Level 2 Create software components using Visual Basic.NET (7266/7267-207)

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Assignment guide for Candidates
Assignment D

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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 (7266/7267-207).

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 (7266/7267-207)
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 for candidates in the form of a company specification for a service they require.

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

- **Task A** - provides a detailed design specification for software to demonstrate the use of graphics.
- **Task B** - provides presentation criteria that should be followed by candidates when producing their work.

Scenario

A software development company, Trimark Software, is developing a program for use as demonstration software for clients. As a contracted employee of Trimark Software, you have been asked to create and test the software.

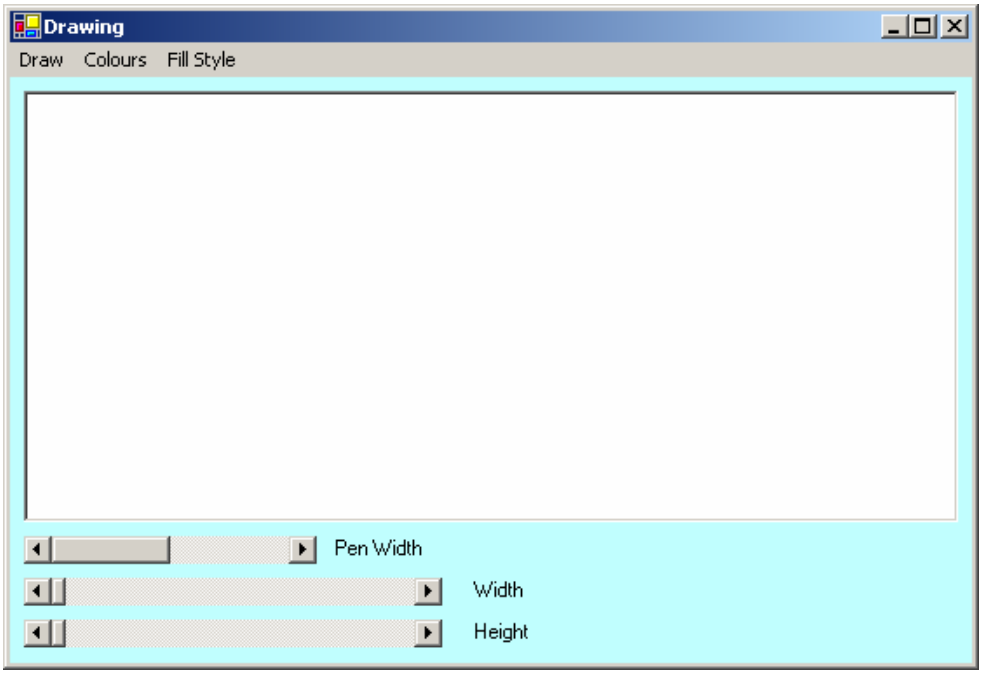
The program is to use menus and scroll bars to demonstrate the following graphics facilities

- draw freehand lines
- draw a rectangle, circle or ellipse
- change the colour of the pen being used
- change the width of the pen for the lines being drawn
- change the fill style for a circle, ellipse or rectangle
- change the width of a circle and the width and height of an ellipse and a rectangle
- clear the drawing area.

Task A

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

In this task you are required to create and test a user interface to show the different types of graphics that can be drawn. Menus are used to allow options for the type of object to be drawn, the colour to be used for lines and the fill style to be used for rectangles, circles and ellipses. Scroll bars are used to specify values for the line (pen) width, width for a circle and width and height for a rectangle or ellipse. Your completed form should appear similar to the screen image shown below.



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

2 Set up variables for the mode, width, height, current value of X, current value of Y, old value of X, old value of Y, fill style (true/false) and a pen and a graphics object at the Form level.

3 Set the Text property of the form to: Task A Drawing *your name* and the date.

4 Set a suitable background colour for the form.

5 Set up a menu with the text Draw and the name mnuDraw with the following items in a drop down menu.

Option	**Name**
Rectangle	mnuRectangle
Freehand Line	mnuFreehandLine
Circle	mnuCircle
Ellipse	mnuEllipse
Clear	mnuClear
Exit	mnuExit

6 Set up a menu with the text Colours and the name mnuColours with the following items in a drop down menu.

Option	**Name**
Yellow	mnuYellow
Green	mnuGreen
Blue	mnuBlue
Red	mnuRed

7 Set up a menu with the text Fill Style and the name mnuFillStyle with the following items in a drop down menu.

Option	Name
Solid	mnuSolid
Transparent	mnuTransparent

8 Draw, size and position a picture box control, name it picDraw and add a border.

9 Set the background colour of the picture box control to white.

10 Draw, size and position three horizontal scroll bar controls for the pen width, width and height and name them hsbPenWidth, hsbWidth and hsbHeight respectively.

11 Set the Min and Max properties of the three horizontal scroll bar controls to appropriate values.

12 Draw, size and position three label controls next to the horizontal scroll bars. Name the controls lblPen, lblWidth and lblHeight. Set their Text properties to Pen Width, Width and Height respectively.

13 Code the *Form name*_Load sub procedure as follows:

- set the starting pen colour to Red
- set the starting Width property of the pen to 2
- set the mode variable to 0
- set the fill style variable to false
- set up the picture box control as a graphics object.

14 Code the sub procedures for the menu options for the Colours menu so that the pen colour is changed to the selected colour option.

15 Code the sub procedures for the menu options for the Fill Style menu so that if Solid is selected the fill style variable is set to true and if Transparent is selected fill style variable is set to false.

16 Code the ValueChanged sub procedures for the scroll bar controls hsbWidth and hsbHeight to store the new values in the appropriate variables.

17 Code the ValueChanged sub procedure for the scroll bar control hsbPenWidth to change the Width property of the pen object to the new value.

18 Code the sub procedures for the menu options for the Draw menu as follows:

- Rectangle - set mode variable to 1
- Freehand Line - set mode variable to 2
- Circle - set mode variable to 3
- Ellipse - set mode variable to 4
- Clear - set mode variable to 0 and clear the picture box control to white
- Exit – terminate the program.

19 Write code so that the menu options on the Fill Style menu are disabled if the Freehand Line menu option is selected on the Draw menu and enabled if any other menu option on the Draw menu is selected.

20 Code the picDraw_MouseUp sub procedure to draw the selected graphic taking account of any selected fill story style.

21 Code the picDraw_MouseDown sub procedure.

22 Code the picDraw_MouseMove sub procedure.

23 Test the program for different positions on the scroll bar controls and all the menu options and ensure that it fully conforms to the specification.

24 Use the debug facilities to find any errors and demonstrate the following to your assessor
- use of single step mode to trace code execution of the MouseUp sub procedure
- use of Console.WriteLine at the end of the MouseMove sub procedure to display the values for the current X and Y position in the Output window.

25 Print a program listing and a printed copy of the form frmDrawing.

26 Remove a control (specified by your assessor) from the Toolbox.

Task B

Candidates should follow the criteria listed below when producing their work:

1 The program conforms to the design specification.

2 The program uses the most appropriate data type(s).

3 The program syntax is consistently indented to aid readability.

4 The program code is commented.

Note

- Candidates should produce the following for their assessor:
  - A printed program listing.
  - A printout of the frmDrawing form.
- 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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