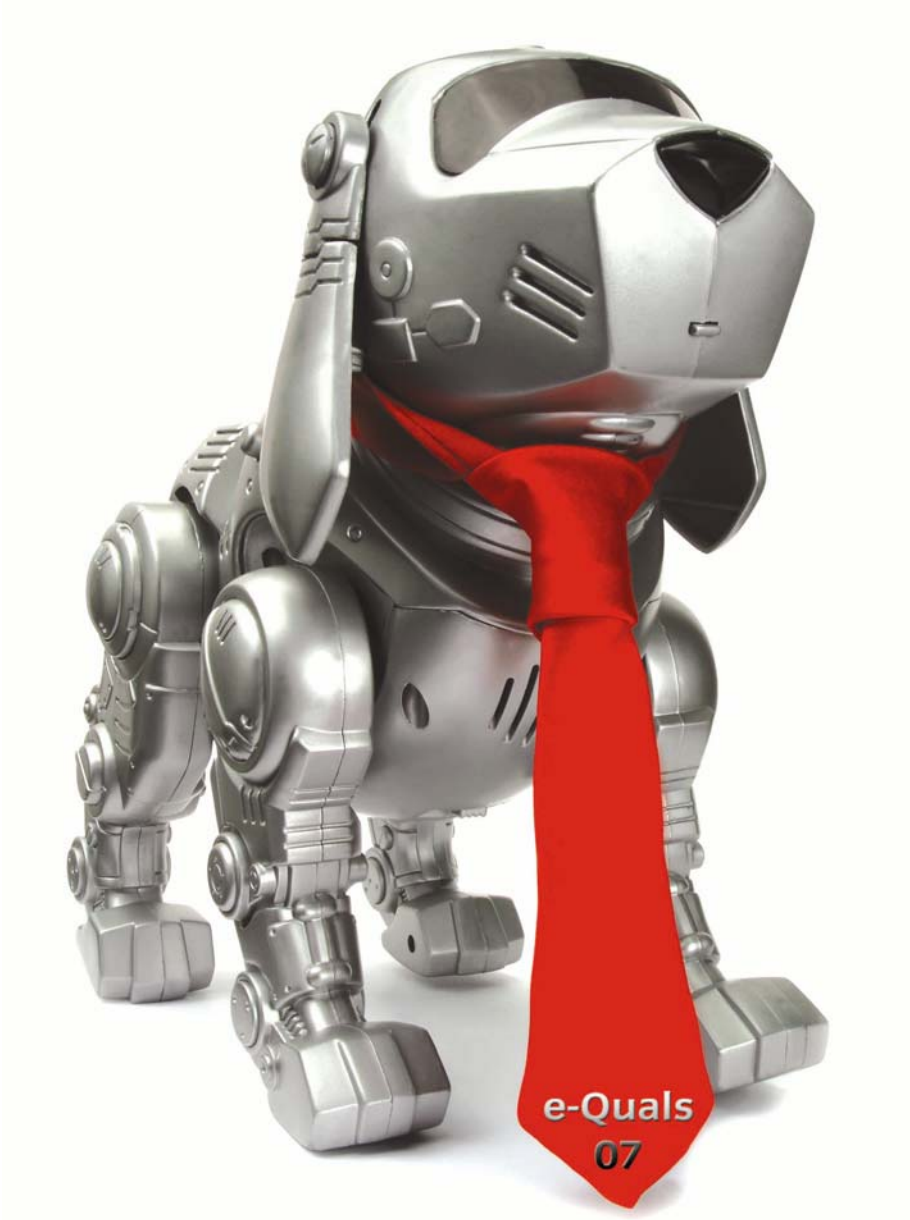
Level 2 Create software components using C# (7266-206)

e-Quals
Assignment guide for Candidates
Assignment C

www.cityandguilds.com/e-quals07
March 2008
Version 1.0



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Level 2 Create software components using C# (7266-206)
Assignment C

Introduction – Information for Candidates

About this document

This assignment comprises part of the assessment for Level 2 Create software components using C# (7266-206).

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 **4 hours**.

Level 2 Create software components using C# (7266-206)
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: 4 hours

Assignment set up:

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

- Task A - Create software from a given design specification
- Task B - Test the software and produce documentation

Scenario

You work as a software developer for MSA Educational Software a company which develops software for educational training. You have been asked to create and test software for multiple choice questions.
The software will include the following functionality:

- password entry to prevent unauthorised use
- display of one question at a time to allow the user to choose one answer from a selection of A, B, C and D
- a button to move to the next question
- a button to move to the previous question
- a button to check the number of answers which are correct
- display of the number of questions answered correctly
- allow the user to change an answer for a question.

Task A

In this task you are required to create software to provide multiple choice questions to test a user's knowledge of C#.

1 Save the project at regular intervals as you work through the task. Save the form as frmQuiz and the Project as MCQQuiz.

2 No variables in the class, for the form, should be declared as public and where possible variables should be declared locally within a function.

3 Declare a constant within the class which contains the string value "\r\n" which is to be used to position text in the question text box on to a new line.

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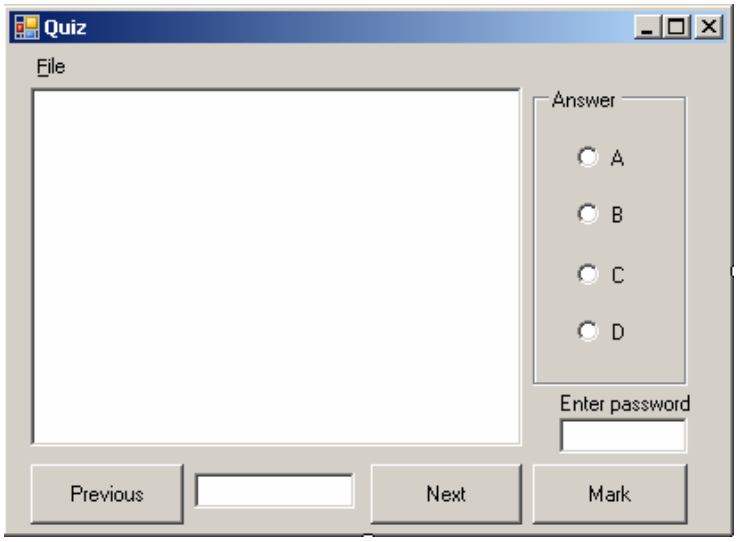

frmQuiz

Create a form to appear similar to the form shown above as follows:

- add a TextBox named txtQuestion with the following:
  - Multiline property set to True
  - Font set to Bold
  - Enabled property set to False
- add a GroupBox named grpAnswer with the Text property set to Answer
  - place four RadioButtons within the group box named radA, radB, radC and radD with Text properties set to A, B, C and D
- add three Buttons named btnPrevious, btnNext and btnMark with their Text properties set to Previous, Next and Mark
- add a TextBox named txtNumber (between the buttons Previous and Next) with the following:
  - Enabled property set to False
  - TextAlign property set to Center
- the Visible property set to False for the two text boxes txtQuestion and txtNumber, the GroupBox grpAnswer and the three buttons btnPrevious, btnNext and btnMark.
- add a menu with two menu options named mnuFile and mnuExit with their Text properties set to File and Exit
- add a Label with the Text property set to Enter password
- add a TextBox (under the Label) with the PasswordChar property set to an appropriate character
- the StartPosition property of the form set to CenterScreen.

5 Set the Text property of the form frmQuiz to:
Quiz *your name* and today's date

6 Declare any single dimension arrays required, within the class, to hold the data e.g. questions, correct answers, user answers.

7 Write code so that when the form is loaded the appropriate data is stored, in the arrays, for the FIVE questions which follow:

Question 1

The TabIndex property of controls is used to
A. set the number of controls on a form
B. set the size of a tab for indenting text in a control
C. preset the order in which controls receive focus
D. set the number of tabs in a TextBox
Answer is C

Question 2

Which is the active control on a form?
A. The control with TabIndex = 1
B. Any control with Enabled = true
C. The control at the top left of the form
D. The control with the focus
Answer is D

Question 3

A menu option which has a character underlined can be accessed by
A. CTRL + character key
B. ALT + character key
C. CTRL + ALT + character key
D. F1 + character key
Answer is B

Question 4

Which property can have a value of true or false?
A. WordWrap
B. TextAlign
C. Interval
D. Items
Answer is A

Question 5

Which control allows a user to select from a list?
A. GroupBox
B. TextBox
C. ComboBox
D. CheckBox
Answer is C

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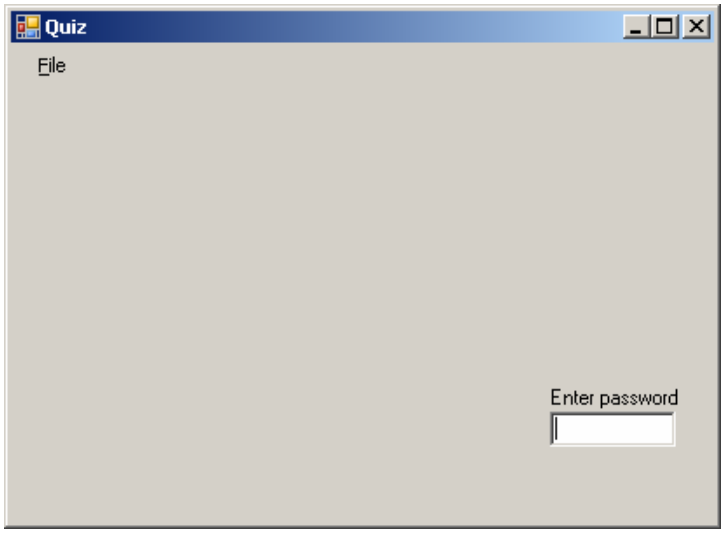

Figure 1

When the form is first displayed it should appear as shown above in Figure 1.
Write code so that when the user enters the correct password the following actions are performed:

- the password text box background colour is changed to dark green
- the password text box remains on screen long enough for the user to see the change of colour.
- the label and textbox for the password are made invisible
- all the other controls on the form are made visible
- the background colour of the form is set to light blue
- the background colour of the text box txtQuestion is set to light yellow
- the first question is displayed in the text box txtQuestion as shown below in Figure 2
- the number of the question and the total number of questions is displayed in the text box txtNumber in the format 'n of nn' as shown below in Figure 2.

The form should then appear similar to the one shown below in Figure 2.

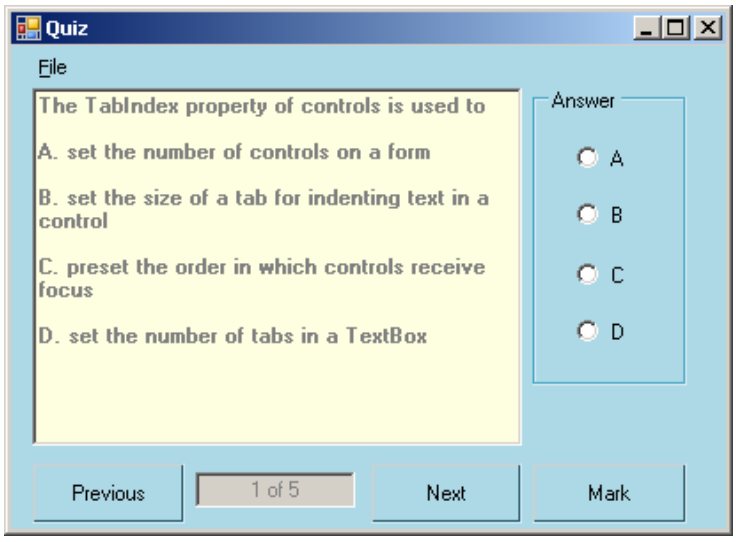

Figure 2

9 Write code for each radio button radA, radB, radC and radD to store the user answer for that question.

10 Write code for the Next button to display the next question in the text box txtQuestion and update the data in the text box txtNumber.
If this question has already been displayed then the user's previous selection for the answer should be displayed otherwise all the radio buttons should be empty.
A message box, with an appropriate message, should be displayed if the user presses the Next button and there are no more questions to be displayed.

11 Write code for the Previous button to display the previous question in the text box txtQuestion and update the data in the text box txtNumber.
If this question has already been displayed then the user's previous selection for the answer should be displayed otherwise all the radio buttons should be empty.
A message box, with an appropriate message, should be displayed if the user presses the Previous button and the first question is displayed in txtQuestion.

12 Write code for the Mark button to check the user's answer for each question. Display a message box to the user to show the number of questions that have been answered correctly eg 'Number of questions answered correctly is n'
The software must allow the Mark button to be used more than once so that the user can change the answer for any question.

13 Write code for the Exit menu option that terminates the software.

Task B

In this task you are required to test the software and produce documentation.

1 Create test data and expected results. Test the software and compare the expected results to the actual results and correct any errors found.

2 Create or locate the EXE file and demonstrate that the software works correctly.

3 Produce a program listing of the code for the software.

4 Produce a screen print of the form frmQuiz while the software is running ie as Figure 2.

Candidates should check that the software produced meets the following criteria.

5 The software conforms to the design specification.

6 The code of the program is commented.

7 Meaningful names are used for constants, variables, and controls using a consistent naming convention.

Note

- Candidates should produce the following for their assessor:
  - a printed program listing
  - screen print of the form frmQuiz
- Ensure that your name is on all documentation
- If the assignment is taken over more than one period, all paperwork must be returned to the test supervisor at the end of each sitting.

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