



**ADVANCED SUBSIDIARY GCE
INFORMATION AND COMMUNICATION
TECHNOLOGY (H117/H517)**

Structured ICT Tasks

G062

MAY 2009

Issued September 2008

Maximum Mark 80



INSTRUCTIONS TO CANDIDATES

- You should attempt all tasks, working independently from other candidates.
- There are no time limitations on the tasks other than that they must be submitted by the appropriate internal deadline set by the Candidate's Centre. This deadline will reflect the need for the Centre to complete marking of the tasks and submission of marks to OCR by 15th May 2009.
- There are no restrictions on computing facilities, hardware or software that may be used.
- All data files required for these tasks can be downloaded from www.ocr.org.uk/qualifications/asa_levelgceforfirstteachingin2008/ict/documents.html#Pre-release_materials
- **Once your tasks have been marked by the Centre, they cannot be re-submitted for improvements.**

INFORMATION FOR CANDIDATES

- **Candidates are reminded of the need for good English and clear presentation in their answers. They will be expected to have used software tools, such as spellcheckers, to help achieve this.**

Notice to candidates

- 1 The work which you submit for assessment must be your own.
However, you may:
 - (a) quote from books or any other sources: if you do, you must state which ones you have used;
 - (b) receive any guidance from someone other than your teacher: if so you must tell your teacher, who will record the nature of the assistance given to you.
- 2 If you copy from someone else or allow another candidate to copy from you, or if you cheat in any other way, **you may be disqualified from at least the subject concerned.**
- 3 When you hand in your coursework for assessment, you will be required to sign that you have understood and followed the coursework and portfolio requirements for the subject.

ALWAYS REMEMBER – YOUR WORK MUST BE YOUR OWN

- This document consists of **12** pages. Any blank pages are indicated.

Task 1 [Total 13 Marks]

This is a software development and documentation task.



DM Carpets is a carpet retailer with just one shop. Darren Martin is the managing director of DM Carpets and has just purchased a new computer for the shop and has provided his sales reps with PDAs. He would like all of his staff to wear name badges so that they can be identified.

In order to create the name badges, he has to take photographs of each of his members of staff. The smallest resolution of his digital camera is 600×800 pixels in portrait. He needs to reduce the image to 90×120 pixels so it can be used on name badges.

- (a) (i) Using Darren Martin.bmp, show annotated screenshot evidence of how you removed the 'red eye' effect caused by the camera flash. [1]



- (ii) Using Darren Martin.bmp, show annotated screenshot evidence of how you reduced the resolution of the picture to 90×120 pixels without losing any of the content of the picture. [2]

- (b) Import the data from staff.txt into a database and then add a new field that will allow the photographs of each of the ten members of staff to be stored. Use the ten photographs provided.



Using a database report, show evidence of all the data and the photographs that are included for each member of staff. [2]

(c) Using an efficient method, create a name badge that can be used by each of the members of staff. The name badge must include the following information:

- logo for DM Carpets (dmc logo.jpg)
- the name of the company
- full name of member of staff
- job title of member of staff
- photograph of member of staff.



(i) Show evidence of all the **ten** name badges that have been created. [2]

(ii) Show annotated evidence of how the picture for each member of staff was included automatically from the database rather than copying and pasting each one separately. [1]

(d) Create a help sheet that will show Darren's secretary Lisa how to:

- set the resolution of the digital camera to its lowest setting
- reduce the resolution using graphics software of pictures taken with the digital camera
- remove red eye from pictures
- add a new member of staff to the database
- print a new name badge. [5]

Task 2 [Total 22 Marks]**This is a design, software development and testing task.**

Emily, a new employee, has moved to DM Carpets from a company that had their own website. She would like a website to be created for DM Carpets. Darren has set her the task of producing the requirements for the website. These requirements are shown below:

The following pages should be included:

- home page
 - the title and logo of the company
 - contact details for the company
 - a picture of a fully fitted carpet
 - a quote from a satisfied customer
 - a link to the "Carpet Foundation" – www.comebacktocarpet.com – this link should be the logo for the Carpet Foundation so that visitors can click on the logo
- a page showing our most popular carpets
 - there should be a photo of each of our ten most popular carpets
 - each carpet should be named and include the price per square metre
- a page about our anti-stain treatment
 - there should be photos of four different types of stains
 - the cost of anti-stain treatment (£3.49 per sq m) should be shown
 - some reviews from satisfied customers should be included
- a form that can be filled in by a customer to request a sales rep to contact them with options to fill in:
 - name
 - address
 - telephone number
 - mobile number (if available)

There should be a set of buttons that are in the same place on every page which allow visitors to click on those buttons to visit any of the pages in our website.

- (a) (i)** Design the layout of the page containing the form that can be filled in by a customer, and include a design specification. **[5]**
- (ii)** Using a diagram, design the structure of the website showing how all the pages will link together, including external links. **[4]**
- (b)** Produce the website showing evidence of all the pages you have created. (The quality of your website will be assessed.) **[5]**
- (c)** Using screenshots, show evidence of how you created the button from the home page to the anti-stain treatment page and how you created the hyperlinked logo from the home page to the Carpet Foundation. **[2]**

Thomas is one of the sales reps and has had some training about quality control. He is keen that the website should be of a high quality. He would therefore like to see a test plan produced.

- (d) Complete the test plan in Table 2.1 for the website showing **six** additional tests. Each test should be for a different aspect of the website and must not test the same type of feature twice. Each test must be specific to this website. Only your first **six** tests will be marked. An example is shown which must not be used as part of your answer, nor should any other timing tests. **[6]**

Item to Test	How to test it	Expected Result
Home page appears quickly.	Type the URL www.dmcarpets.biz into a web browser and time how long it takes for the whole home page to appear using a 2Mbps broadband connection.	Whole home page should appear within 3 seconds after pressing enter.

Table 2.1

Task 3 [Total 22 Marks]

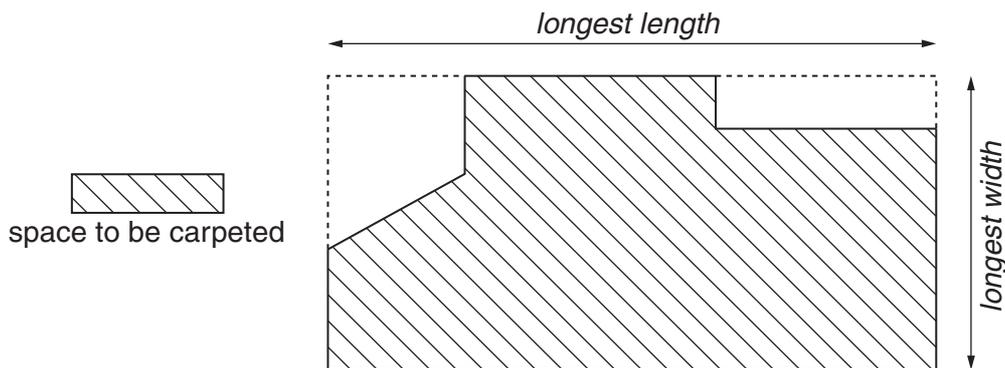
This is a software development and documentation task.

Jade is one of the sales reps but is not very good at maths. She often makes mistakes when calculating the costs on a quotation, especially when she forgets to round the prices to two decimal places. She would like a spreadsheet to be created that will do all the calculations for her and the other sales reps when they prepare a quotation for carpets. As they use touch screen PDAs, she would like to do as little writing as possible.



Jade has explained how a quotation is prepared:

We always measure the longest length in the room, the longest width and the perimeter in metres. We have carpets in 4m wide rolls, 6m wide rolls and 8m wide rolls. If the longest width of the room is less than or equal to 4m wide then we quote for a 4m wide roll, if it is greater 4m and less than or equal to 6m wide then we quote for a 6m wide roll, otherwise we quote for an 8m wide roll. We do not cater for rooms wider than 8m as that requires a specialist carpet fitter. We then calculate the area of the carpet required which is the width of the roll times the longest length. This will always be in square metres.



The customer will have already chosen their carpet but we still need to input the name of the carpet – it would be much easier for us if we could select from a list. We would normally then look up the price of the carpet per square metre but it would be helpful if this could be displayed for us. To calculate the cost of the carpet, we multiply the area of carpet required by the price per square metre. To encourage sales, we sometimes offer a discount on the cost of the carpet. We are only allowed to offer up to 20% off the cost of the carpet. We need to be able to see how much discount we have offered. I've heard that it's possible to have mutually exclusive option buttons on the screen so that we could choose one of 0%, 5%, 10%, 15% or 20% with 0% being the default. They look like this:

- 0%
- 5%

We try to sell each of the following extras (these are not discounted):

- Gripper strip – this costs £0.99 per metre at the moment and the amount needed is the perimeter of the room. It would be useful if we could tick a box to say whether or not gripper strip is required. Only whole metres can be sold.

- Underlay – the amount needed is the area of carpet required. We have 3 styles – basic (£2.50 per sq m), comfort (£4.99 per sq m) and extra comfort (£6.99 per sq m). It would be useful if we could have a drop down box to choose one of the 3 styles or not required.
- Anti-stain treatment costs £3.49 per square metre of the area of carpet required. It would be useful if we could tick a box to say whether or not the treatment is required.
- Fitting – this is a £20 basic fee plus £1.49 per square metre of the area of carpet required.
- Plywood base – this should only be offered if fitting is chosen as an option and will cost £3 per square metre of the area of carpet required. It would be useful if the option for plywood was only displayed if fitting has been chosen.

All of the charges are subject to change each month although they are mostly the same. Therefore there needs to be a way that the prices can be changed but only I should be able to change them as I am the designated sales rep for changing the prices.

We need to be able to show the customer a complete breakdown of all the costs including the total price.

Produce the spreadsheet that will be used by the sales reps and enter the following data:

- longest length = 7.2 m
- longest width = 6.5 m
- perimeter = 26.3 m
- 10% discount
- carpet = Golden Berber Twist @ £22.99 per sq m
- gripper strips are required
- comfort underlay is required
- anti-stain treatment is required
- fitting is required with a plywood base

(a) (i) Using the data above, show evidence of the data entry screen that will be used by the sales reps to prepare quotations, including a complete breakdown of all the costs including the total price. You should show screenshot evidence of any drop down lists so that the options are displayed. [8]

(ii) Show evidence of any formulae or functions you have used in your spreadsheet. You **must** show the row and column headings (eg 1, 2, 3; A, B, C) in any printouts that formulae and functions make reference to, or are included within. You should use the most efficient formulae and functions for solving the problem. [7]

(b) Produce technical documentation to show how the:

- option buttons for discount have been set up
- tick box for the gripper strip has been set up
- drop down lists for the type of carpet and underlay have been set up
- option for choosing a plywood base only appears if fitting has been chosen as an extra
- security has been set up so that only Jade can change the prices.

The documentation should show how each of Jade's requirements has been met and include a contents page. [7]

Task 4 [Total 23 Marks]

This is a software development and testing task.

When a customer makes a purchase, a job sheet is produced. An example of a job sheet is shown in Fig. 4.1 below:

DM Carpets			
Customer:	Hardeep Kanth	Date:	
Address:	4a Maynard Avenue Sutton Coldfield B73 2PQ	Fitting?:	Yes
Telephone:	0782 827 12	Fitting Date:	23-9-08
		Fitting Time	3:00pm
Area of carpet required:	22 sq m	Perimeter:	18m
Golden Berber Twist	22		£505.78
Gripper Strips	18		£17.82
Comfort Underlay	22		£109.78
Anti-Stain	22		£76.78
Fitting	22		£52.78
Plywood	22		£66.00
Discount	10%		-£50.58
Total Due:			£778.36
		Sales Rep:	Charlotte

Fig 4.1

Daisy-May has found out how other companies record new jobs using a database. She has suggested to Darren that DM Carpets use a database in a similar way.

Before a job is input into the computer, the customer details are input separately. When the job is input, the customer is selected from a drop down list. The sales rep is also selected from a drop down list.

Each job sheet consists of a number of 'job lines' – these are each part of the job that needs to be carried out. For each job line, the sales rep will select the product (eg gripper strips) from a drop down list and the quantity needed. The system will automatically display the unit price (eg £0.99) and units (eg per metre, or per sq metre) and display the sub-total for each job line (quantity multiplied by unit price).

The discount is only applied to the price of the carpet eg. Golden Berber Twist has a total price of £505.78, therefore a discount of 10% would be £50.58.

If the option of fitting is chosen, then the charge for fitting is automatically displayed and added to the total due. If fitting is not chosen, then £0 is displayed as the fitting charge.

The total due is calculated by adding up all the sub-totals and the fitting charge and deducting any discount.

- (a) Develop an appropriate database structure to meet the requirements above.
- (i) Show evidence of the implemented entity relationship diagram for the database. [1]
 - (ii) Show evidence of the field names, data types and primary keys used for each table. [4]
- (b) Create a data entry screen that can be used for inputting a new job sheet.
- (i) Show evidence of the data entry screen that you have created with data entered from Fig 4.1. [4]
 - (ii) Show evidence of what happens when you click on the drop down lists for customer and product. Your evidence should ensure that at least 5 customers and 5 products are present in the drop down lists. [2]
 - (iii) Show evidence of any calculations that you have used. [3]
- (c) The area of carpet required must be between 1 and 100.
The fitting date must be in the future and after the order date.
- (i) Show evidence of how you set up validation rules for the area of carpet required and the fitting date. [2]
 - (ii) Show screenshot evidence of the input data and a customised error message when -10 is input as the area of carpet required. [1]

- (d) Thomas, the expert quality controller, has found out about Daisy-May's plans for the new database. He has created a test plan that can be used once the data entry screen has been created.

Follow the test plan in Table 4.2 to produce screenshot evidence of testing the data entry screen. Clearly label the **four** tests with the actual input and output values. The tests must pass to gain marks. [4]

Test Number	Description of Test	Type of Test	Input Data Value (s)	Expected Output Value
1	Fitting fee does not display if the fitting option is not chosen.	Valid	Fitting option is not chosen	Fitting fee displays as £0
2	Fitting fee displays if the fitting option is chosen.	Valid	Fitting option is chosen, carpet area is 51 sq m	Fitting fee = £95.99
3	Total due calculation without discount and fitting is correct.	Valid	Products: <ul style="list-style-type: none"> • Beige Belgian Float @ £21.99 per sq m • Basic Underlay @ £2.50 per sq m • Anti-Stain treatment @ £3.49 per sq m • No discount Carpet area 51 sq m	Total Due = £1,426.98
4	Total due calculation with discount and fitting is correct.	Valid	Products: <ul style="list-style-type: none"> • Beige Belgian Float @ £21.99 per sq m • Basic Underlay @ £2.50 per sq m • Anti-Stain treatment @ £3.49 per sq m Carpet area 51 sq m Fitting is chosen 15% Discount = £168.22	Total Due = £1,354.75

Table 4.2

- (e) Charlotte has spotted that the test plan doesn't test whether the validation rules will work.

Plan **one** test for each of the validation rules that could be used to test the input of invalid data for the rules in 4 (c). Produce a table of invalid test data using the structure in Table 4.3 below. Clearly identify the input values to be used and the expected customised error messages. The tests will take place on 5 June 2009. Only the first **two** tests will be assessed. [2]

Test Number	Description of Test	Type of Test	Input Data Value(s)	Expected Error Message
1		Invalid		
2		Invalid		

Table 4.3



Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (OCR) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

OCR is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.