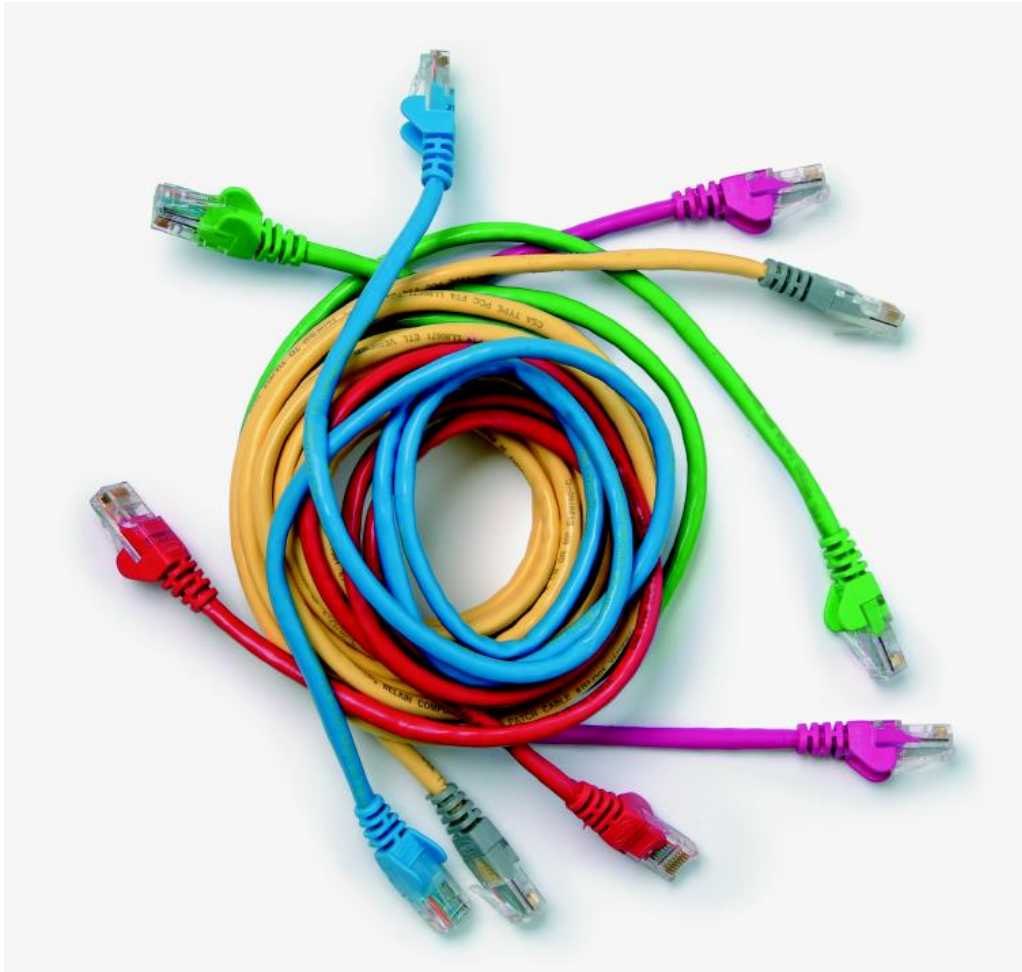


# Level 2 Creating an event driven computer program using Visual Basic.NET (7540-009)

## Systems and Principles Assignment guide for Candidates Assignment C



## 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)844 543 0000 (Centres)**

**T +44 (0)844 543 0033 (Learners)**

**F +44 (0)20 7294 2413**

**[www.cityandguilds.com](http://www.cityandguilds.com)**

**[learnersupport@cityandguilds.com](mailto:learnersupport@cityandguilds.com)**

# Contents

Introduction – Information for Candidates	2
Candidate instructions	3

# Level 2 Creating an event driven computer program using Visual Basic.NET (7540-009) Assignment C

## Introduction – Information for Candidates

### About this document

This assignment comprises all of the assessment for Level 2 Creating an event driven computer program using Visual Basic.NET (7540-009).

---

### 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 Creating an event driven computer program using Visual Basic.NET (7540-009)

### 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:** A scenario is provided below for this assignment.

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 candidate to demonstrate that debugging and testing have taken place.
- **Task C** - provides criteria that should be followed by candidates when producing their work.
- **Task D** - lists what the candidate should produce for their assessor.

### Scenario

You work for a local software company as a programmer. Your employer has been approached by a local builder (Roberts Builders) to supply a program to give estimates to their customers either over the telephone or by visiting their premises.

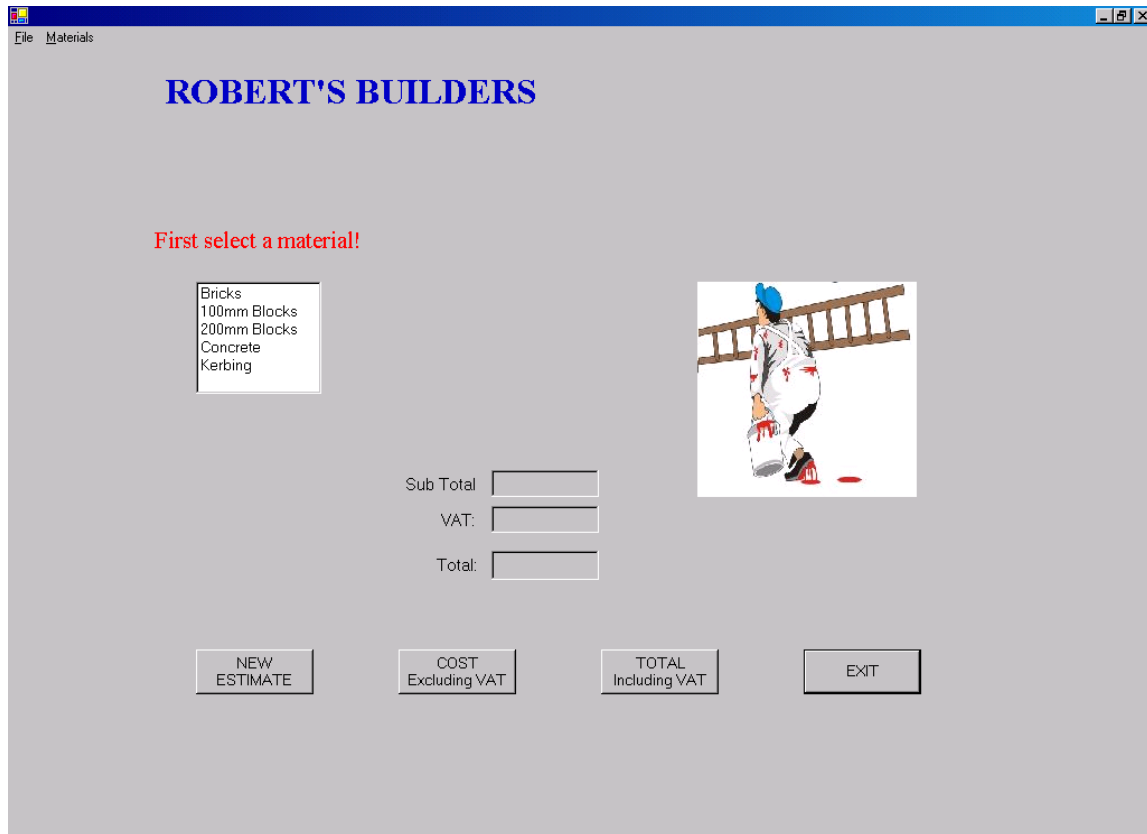
Roberts Builders specifically deals with foundation work, building brick or block-work walls and kerbing. The materials they supply cost: -

Bricks @ 25p each  
100mm Building Blocks @ £1.50 each  
200mm Building Blocks @ £2.50 each  
Concrete @ £25 cubic metre  
Kerbing @ £5 each section

For calculation purposes, the number of bricks, blocks or kerbing required are worked out as follows: -

1 square metre = 50 bricks  
1 square metre = 16 blocks (for both 100mm or 200mm blocks)  
1 metre length = 2 sections of kerbing

Your employer has already interviewed the client and it is requested that the final form be similar to the following screen prints and outline specification: -



**Figure 1**

**VIEW AT START-UP or CLICKING THE NEW ESTIMATE BUTTON**

A message must be displayed stating “First select a material!” over the materials list box.

All text boxes for the input of Length, Height and Width and their respective labels are hidden from view. The remaining text boxes should not contain any values and no other information as shown.

**Enter the dimensions below**

Bricks  
**100mm Blocks**  
 200mm Blocks  
 Concrete  
 Kerbing

Length

mtrs

Height

mtrs


Area

sq mtrs

Sub Total

VAT:

Total:



**Figure 2**

### SELECTION OF BRICKS or BLOCKS

Selection of Bricks, 100mm Blocks or 200mm blocks from a list box must cause the display of the Length and Height text boxes and their related labels.

**Note:** If Kerbing is selected only the Length text box and its related label is to be displayed.

**Enter the dimensions below**

Bricks  
 100mm Blocks  
 200mm Blocks  
**Concrete**  
 Kerbing

Length

mtrs

Depth

mtrs

Width:

mtrs


Area

cu mtrs

Sub Total

VAT:

Total:



**Figure 3**

### SELECTION OF CONCRETE

Selection of Concrete must cause the display of Length, Depth and Width labels along with the related text boxes.

**Note:** Label text will have to be changed to accommodate this.

As with Figure 2 above, the message 'First select a material!' should be hidden from view and the new message 'Enter the dimensions below' displayed.

**Enter the dimensions below**

Length  mtrs

Depth  mtrs

Width:  mtrs

Area  cu mtrs

Sub Total

VAT:

Total:

**Figure 4**

### **CLICKING – COST Excluding VAT – BUTTON**

The Area is to be calculated and the right-hand label display sq mtrs, cu mtrs or mtrs as appropriate to the materials selected. The cost is then to be displayed in the Sub Total text box.

**Enter the dimensions below**

Length  mtrs

Depth  mtrs

Width:  mtrs

Area  cu mtrs

Sub Total

VAT:

Total:

**Figure 5**

### **CLICKING – TOTAL Including VAT - BUTTON**

The VAT (tax) is to be calculated and displayed in the VAT text box and the sum of the Sub Total and VAT displayed in the Total text box.

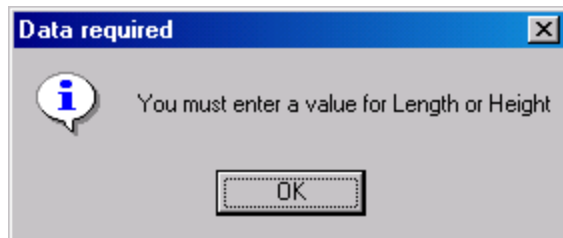
#### **Note:**

1. VAT is to be calculated at 17.5%



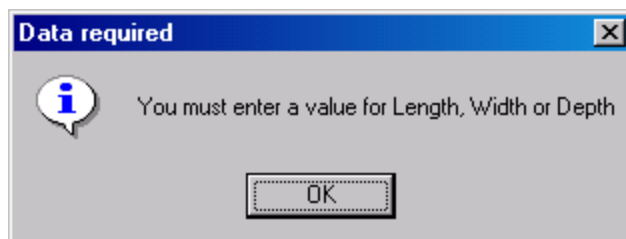
2. The client would like a suitable picture/graphic to be displayed on the form.
3. Clicking on the Exit button must cause the program to terminate.

The following represent the message boxes that should be displayed if the 'COST Excluding VAT' button is clicked and there is no data in an input text box.



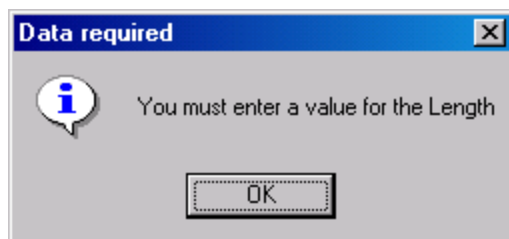
**Figure 6**

Bricks or Blocks selected from the List Box



**Figure 7**

Concrete selected from the List Box



**Figure 8**

Kerbing selected from the List Box

**Task A - provides a detailed design specification that should be followed by candidates when developing their program.**

*Candidates should use both the information above and the following detailed specification to fulfil the company's requirements.*

In this task you are required to create the user interface that consists of a list box, text boxes, labels, command buttons a picture and create menus.

Using the Integrated Development Environment:

- 1 Save the project at regular intervals as you work through the task. Save the form file as frmEstimate and the project file as Estimate.
- 2 The value for VAT **must** be defined as a constant
- 3 Using Figures 1 to 5 as a guide, create the user interface by selecting the appropriate components from the toolbox and following the design criteria specified in 5 to 10 below.
- 4 The title 'ROBERT'S BUILDERS' must be capitalised and set at design to:
  - Font: Times New Roman
  - Font style: Bold
  - Size: 24
  - ForeColor:
- 5 The label 'First select a material!' must be set at design to:
  - Font: Times New Roman
  - Font style: Regular
  - Size: 16
  - ForeColor: Red
- 6 The label 'Enter the dimensions below' must be set at design to:
  - Font: Times New Roman
  - Font style: Regular
  - Size: 16
  - ForeColor: Navy
- 7 All labels attached to text boxes must be set at design to:
  - Font: Microsoft Sans Serif
  - Font style: Regular
  - Size: 11
  - ForeColor: ControlText
  - BackColor: Control
  - TextAlign: MiddleRight
- 8 All text on Command Buttons must be set at design to:
  - Font: Microsoft Sans Serif
  - Font style: Regular
  - Size: 10
  - ForeColor: ControlText
  - TextAlign: MiddleCenter
- 9 The text boxes for 'Sub Total' and 'VAT' are to be set at design to:
  - BackColor: Control
  - Font: Microsoft Sans Serif
  - Size: 11
- 8 Assignment A Level 2 Creating an event driven computer program using Visual Basic.NET (7540-009)

Enabled: False

- 10 The text box 'Total' must be set at design to:
  - BackColor: Control
  - Font: Microsoft Sans Serif
  - Font style: Bold
  - Size: 12
  - Enabled: False
- 11 The remaining input text boxes should be set at design to:
  - Font: Microsoft Sans Serif
  - Size: 11
- 12 At Form\_Load the screen should look similar to that of Figure 1. The Length, Height and Width text boxes and their related labels hidden from view.
- 13 List box items (as shown in the scenario) are to be added at Form Load and **must** be in the order Bricks, 100mm Blocks, 200mm Blocks, Concrete and Kerbing.
- 14 The list box SelectedIndex value must be used to control the display of input text boxes as below:
  - On selection of Bricks, 100mm Blocks or 200mm blocks from the Materials list, the Length and Height text boxes shall be displayed along with their related labels.
  - On selection of Concrete from the Materials list, Length, Depth and Width text boxes shall be displayed along with their related labels. The text for the label for Height **must** be changed to 'Depth'.
  - On selecting Kerbing, only the Length text box and its label is to be displayed.
- 15 On clicking the 'COST Excluding VAT' button, the area must be calculated into square metres for Bricks, 100mm Blocks or 200mm blocks, cubic metres for Concrete or just the length in metres for Kerbing.

The value for square metres, cubic metres or length must be displayed in the Area text box with suitably updated labels before and after the value (ie Area or Length before and sq mtrs, cu mtrs or mtrs after).

The cost is also to be calculated (using the information supplied in the scenario) and the result displayed in the 'Sub Total' text box.
- 16 Clicking the 'COST Excluding VAT' button when no value has been entered into the required text boxes (eg Length and Height or Length, Width and Depth, or Length) **must** result in a suitable message box being displayed on screen to inform the user.

The message box should be similar to those shown in Figures 6 to 8.
- 17 Clicking on the 'New Estimate' command button should cause the program to reset. All values are to be set to zero, any values/text displayed in text boxes deleted as in Figure 1 and the text input boxes and related labels hidden from view.
- 18 Clicking on the 'TOTAL Including VAT' button should cause the VAT to be calculated and displayed and the sub total and VAT to be added and displayed in the 'Total' text box.
- 19 All values displayed in 'Sub Total', 'VAT' and 'Total' are to be formatted to currency (eg £11.75).

- 20 Clicking on the 'Exit' command button should cause the program to terminate.
- 21 The program must display a suitable picture or graphic towards the right hand side of the form that enhances the appearance of the program.
- 22 The following menus must be displayed for the program. 'File' and 'Materials'.
- 23 The 'File' menu option should have two menu options, 'New' and 'Exit'.
- 24 Selection of menu option 'New' should cause a new estimate to be generated as Figure 1 (Form Load).
- 25 Selection of menu option 'Exit' should cause the program to terminate.
- 26 The 'Materials' menu must have five menu options, Bricks, 100mm Blocks, 200mm Blocks, Concrete and Kerbing.
- 27 Selection of any of these menu options should cause the correct value to be assigned to the List Box SelectedIndex and the assigned screen display should be activated accordingly.

**Task B - requires the candidate to demonstrate that debugging and testing have taken place.**

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

- 1 Produce two screen prints to show that the debug facilities have been applied to locate errors (eg Set Breakpoint, remove Breakpoint, Step over, Step Into etc.)
- 2 Produce test data and determine expected results.
- 3 Test the program and compare the actual results to the expected results and correct any errors found.

**Task C - provides criteria that should be followed by candidates when producing their work.**

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

- 1 The program code is commented.
- 2 The program syntax is consistently indented to aid readability.

**Task D - lists what the candidate should produce for their assessor.**

*Candidates should produce the following for their assessor:*

- 10 Assignment A Level 2 Creating an event driven computer program using Visual Basic.NET (7540-009)

- 1 Print a program listing of the code.
- 2 Produce screen prints of frmEstimate, one at start-up (Figure 1) and one after the command button 'TOTAL Including VAT' has been clicked (Figure 5).
- 3 Create Technical documentation which states the purpose and operation of the program.

When you have finished working:

- Sign each document above your name and label all removable storage media with your name.
- Hand all paperwork and removable storage media to your assessor.

If the assignment is taken over more than one period, all paperwork and removable media must be returned to the test supervisor at the end of each sitting.

**End of assignment**

---

**Published by City & Guilds**  
**1 Giltspur Street**  
**London**  
**EC1A 9DD**  
**T +44 (0)844 543 0000 (Centres)**  
**T +44 (0)844 543 0033 (Learners)**  
**F +44 (0)20 7294 2413**  
**[www.cityandguilds.com](http://www.cityandguilds.com)**

**City & Guilds is a registered charity**  
**established to promote education**  
**and training**