise indicated, © City & Guilds Limited and may not be copied, reproduced or distributed without prior written consent.

However, approved City & Guilds centres and learners studying for City & Guilds qualifications may photocopy this document free of charge and/or include a locked PDF version of it on centre intranets on the following conditions:

- centre staff may copy the material only for the purpose of teaching learners working towards a City & Guilds qualification, or for internal administration purposes
- learners may copy the material only for their own use when working towards a City & Guilds qualification

The *Standard Copying Conditions* on the City & Guilds website also apply.

Please note: National Occupational Standards are not © City & Guilds Limited. Please check the conditions upon which they may be copied with the relevant Sector Skills Council.

Publications
City & Guilds publications are available on the City & Guilds website or from our Publications Sales department at the address below or by telephoning +44 (0)20 7294 2850 or faxing +44 (0)20 7294 3387.

Every effort has been made to ensure that the information contained in this publication is true and correct at time of publication. However, City & Guilds products and services are subject to continuous development and improvement, and the right is reserved to change products and services from time to time. City & Guilds cannot accept responsibility for any loss or damage arising from the use of information in this publication.

City & Guilds
1 Giltspur Street
London EC1A 9DD
T +44 (0)20 7294 2800
F +44 (0)20 7294 2400
www.cityandguilds.com
learnersupport@cityandguilds.com

Contents

Introduction – Information for Candidates	2
Level 3 Develop software using Visual Basic.NET (7266/7267-307) Candidate instructions	3

Level 3 Develop software using Visual Basic.NET (7266/7267-307) Assignment B

Introduction – Information for Candidates

About this document

This assignment comprises part of the assessment for Level 3 Develop software using Visual Basic.NET (7266/7267-307).

Health and safety

You are asked to consider the importance of safe working practices at all times.

You are responsible for maintaining the safety of others as well as your own. Anyone behaving in an unsafe fashion will be stopped and a suitable warning given. You will **not** be allowed to continue with an assignment if you compromise any of the Health and Safety requirements. This may seem rather strict but, apart from the potentially unpleasant consequences, you must acquire the habits required for the workplace.

Time allowance

The recommended time allowance for this assignment is **6 hours**.

Level 3 Develop software using Visual Basic.NET (7266/7267-307) Candidate instructions

Candidates are advised to read **all instructions** carefully before starting work and to check with your assessor, if necessary, to ensure that you have fully understood what is required.

Time allowance: 6 hours

Assignment set up: A scenario is provided below for this assignment.

This assignment is made up of **two** tasks

- **Task A** - provides a detailed design specification for software to access a database with a graphical user interface.
- **Task B** - provides presentation criteria that should be followed by candidates when producing their work.

Scenario

A software development company, Tricolour Databases, is developing a program with a Graphical User Interface (GUI) for use with a client's database. As a contracted employee of Tricolour Databases, you have been asked to design, create and test the software to access an external database (BookSeller) table (Book). The interface to the database table must enable the user to do the following:

- display individual records
- add a new record
- delete a record
- edit a record
- update a record
- cancel amendments for a record
- cancel all amendments made to the table
- print records.

A pre-prepared database (BookSeller) containing book details is to be used. The database contains a single table named Book with the following fields:

Field Name	Data Type	Field Length
ISBN No (Primary Key)	Text	10
Title	Text	30
Author	Text	20
Publisher	Text	15
Date Published	Date (dd/mm/yyyy)	
Available	Logical (Yes/No)	1
Price	Currency, 2 decimal places	

The **ISBN No** field is a primary key and there cannot be duplicate entries in this field and a zero-length entry is not allowed.

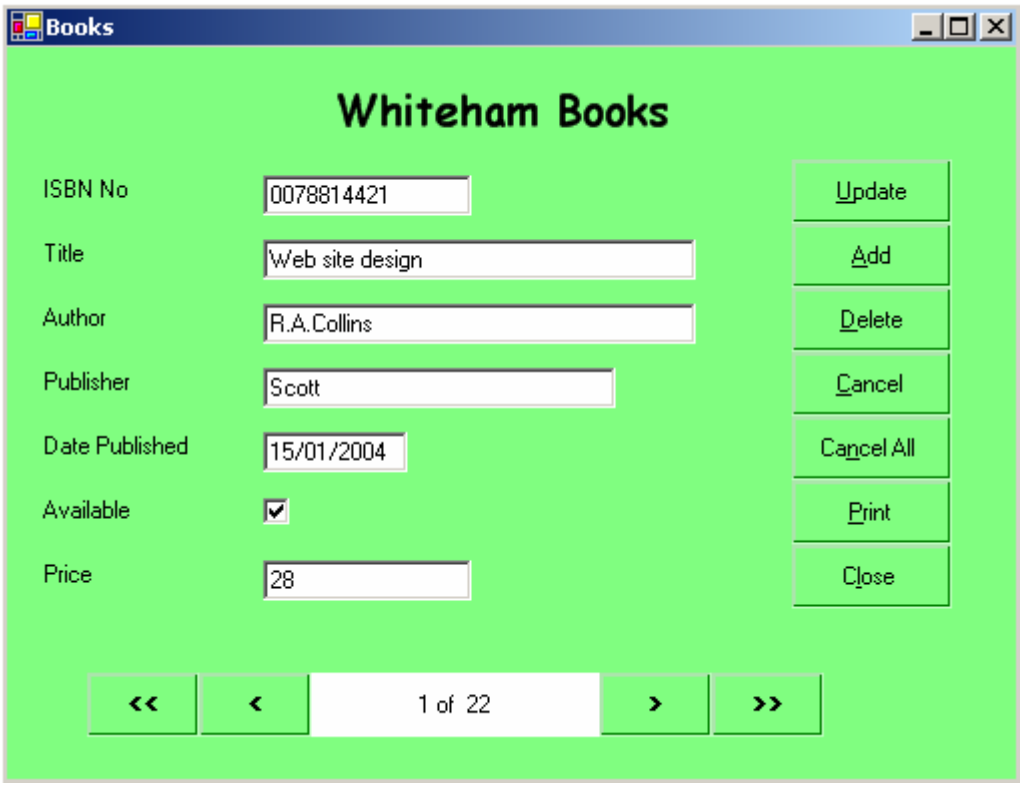
Task A

Candidates should use the following detailed specification to fulfil the company's requirements.

In this task you are required to design, create and test an application to access an external database (BookSeller) with a table (Book), via a database connection and a data form.

Copy the database file(s) that you have been given into the same directory as your project. Make a backup copy of the files in another directory.

1 Save the project at regular intervals as you work through the task. Save the form file as frmBooks and the project as Assignment2.



frmBooks

2 Create a data form that shows a single record to appear similar to the form shown above and includes

- a label for the heading **Whiteham Books** in bold with a different font and a larger font size
- seven controls and associated labels to display the data for the record
- controls to move to the first, previous, next and last record and a record count
- seven buttons for Update, Add, Delete, Cancel, Cancel All, Print and Close adding the shortcuts as shown
- set the background to a suitable colour
- the data input controls receiving focus in an appropriate order.

3 Set the title of the data form frmBooks to: Books *your name* and the date.

4 Make a connection to the database BookSeller using suitable parameters.

5 Insert code so that when the data form is loaded the dataset is loaded automatically and the data for the first record is displayed in the controls.

6 Insert code for the Update, Add, Delete, Cancel and Cancel All buttons.

7 Write code for the controls to move to the first, previous, next and last records.

8 Write code to display the current record number and record total in the form n of nn as shown on the form frmBooks.

9 Insert the code required to handle errors for database access which prevents run-time errors.

10 Write code for the Close button to terminate the program.

11 Write code to validate the ISBN number. The international standard for allocating reference numbers for published books (ISBN) is based on a 10 character entry. The rightmost character may be any number between 0 (zero) to 9 or the character X. The remaining nine characters (leftmost) are always numbers between the value 0 (zero) to 9.

The 10 characters are validated by a modulus 11 check (see Appendix A). The X character counts as a 10.

Typical examples of ISBN reference numbers are:

013527754X
0078814421
0201182440
0672226324

Output the following error messages if the ISBN number is not valid.

Error Number	Error Message
1	1: ISBN Number must be 10 characters
2	2: ISBN Number is not a valid modulus 11 number

12 Write Code for the Print button to print out all the records with the fields ISBN No, Title, Available and Price in the database with a layout similar to that shown below where 9 indicates a digit and X indicates an alphanumeric character.

Note the field Available should be printed as either Yes or No.

Whiteham Books **Page 99**

Date 99/99/9999

ISBN No	Title	Available	Price
XXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXX	£99.99
XXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXX	£99.99
XXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXX	£99.99
XXXXXXXXXX	XXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	XXX	£99.99

13 Create test data to test the Update, Add, Delete, Cancel, Cancel All and Print buttons on the data form frmBooks and determine the expected results.

14 Prepare a test plan, test the software, compare the actual results to the expected results keeping a log for each test which identifies any discrepancies between actual and expected results and records any amendments made to correct errors.

15 Locate the EXE file or create if not automatically generated.

16 Run the executable file to demonstrate the software.

17 Produce technical documentation to describe the database design, connection details, and purpose of the software.

18 Produce end user documentation.

19 Print a program listing and screen print of the form frmBooks.

Task B

Candidates should check that the program produced meets the following requirements.

1 The program must conform to the design specification.

2 The code must be structured.

3 The program uses the most appropriate controls and events.

4 Meaningful names are used for controls and procedures using consistent naming conventions.

5 The program syntax must be consistently indented to aid readability.

6 The program must be commented to aid future maintenance.

Note

- Candidates should produce the following for their assessor:
  - A printed program listing.
  - Printout of the frmBooks data form.
  - Test data, test plan, expected results, actual results, log of testing and test output.
  - Technical documentation.
  - End user documentation.
  - A disk containing the files created.
- At the conclusion of this assignment, hand all paperwork and removable media to the test supervisor.
- Ensure that your name is on the removable media and all documentation.
- If the assignment is taken over more than one period, all removable media and paperwork must be returned to the test supervisor at the end of each sitting.

Appendix A

Modulus 11 check

A modulus 11 check is carried out as follows:

Multiply each digit in the ISBN number, staring at the right, by the number 1, then 2, then 3 etc.

Multiply by	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
ISBN number	0	1	3	5	2	7	7	5	4	X
Result	0	9	24	35	12	35	28	15	8	10

The result of each multiplication is added together.

0 + 9 + 24 + 35 + 12 + 35 + 28 + 15 + 8 + 10 = 176

The result of the addition is then divided by the modulus (11).

176 divided by 11 = 16 reminder 0

If the remainder from the division is 0 the ISBN number is a valid modulus 11 number otherwise the ISBN number is not a valid modulus 11 number.

The remainder is 0 so the ISBN number 013527754X is a valid modulus 11 number.

Published by City & Guilds
1 Giltspur Street
London
EC1A 9DD
T +44 (0)20 7294 2468
F +44 (0)20 7294 2400
www.cityandguilds.com

City & Guilds is a company registered in England and Wales (company number 16513878)