Level 2 Create software components using Visual Basic.NET (7266-207)

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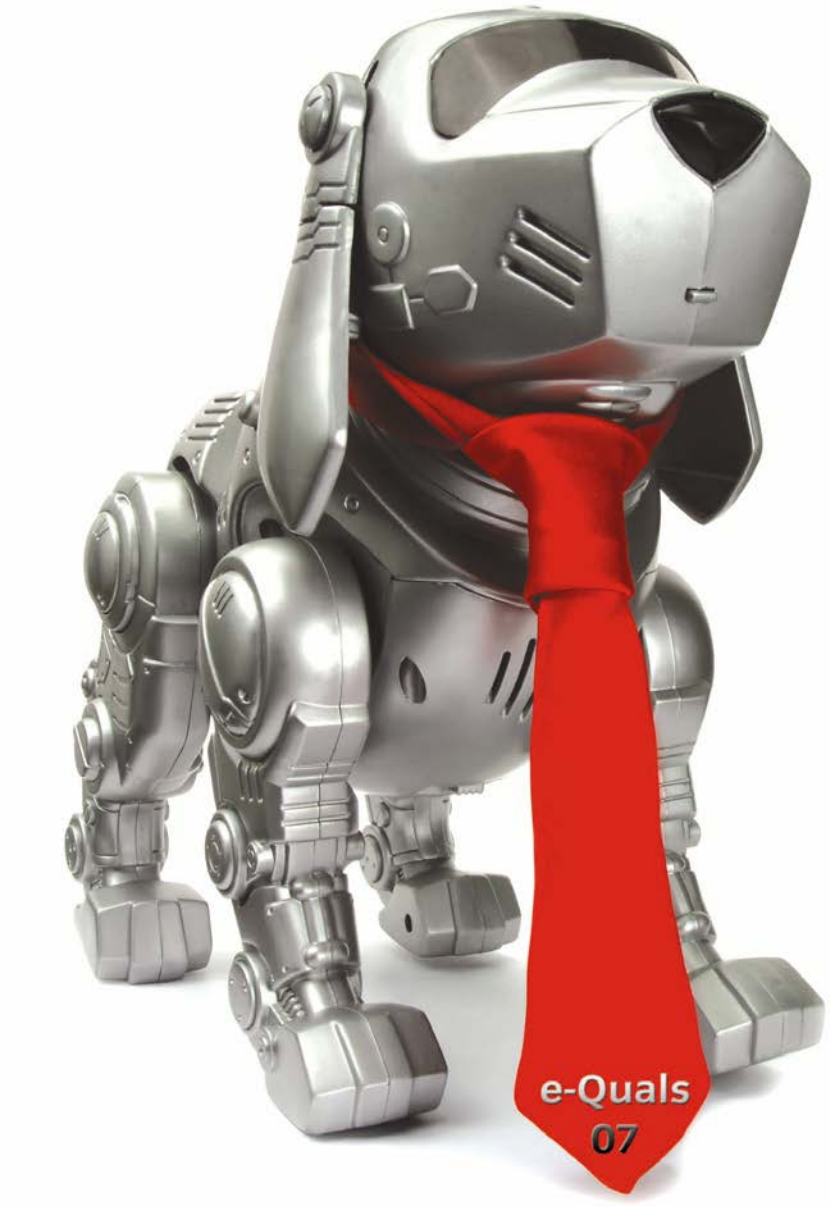
e-Quals
Assignment guide for Candidates
Assignment C



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Introduction – Information for Candidates

About this document

This assignment comprises part of the assessment for Level 2 Create software components using Visual Basic.NET (7266-207).

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 Visual Basic.NET (7266-207)
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 has taken place.
- **Task C** - provides additions to the initial design that should be followed by candidates, once the initial program is working.
- **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: -

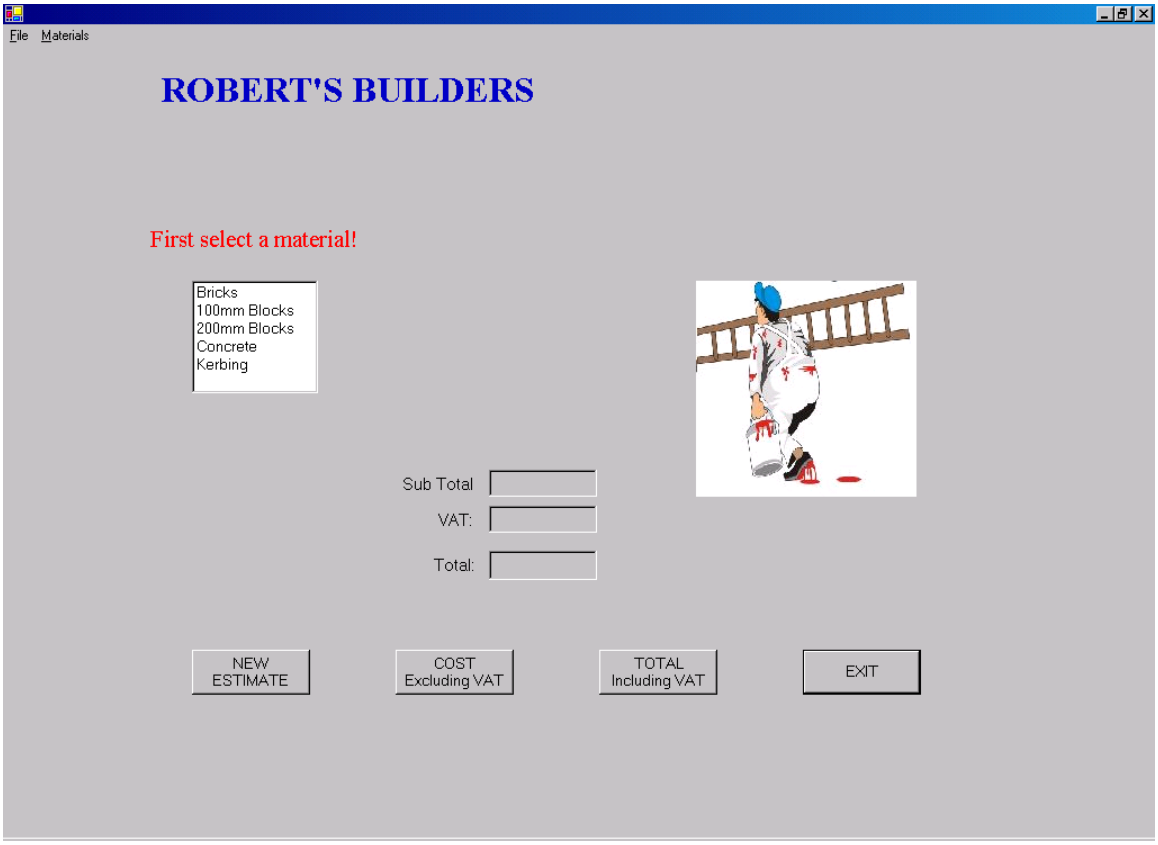
Bricks @ 25p each
100mm Building Blocks @ £1.50 each
200mm Building Blocks @ £2.50 each
Concrete @ £25 cubic metre
Kerbing @ £5 each section

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: -

Fig. 1

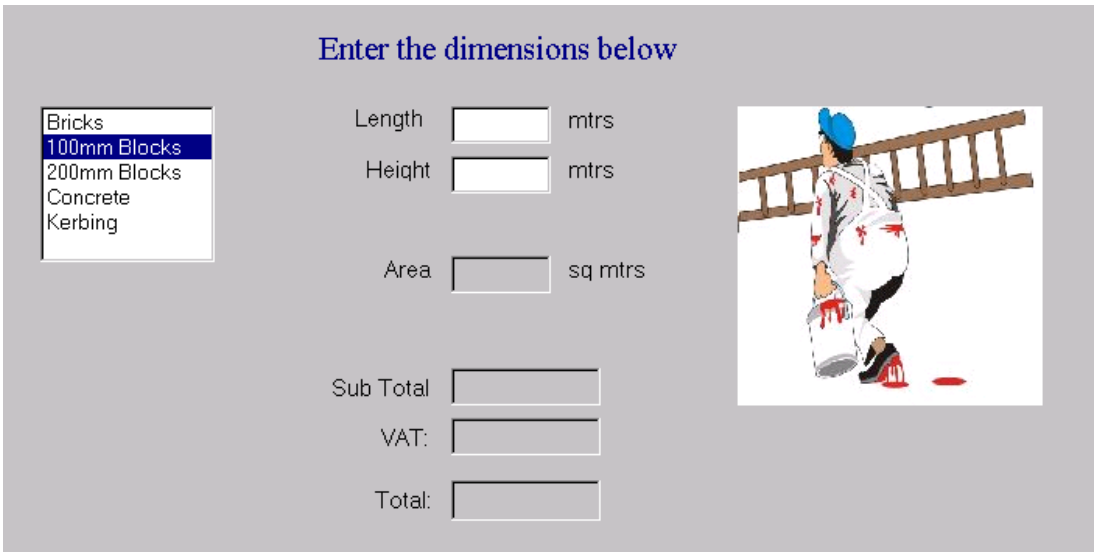


VIEW AT START-UP or CLICKING THE NEW ESTIMATE BUTTON

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.

Fig. 2

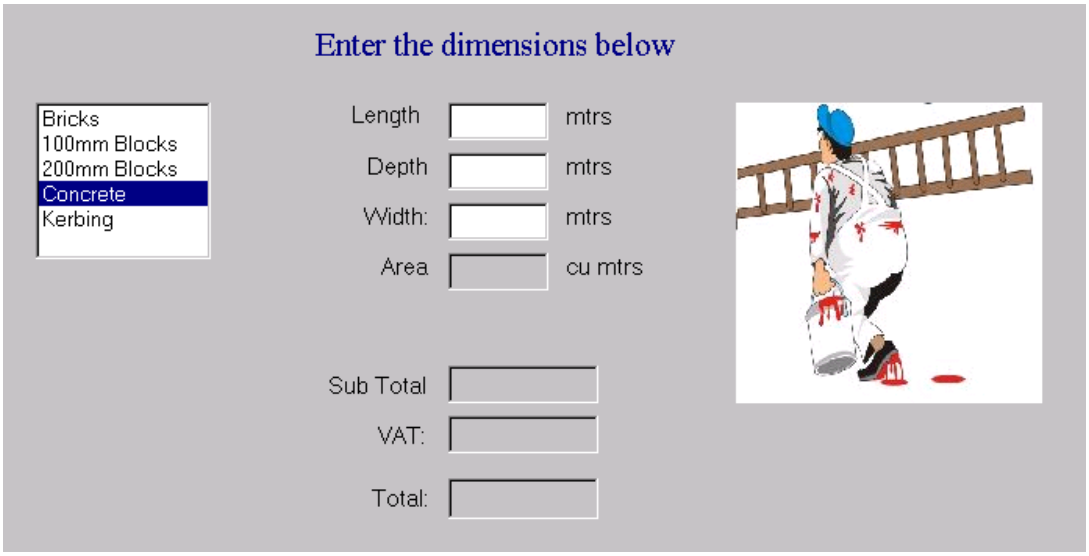


SELECTION OF A BRICKS OR BLOCKS

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.

Fig. 3



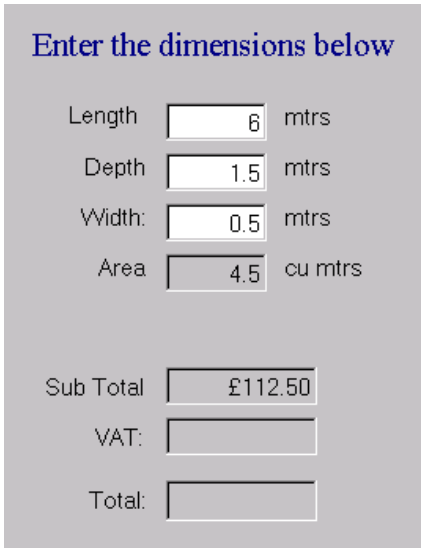
SELECTION OF CONCRETE

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

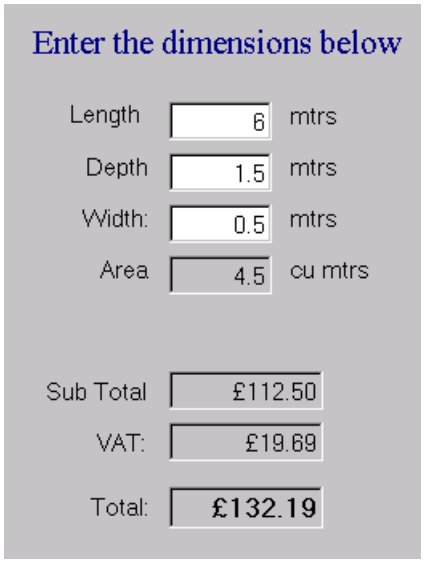
Fig. 4



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.

Fig. 5



CLICKING – TOTAL Including VAT - BUTTON

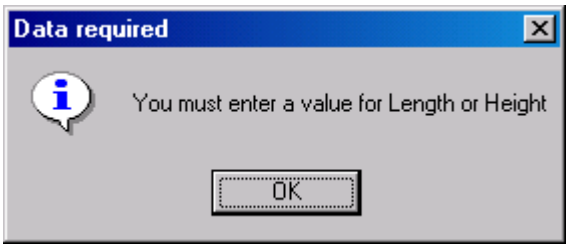
The VAT is to be calculated and displayed in the VAT text box and the sum of the Sub Total and VAT displayed in the Total text box.

Note:

1. VAT is to be calculated at 17.5%
2. The client would like a suitable picture/graphic to be displayed on screen.
3. Clicking on the Exit button must cause the program to terminate.

The following figures 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.

Fig. 6

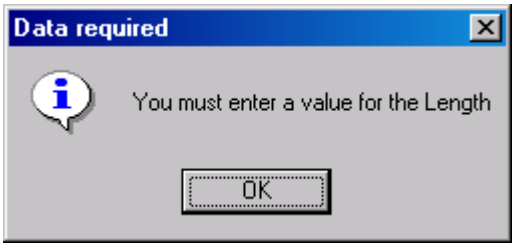


Bricks or Blocks selected from the List Box

Fig. 7

Concrete selected from the List Box

Fig. 8



Kerbing selected from the List Box

Task A

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 to specification the user interface that consists of a list box, text boxes, labels, command buttons a picture and create menus.

Your work is to be both indented and commented so as to aid understanding and maintenance.

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

2 The value for VAT **must** be defined as a constant.

3 Public variables may be used, but at least **two** local variables **must** be declared.

4 Using Figs 1 to 5 as a guide, create the user interface by selecting the appropriate components from the toolbox. The design criteria specified in 5 to 10 below applies.

5 The title 'ROBERT'S BUILDERS' must be capitalised and set at design to:

Font: Times New Roman
Font style: Bold
Size: 24
ForeColor: Mid Blue (e.g. 0,0,192)

6 The message 'First select a material!' (label or text box) must be set at design to:

Font: Times New Roman
Font style: Regular
Size: 16
ForeColor: Red

7 The message 'Enter the dimensions below' (label or text box) must be set at design to:

Font: Times New Roman
Font style: Regular
Size: 16
ForeColor: Navy

8 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

9 All text on Command Buttons must be set at design to:

Font: Microsoft Sans Serif
Font style: Regular
Size: 10
ForeColor: ControlText

TextAlign: MiddleCentre

10 The text boxes for 'Sub Total' and 'VAT' are to be set at design to:

BackColor: Control
Font: Microsoft Sans Serif
Size: 11

11 The text box 'Total' **must** be set at design to:

BackColor: Control
Font: Microsoft Sans Serif
Font style: Bold
Size: 12

12 The remaining input text boxes should be set at design to:

Font: Microsoft Sans Serif
Size: 11

13 At Form_Load the screen should look similar to that of **Fig 1**. The Length, Height and Width text boxes, their related labels hidden from view.

14 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.

15 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.

16 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 (i.e. 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.

17 Clicking the 'COST Excluding VAT' button when no value has been entered into the required text boxes (e.g. 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 Figs 6 to 8.

18 Clicking on the 'New Estimate' command button shall cause the program to reset. All values are to be set to zero, any values/text displayed in text boxes deleted as in Fig. 1 and the text input boxes and related labels hidden from view.

19 Clicking on the 'TOTAL Including VAT' button shall cause the VAT to be calculated and displayed and the sub total and VAT to be added and displayed in the 'Total' text box.

20 All values displayed in 'Sub Total', 'VAT' and 'Total' are to be formatted to currency (i.e. £11.75).

21 Clicking on the 'Exit' command button shall cause the program to terminate and return to the operating system.

22 The program must display a picture or graphic (your choice) towards the right hand side of the screen that enhances the appearance of the program.

23 The following menus must be displayed for the program. 'File' and 'Materials'.

24 The 'File' menu option shall have two menus options, 'New' and 'Exit'.

25 Selection of menu option 'New' shall cause a new estimate to be generated as Fig.1 (Form Load).

26 Selection of menu option 'Exit' shall cause the program to terminate and return to the operating system.

27 The 'Materials' menu must have five menu options, Bricks, 100mm Blocks, 200mm Blocks, Concrete and Kerbing which mirror the contents of the materials list.

28 Selection of any of these menu options shall cause the correct value to be assigned to the List Box SelectedIndex and the assigned screen display be activated accordingly.

Task B

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

1 Produce screen prints to show that the debug facilitates in VB.NET have been applied to locate logical errors (i.e. Breakpoint, Step Into etc.)

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

3 Create or locate an executable file (.exe) and test its operation.

4 From testing record the actual results and then compare the actual results to the expected results and correct any errors found.

Task C

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

1 The program must conform to the design specification.

2 The program uses the most appropriate controls and events.

Task D

Candidates should produce the following for their assessor:

1 Print a program listing of the code.

2 Produce screen prints of frmEstimate, one at start-up (Fig. 1) and one after the command button 'TOTAL Including VAT' has been clicked (Fig. 5).

Note

- 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.

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