

## BTEC 90 Credit Diploma in Information Technology

Responsible Team:                      Computing

<b>Module Title:</b>	<b>Event Driven Programming</b>	<b>Internal Verifier</b>	<b>S. Karavadra</b>
<b>Module Tutor:</b>	<b>D. Peacock</b>	<b>Course Code</b>	<b>C90ICTXX3</b>
<b>Assignment Title/No:</b>	<b>Assignment 3/3</b>	<b>Module Code</b>	<b>Unit 14</b>
<b>Submission date/week:</b>	<b>22/06/18</b>	<b>Hand out Date</b>	<b>3/05/18</b>

### Submission instructions

To be submitted by 14.55pm on Friday 22<sup>nd</sup> June electronically via Cloud using links provided.

### Learning Outcomes

- LO3 - Be able to design event driven applications
- LO4 - Be able to implement event driven application

### Tasks

**You have recently been employed by Custom IT solutions, a local company providing IT software solutions to businesses in the area.**

**As a newly employed junior programmer in the team, Custom IT Solutions has asked you to do some investigative work into Event Driven Programming which will lead to you creating an application for one of their customers.**

**This assignment will use the concepts of event driven programming that you have learned to carry out the implementation of your project.**

## TASK 1

You have been asked to design an event driven system for Custom IT Solutions. The contract is from a local DIY store in Aylesbury who are trying to compete with the big chain stores such as B&Q. The program could be designed for to run on a desktop PC, tablet or mobile phone.

### User Requirements – Summary

You have been asked to design a simple windows desktop form that would assist someone wishing to paint rooms in their house. The application should prompt the user to enter the dimensions of the room and it should calculate and display the area of the ceiling, the area of the four walls and the combined area of ceiling and walls. It should also calculate the quantity of emulsion paint needed to paint just the ceiling, walls or to paint both the walls and the ceiling in the same colour. The design should include suitable full onscreen assistance to users of the program.

This first version of the application can be kept as simple as possible as a more sophisticated version will be developed later, including a version that could run on a tablet or mobile phone. You might like to make a note of possible future enhancements that could be used as evidence for **D2**.

Your design document should include:

- **Screenshots** of the form(s) you have designed showing which GUI controls you have chosen to use, and what properties you have altered. The GUI design should also clearly indicate in detail what inputs the user will provide, what outputs the application will display, and what processes will be used to convert the inputs to the required outputs.
- A **table of events** that will occur in your program (show this in a table with the triggers identified, the name of the event handlers that will be called, and a short description of what they will do).

**(P3)**

## Task 2

Implement a working version of that meets the above requirements using a Windows Form and suitable event driven code.

**(P4)**

Add code to create full and detailed onscreen help to assist the users of the program understand how to use the program to its best advantages as well as being aware of its limitations.

**(P6)**

Produce technical documentation to support maintenance of the application including:-

- A **use case diagram** summarising the main functions of the software.
- A **class diagram** containing the required attributes and methods
- Refactor the code to ensure that it can be easily maintained and fully document the code in order to produce suitable API documentation (Application Programming Interface)

**(M4)**

### Task 3

Devise a test plan to thoroughly test that the completed application works with a realistic range of valid data. Include some tests that illustrate the possible range of invalid data. Execute your tests, and record the expected and actual result of each test.

(P5)

Analyse the actual test results against the expected results to identify and explain any discrepancies

(M3)

Evaluate the strengths and weaknesses of the completed application, and discuss ways in which the application could be improved in future versions

(D2)

#### Format for submission

Task 1: A design document (word or pdf) including the sections listed in the task.

Task 2: C# Code Listing as a Git Repository, Word or PDF document.

#### Suggested Methods

Use GUI designers such as **moqups**, **balsamiq** or a suitable IDE visual designer such as **Visual Studio** or **Eclipse**.

#### Useful Sources

##### Websites.

See Cloud for any useful sites

- [http://www.valerianweb.com/tutor/ND\\_Unit14](http://www.valerianweb.com/tutor/ND_Unit14) contains useful links to resources for unit 14
- [How to Draw Wireframes for Android Apps](#)
- [How to Write Effective Use cases](#)
- [How to Draw a Class Diagram for Java, C# and VB](#)

##### Textbooks

Windows Forms came out first in 2003, and there are currently no books that focus on the gui controls side, however the books below are good for learning C#. Windows forms is little used except as part of VBA which can be used to create simple forms inside Excel, Word, Access and other Microsoft products. The principles have been transferred to Web Forms which is still widely used.

- *Microsoft Visual C# Step by Step* by John Sharp (2015) £26, there is a more up to date version (2018)
- *Visual C# Homework Projects* by Philip Conrod and Lou Tylee, (2017) Kindle £14.56 This looks good fun with card games, sprites and quizzes to play with. Good for giving you more experience of programming.

## Assessment and Grading Criteria

<b>P3</b>	design an event driven application to meet defined requirements [CT1]		
<b>P4</b>	implement a working event driven application to meet defined requirements [SM2, SM3]		
<b>P5</b>	test an event driven application [SM4]	<b>M3</b>	analyse actual test results against expected results to identify discrepancies [RL3]
<b>P6</b>	create onscreen help to assist the users of a computer program. [RL6]	<b>M4</b>	create technical documentation for the support and maintenance of a computer program. [RL6]
			<b>D2</b>
			evaluate an event driven application. [IE4]