



AS GCE INFORMATION AND COMMUNICATION TECHNOLOGY

G062/01 Structured ICT Tasks

MAY 2014

Issued September 2013

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 2014.
- There are no restrictions on computing facilities, hardware or software that may be used.
- All work produced for the tasks must be kept secure within Centres and not published or distributed externally in any form.
- You **must not** be given, either individually or as a group, any assistance, verbal or written, in the carrying out of the tasks or evidence to produce.
- **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.

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

Attempt **all** tasks.

Task 1 Presentation – Total 20 Marks

Moving On Up is an estate agency owned by Karen Brown. She requires an interactive touch screen presentation that can be used by customers to inform them about the company. Her requirements for the presentation are listed below.

Content requirements

- A *Title* slide containing the company name.
- A *Services* slide containing details of the services that the company offers. This slide will also contain the company video that will play automatically when the slide is viewed. The video is provided in the file **MovingOnUp** and must be edited to include the company name at the start of the video.
- A *Staff* slide containing the names and photos of the staff: Karen Brown (Manager), Chris Smith (Sales Executive) and Mark Lang (Customer Advisor).
- A *Property* slide containing photos of three featured properties. These must appear automatically in an animated sequence with a one second delay between each image. Each image should be a hotspot that will link to a *Featured Property* slide for that property.
- Each *Featured Property* slide will contain a photo of the property, its price and a brief description of the property.
- A *Contact* slide containing the following contact details:
 - Address: 120 The High Street, Inverness, IV1 1AA
 - Telephone: 01463 123123
 - Website: www.movingonupproperty.co.uk
- A *Help* slide that gives instructions on how to use this interactive touch screen presentation.

Navigation requirements

- Every slide will contain a navigation bar area that will contain navigation buttons and the company logo. The logo is provided in the file **Moving**.
 - The *Title* slide will contain a 'Start' button that will link to the *Services* slide.
 - The *Services*, *Staff*, *Property* and *Contact* slides will all contain 'Services', 'Staff', 'Property' and 'Contact' buttons that will link to the respective slides.
 - The *Featured Property* slides will contain a 'Property' button that will link to the *Property* slide.
 - Every slide will contain a 'Help' button that will link to the *Help* slide.
 - The *Help* slide will contain a 'Back' button that will return to the previous slide viewed.
 - Every slide will contain a 'Reset' button that will link to the *Title* slide.
 - The presentation can only be navigated by clicking on a hotspot or a button.
- (a) Using a diagram, design the overall structure of the presentation, showing how all the slides will link together. [1]
- (b) (i) The presentation is to be based on a master slide. The slide must contain an area for the navigation bar with the logo. Produce a design specification for the master slide that a third party could implement. [2]
- (ii) Produce printed evidence of the master slide implementation. [1]

- (c) (i) Implement the presentation and produce printed evidence of the slides that you have created. [3]
- (ii) Produce annotated evidence to show how the features you implemented meet Karen's requirements for the presentation. [7]
- (d) Complete the test plan in Table 1.1 showing **three** further tests. Each test should be for a different aspect of the presentation.

Test number	Test description	How to test it	Expected result
Example	The video on the Services slide plays automatically.	Click the Services button on the Staff slide to select the Services slide.	When the Services slide appears on the screen the company video will appear and it will start to play automatically.
1			
2			
3			

[3]

Table 1.1

Karen requires a short version of the presentation to advertise the featured properties. It should meet the following requirements:

- the presentation should contain the three *Featured Property* slides
- the presentation should be automated to require no user intervention
- the slides should each be displayed for exactly 5 seconds
- the presentation should loop.

- (e) Produce a help sheet(s) to show how to amend the presentation to meet Karen's requirements. [3]

Task 2 Spreadsheet Model – Total 29 Marks

Mark Lang (Customer Advisor) provides financial advice to customers. He wants to show customers the total purchase cost of a property including fees. He also wants to advise customers whether or not they are likely to be able to obtain a mortgage. He wants to be able to see all relevant details on a *Purchase* worksheet laid out as shown in Fig. 2.1.

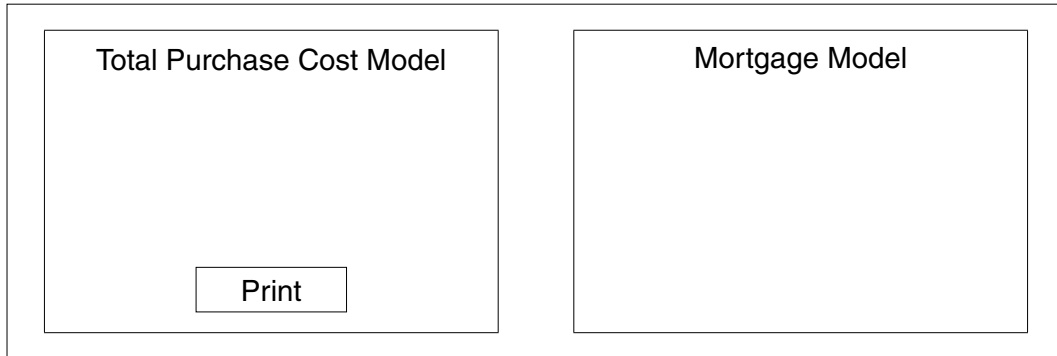


Fig. 2.1

The Total Purchase Cost Model area of the worksheet has the following requirements.

- *Property Price*. This is a variable that is to be entered into the model.
- *Stamp Duty*. This is calculated as a percentage of the *Property Price*. First time buyers who purchase a property priced at £250,000 or less will not be charged stamp duty. The interface should contain a check box that can be ticked if the purchaser is a first time buyer.
- *Legal Fee*. This is determined by the type of property purchased (Land, Commercial or Residential). The type of property purchased is a variable that must be selectable from a drop-down list. VAT must be added to the *Legal Fee*.
- *Search Fee*. This is fixed at £50.
- *Recording Fee*. This is fixed at £500.
- *Total Purchase Cost*. This is calculated as the sum of the *Property Price*, *Stamp Duty*, *Legal Fee*, *Search Fee* and *Recording Fee*.

Table 2.2 contains the rates and fees that Moving On Up uses. All rates and fees (*Stamp Duty*, *Legal Fee*, *Search Fee*, *Recording Fee* and *VAT rate*) must be stored on a separate worksheet called *Fees*.

Stamp Duty Rates			Legal Fee	
Stamp Duty Band	Rate		Land	1% of the property price
£0 to £125,000	0%		Commercial	1.5% of the property price
£125,001 to £250,000	1%		Residential	£800 fixed fee
£250,001 to £500,000	3%			
£500,001 to £1,000,000	4%		Other Fees	
£1,000,001 and above	5%		Search Fee	£50
			Recording Fee	£500
Other Rates				
VAT rate	20%			

Table 2.2

The Mortgage Model area of the worksheet (Fig. 2.1) has the following requirements.

- *Salary 1* and *Salary 2*. These are variables that can be entered into the model.
- *Maximum Mortgage*. This is calculated as the greater of either four times the higher salary or three times the joint salaries.
- *Deposit*. This is a variable that is to be entered into the model. Mark advises that the deposit should be at least 10% of the *Property Price*. A customised validation message should be displayed if a value less than 10% of the *Property Price* is entered.
- *Mortgage Required*. This is calculated as the *Total Purchase Cost* minus the *Deposit*. Mark wants this value highlighted with a green background if the *Mortgage Required* is less than or equal to the *Maximum Mortgage*. Otherwise he wants a red background for this value.

Mark has additional requirements.

- A *Print* button that will print only those details that relate to the Total Purchase Cost Model.
- The *Purchase* worksheet should allow only variables to be entered and for the *Print* button to be useable. All other areas of the worksheet should be protected.

- (a) (i) Rishi and Sadi Kahn want to purchase a £150,000 residential property. They are first time buyers with salaries of £25,000 and £20,000. They have a £21,510 deposit. Create the model and enter Rishi and Sadi's details.

Print the *Purchase* worksheet and the *Fees* worksheet. Make sure that row and column headings are displayed. Each worksheet should fit on one side of A4. [3]

- (ii) Print annotated evidence to show how all the requirements were met.

All formulae/functions that you have used in your solution should be explained.

All named ranges should be identified and row and column headings should be present. [10]

- (b) A test plan is required for the model. Complete the test plan in Table 2.3 to show how three different formulae/functions may be tested. [3]

Test Number	Description	Type of Test	Input Data Value(s)	Expected Output Value(s)
1				
2				
3				

Table 2.3

Mark wants to be able to show clients a breakdown of mortgage payment costs. A *Mortgage* worksheet should be added to the current model. The worksheet must enable a number of variables to be entered and a number of values to be calculated.

- *Mortgage Amount*. A variable for the mortgage size.
- *Term*. A variable between 1 and 25 years.
- *APR* (Annual Percentage Rate). A variable for the interest rate charged on the mortgage. This will remain fixed for the term.
- *Regular Monthly Payment*. A function should be used to calculate the value for the required monthly payment. This should be rounded up to the nearest penny.
- *Overpayment*. A variable that allows an optional extra payment per month to be entered. For the purpose of the model, assume this will remain fixed for the duration of the mortgage.
- *Total Monthly Payment*. This is calculated by adding the *Regular Monthly Payment* to any *Overpayment* made.

Table 2.4 shows example data.

Mortgage Amount	£100,000
Term	25
APR	5.00%
Regular Monthly Payment	£584.60
Overpayment	£200.00
Total Monthly Payment	£784.60

Table 2.4

The worksheet created should calculate the balance remaining at the end of each Monthly Payment Period. Table 2.5 shows the results for the data shown in Table 2.4 for the first two Monthly Payment Periods.

Monthly Payment Period	Initial Balance	Interest	Total Monthly Payment	Balance Remaining
1	£100,000.00	£416.67	£784.60	£99,632.07
2	£99,632.07	£415.14	£784.60	£99,262.61
3				
↓				
300				

Table 2.5

- *Initial Balance.* This is the balance outstanding at the beginning of the Monthly Payment Period.
- *Interest.* This is calculated by multiplying the Initial Balance by the APR divided by 12. Interest should be rounded up to the nearest penny.
- *Balance Remaining.* This should be calculated by adding the Interest and subtracting *Total Monthly Payment*.
- The final Balance Remaining should be exactly £0.00 and the final Total Monthly Payment should be automatically reduced to make sure that this happens.

Mark also wants some summary information calculated on the worksheet as shown in Table 2.6.

- The *Total Repayments* should be calculated by adding all the Total Monthly Payments made.
- The *Total Interest* should be calculated by adding all the Interest paid.
- The number of payments required to complete the payment of the mortgage should be calculated and given as a number of years and months.

Total Repayments	
Total Interest	
Years	
Months	

Table 2.6

- (c) (i) Rishi and Sadi Kahn have decided to take out a £130,000 mortgage over 20 years. A 4.74% APR fixed rate is available. They plan to make an overpayment of £100 each month.

Print the *Mortgage* worksheet using relevant figures for Rishi and Sadi. Make sure that row and column headings are displayed. [2]

- (ii) Print annotated evidence to explain the formulae that you have used in the *Mortgage* worksheet. Row and column headings must be displayed. [5]

Mark wants to be able to show customers a graph. The graph must be generated automatically when variables are entered into the mortgage worksheet to show the difference between paying just the *Regular Monthly Payment* and making an *Overpayment*.

Mark has the following requirements for the graph:

- the X axis should show the payment period and should be labelled 'Payment Period'
- the Y axis should show the mortgage balance and should be labelled 'Mortgage Balance'
- a line should show the monthly balance remaining for *Regular Monthly Payments*
- a second line should show the effect of making an *Overpayment* each month
- a message on the graph should summarise the savings made from making an *Overpayment*. The message should say: 'An overpayment of £[*Overpayment*] per month will mean that you save £[*Calculated interest saving*] in interest and repay the loan [X] years and [Y] months early'.

- (d) (i) Mark would like to show Rishi and Sadi Khan a graph for their proposed mortgage showing the effect of making an *Overpayment* of £100 a month.

Print the graph produced for Rishi and Sadi Kahn on one side of A4. [2]

- (ii) Produce annotated evidence to explain how the requirements of the graph are met. [4]

Task 3 Database – Total 31 Marks

Karen would like a database system for her estate agency business. Data already exists for the staff in the file *staff.txt* so she would like this to be imported into the database. She would also like to store details about the residential properties that the estate agency is selling, the potential buyers who are registered with the estate agency, and viewings which have been booked.

For each property she needs to record:

- the address
- postcode
- valuation
- date of valuation
- type of property (detached, semi-detached, bungalow, terrace, flat)
- number of bedrooms
- number of bathrooms
- whether or not there is central heating
- whether or not there is a garden
- an image of the property.

For each buyer, she needs to know their title, forename, surname, address, post code, telephone number and email address.

For each viewing, she needs to know which member of staff is conducting the viewing, the property viewed, the potential buyer, the date of the viewing and the viewing period. The viewing period is either 09:00 to 10:30, 11:00 to 12:30, 13:30 to 15:00 or 15:30 to 17:00.

- (a) (i) Produce a hand drawn design of an entity relationship diagram for the database. [1]
- (ii) Produce a data dictionary design for the PROPERTY table that includes field name, data type, length and validation. The data types must be suitable, the field lengths must ensure efficient storage and the validation rules should include at least three different types of validation. [3]

Create the database and import all staff whose job title is “Estate Agent” from *staff.txt* into an AGENT table in the database. Records should be added for buyers, properties and viewings. There should be:

- 5 BUYERS
- 12 PROPERTYs
- 5 VIEWINGs

- (b) Print evidence of the data within each table. [2]

Karen would like a screen that will allow property information to be viewed or edited. She has the following requirements for the Property Screen:

- a title of 'Moving On Up – Property Screen'
 - no scroll bars, record selectors or default navigation buttons should be present
 - customised buttons should be added for first record, previous record, next record, last record, new record and delete record
 - the total number of viewings arranged for the property (previous and future) should be displayed. If the property has no viewings arranged, the message 'No Viewings' should be displayed instead
 - if the property has had past viewings the date of the most recent viewing should be displayed.
- (c) (i)** Print evidence of the Property Screen. **[1]**
- (ii)** Produce annotated evidence to explain how the requirements for the Property Screen are met. **[5]**

Karen would like a Search Screen designed for the system that will enable her to find properties which match specific requirements that a potential buyer has. She wants to be able to enter the following parameters:

- a minimum price and a maximum price
- a property type from a drop-down list that contains the options: detached, semi-detached, bungalow, terrace, flat and any. If the option 'any' is selected the property type matched is not important
- minimum number of bedrooms
- whether or not a garden is required
- whether or not central heating is required.

She also has the following requirements:

- a title of 'Moving On Up – Search Screen'
 - as the parameters are entered, Karen wants an indicator displayed on the screen to show how many properties match the search criteria. This should update dynamically
 - the search criteria parameters should be validated, and customised error messages should be displayed if the data entered is invalid
 - the Search Screen should have a 'View Matches' button that when clicked will produce a Property Report which can be printed for the potential buyer
 - the Property Report should identify the properties matched and sorted in descending price valuation order. The report should have the title 'Property Report'.
- (d) (i)** Print evidence of the Search Screen you have created. **[1]**
- (ii)** Define a set of search parameters that would return exactly four properties from your test data in the property table and identify which properties will be matched. **[1]**
- (iii)** Print the Property Report for your search when the parameters from **(d)(ii)** are entered. **[1]**
- (iv)** Produce annotated evidence to explain how the requirements for the Search Screen and the Property Report are met.
- You need to implement and test only one validation rule. **[4]**

Karen wants a Booking Screen that will enable viewings to be set up. The screen must enable the following items to be entered:

- the date for the viewing
- the timeslot for the viewing (selected from a drop-down list)
- the agent who is to be assigned to conduct the viewing
- the property to be viewed
- the buyer who wants to view the property.

Karen also has the following requirements:

- a title of 'Moving On Up – Booking Screen'
- the Booking Screen should start with no values present
- the Booking Screen should have a 'Process Booking' button
- after the 'Process Booking' button is clicked a check should be made to see if it is possible to make the requested viewing
- it should not be possible to double book for any combination of agent, property or buyer for the same date and time slot
- if it is possible to make a booking, a message to this effect should be displayed to the user, and the booking should be added to the system
- if a double booking is attempted a customised error message should be displayed that indicates what the potential problem is (eg Agent double booked).

- (e)** Produce annotated evidence to explain how the requirements for the Booking Screen are met. **[6]**

Karen wants a Main Menu Screen to be added to the system. She wants to navigate between all of the components within the system (Main Menu Screen, Property Screen, Search Screen and Booking Screen).

- (f)** Print evidence of the Main Menu Screen and the updated Property Screen, Search Screen and Booking Screen. **[1]**

Karen wants a user guide for the system. The user guide must contain instructions to:

- load the system
- navigate between the system components
- view property details
- perform searches for potential buyers to find properties that match their requirements
- set up viewings for buyers.

- (g)** Produce and print a user guide that will meet Karen's requirements. **[5]**

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