Level 2 Create Software Components Using C# (7266/7267-206)

e-Quals
Assignment guide for Candidates
Assignment B
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, © The City and Guilds of London Institute 2007 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 © The City and Guilds of London Institute. 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 the time of going to press. 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 liability for 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

**Level 2 - Create Software Components Using C# (7266-206)**

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction – Information for Candidates</td>
<td>2</td>
</tr>
<tr>
<td>Candidate instructions</td>
<td>3</td>
</tr>
</tbody>
</table>
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.
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:** A scenario is provided for candidates in the form of a company specification for a new project

This assignment is made up of four tasks

- **Task A** - provides a detailed design specification that should be followed by candidates when developing their program
- **Task B** - requires the production of evidence to show that the program conforms to the design specification
- **Task C** - provides presentation criteria that should be followed by candidates when producing their work
- **Task D** - lists the evidence to be produced for this assignment.

**Scenario**

You have applied for a job as a trainee programmer for a local software company. The job specification requires you to already have a basic knowledge of programming in C#. In order to assess your suitability, your prospective employer requires you to demonstrate your C# skills by writing and testing a short program.

You are required to produce a simple word-processor/notepad to the company’s specific design. The task is designed to test your ability to manipulate text within a rich file text box as well as opening and saving .rtf files. Your program must include a working menu and tool bars. In addition you are required to produce evidence that you have used the built-in debugging facilities and that the program has been fully tested and documented.
The following screen prints form a part of the design/requirements and will be referred to in the following detailed design specification.

**Fig 1**

**Fig 2**

**Fig 3**

**Fig 4**
Task A

1. You are advised to save your work at regular intervals. The project is to be saved as RTFBoxes and the main form saved as frmMyNotepad.

2. Public variables may be used, but as far as possible local variables must be declared.

3. frmMyNotepad to be created similar to that shown in Fig 1. At design the following properties are to be set to:
   - StartPosition: CenterScreen
   - Text: My Notepad
   - WindowState: Maximised

4. As shown in Fig 1, frmMyNotepad must include the following components:
   - A tool strip named “tstCommands”
   - A menu strip named “mnuOptions”
   - A rich text box named “rtfBox”
   - A dateTimePicker named “dtpMenu”

5. Set the properties at design for rtfBox to:
   - Dock = Fill
   - Font name = Arial
   - Font size = 12pt

6. Add the following nine buttons to the tool strip tstCommands:

<table>
<thead>
<tr>
<th>Name</th>
<th>Display Style</th>
<th>Text</th>
</tr>
</thead>
<tbody>
<tr>
<td>tstDefault</td>
<td>Text</td>
<td>Default</td>
</tr>
<tr>
<td>tstNewFont</td>
<td>Text</td>
<td>New_Font</td>
</tr>
<tr>
<td>tstRed</td>
<td>Text</td>
<td>Red_Text</td>
</tr>
<tr>
<td>tstBold</td>
<td>Text</td>
<td>Bold</td>
</tr>
<tr>
<td>tstItalic</td>
<td>Text</td>
<td>Italic</td>
</tr>
<tr>
<td>tstCopy</td>
<td>Text</td>
<td>Copy</td>
</tr>
<tr>
<td>tstPaste</td>
<td>Text</td>
<td>Paste</td>
</tr>
<tr>
<td>tstOpen</td>
<td>Text</td>
<td>Open_File</td>
</tr>
<tr>
<td>tstSave</td>
<td>Text</td>
<td>Save_File</td>
</tr>
</tbody>
</table>

7. Add a dateTimePicker named “dtpMenu” to the right hand side of the tool strip tstCommands and set its anchor property to Top, Right

8. Size the nine buttons to make them all the same width and height

9. Add two items to the menu strip mnuOptions with the following properties set at design:

<table>
<thead>
<tr>
<th>Name</th>
<th>Text</th>
<th>FontBold</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10 Add the following sub menu items to menuFile at design:

<table>
<thead>
<tr>
<th>Name</th>
<th>Text</th>
<th>FontBold</th>
</tr>
</thead>
<tbody>
<tr>
<td>mnuNew</td>
<td>New</td>
<td>False</td>
</tr>
<tr>
<td>mnuFileOpen</td>
<td>Open_File</td>
<td>False</td>
</tr>
<tr>
<td>mnuFileClose</td>
<td>Save_File</td>
<td>False</td>
</tr>
<tr>
<td>mnuExit</td>
<td>Exit</td>
<td>False</td>
</tr>
</tbody>
</table>

11 Add the following sub menu items to menuEdit at design:

<table>
<thead>
<tr>
<th>Name</th>
<th>Text</th>
<th>FontBold</th>
</tr>
</thead>
<tbody>
<tr>
<td>mnuDefault</td>
<td>Default</td>
<td>False</td>
</tr>
<tr>
<td>mnuFont</td>
<td>New_Font</td>
<td>False</td>
</tr>
<tr>
<td>mnuRed</td>
<td>Red_Text</td>
<td>False</td>
</tr>
<tr>
<td>mnuBold</td>
<td>Bold</td>
<td>False</td>
</tr>
<tr>
<td>mnuItalic</td>
<td>Italic</td>
<td>False</td>
</tr>
<tr>
<td>mnuCopy</td>
<td>Copy</td>
<td>False</td>
</tr>
<tr>
<td>mnuPaste</td>
<td>Paste</td>
<td>False</td>
</tr>
</tbody>
</table>

12 Write code that at form load sets the open and save file properties to the file type “.rtf” and sets the default extension for files to “.rtf”

13 Write code that responds to the tool strip click events and causes the changes shown below for any highlighted text.

- Clicking ‘Default’ returns the text to font Arial, 12, Regular.
- Clicking ‘New_Font’ must cause the font dialog box to be displayed in order to select a new font, size or style for the text and for any change to take effect.
- Clicking ‘Red’ must cause that text to change to the colour red.
- Clicking ‘Bold’ must cause the text to be highlighted as bold.
- Clicking ‘Italic’ must cause the text to be changed to italic.
- Clicking ‘Copy’ must cause the text to be copied to the clipboard.
- Clicking ‘Paste’ must cause the copied text to be inserted at the cursor position.

14 Clicking ‘Open_File’ must open the open file dialog box. Only .rtf files should be visible.

15 Clicking ‘Save_File’ must open the save file dialog box. The default file type must be in the .rtf format.

16 When the program executes the rich text box is to display the current date (as shown in dtpMenu) as a long date as shown in Fig 1 followed by a colon (:) and some spaces (eg 3 or 4 spaces).

17 When clicking in the rich text box the cursor position must be to the right of the date awaiting user input. (eg at the end of the spaces).
18 Enter the text “City and Guilds C# Programming” into the rich text box.

19 Copy the text “City and Guilds C# Programming” and past it four times, each on a new line and using the tool strip buttons make the following changes as shown in Fig 2:
   Original line to be left as the default text.
   Copied line 1 = New font – Times New Roman,16 pt
   Copied line 2 = Bold
   Copied line 3 = Italic
   Copied line 4 = “City and Guilds” only changed to red text.
   Copied line 5 = New font – Arial, 20pt

20 Save the file as Demo1.rtf

21 Open the file Demo1.rtf, highlight the last line (Copied line 5 - Arial, 20pt) and click on ‘Default’. The text must change to the default font of Arial,12pt.

22 Click ‘Save_File’ and save the modified text as Demo2.rtf

23 Repeat tasks 19 to 22 to test the menu strip items. Save the two files as Demo3.rtf and Demo4.rtf

24 Clicking on the menu strip item File|New must cause the save file dialog box to open defaulted to .rtf file types.

25 Having saved the file or cancelled the save option the rich text box must be cleared of any text and the current date inserted as Fig 1.

26 Create a Yes/No message box titled “Save Reminder” that becomes visible when the user clicks on the menu strip item File|Exit. The text must be “Do you want to save this work?” and the icon must be a question mark. See Fig 3.

27 Clicking ‘Yes’ in the message box must cause the save file dialog box to appear.

28 Create a second Yes/No message box titled “Application Exit” that becomes visible when the file is saved or the user clicks on the ‘No’ button. The message box text must be “Are you sure that you want to exit?” and the icon must be a question mark. See Fig 4.

29 Clicking ‘No’ will continue with the application in its current state while clicking ‘Yes’ must close/exit the application.

30 Add shortcut keys to the menu options.

Task B
Candidates must evidence the following in order to confirm that the program conforms to the design specification.

1 Produce screen prints to show that the debug facilities in C# have been used to locate logical errors (i.e. Breakpoint, Step Into etc.)

2 Produce test data that shows expected results from known inputs.

3 Create or locate the executable file for this program and tests its operation.
4 Produce a record (test log) of the actual results and then compare them to the expected results and correct any errors.

**Task C**
*Candidates should check that the program produced meets the following criteria.*
1 The program must conform to the design specifications given.
2 The program uses appropriate controls and methods.
3 Meaningful names are used for controls and methods using consistent naming conventions.
4 The program syntax must be consistently indented to aid readability.
5 The program must be commented to aid future maintenance.

**Task D**
*Candidates should produce the following for their assessor.*
1 Print a program listing of the code.
2 Produce screen prints of:
   - frmMyNotepad
   - Message box “Save Reminder”
   - Message box “Application Exit”
   - Contents of the file Demo1.rft
   - Contents of the file Demo2.rtf
3 Save all project files to removable media or state the file locations

**Note**
- At the conclusion of this assignment, hand all paperwork and removable media to the test supervisor.
- Ensure that your name is on any 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.