

Paper Reference(s)

4385/03

**London Examinations IGCSE
Information and Communication
Technology**

Paper 3

Case Study and Set Tasks

May 2009 and November 2009

Instructions to Candidates

All of the tasks should be attempted.

1. Work submitted must be your own and must be independent from that of other candidates.
2. Sharing the work for any task could result in all of your work being rejected.
3. The time allowed for each task is that set by your teacher.
4. The deadline date for each task is that set by your teacher. Time allowances and deadlines will reflect the need for the centre to submit the work to London Examinations by the required date.
5. There are no limitations on the hardware or software that you may use.
6. **All material submitted as evidence for a task must be clearly labelled with the Candidate Name and Candidate Number, and the task identification, e.g. Task 1(a), Task 1(b).**
7. **Only work which is specified in the set tasks should be submitted.**

Four marks will be awarded for full compliance with **instructions 6 and 7.**

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THE BANKSIDE COLLEGE WILDLIFE CLUB

The Bankside College Wildlife Club is an after-school club for any staff and students who have an interest in wildlife. The club has been given an area of the college grounds to develop into a wildlife garden.

The area measures 50 metres by 75 metres and is bordered by woodland on one side. The other three sides are separated from the rest of the college grounds by concrete paths and a low fence. The area was a lawn some years ago but has been neglected and is now overgrown, with several small trees and bushes in it. There is a narrow stream which cuts across one corner of the area. The stream had been contained by concrete banks but these have cracked and broken, allowing the stream to overflow in wet weather. The ground is wet and boggy for up to 5 metres on either side of the stream.

The Wildlife Club held a meeting to discuss what to do with the area and suggested the following ideas:

- create a wetland area with a pond
- create a woodland edge area
- plant shrubs and bushes which will attract butterflies
- create nesting sites to attract birds
- create a nature trail with information boards to explain points of interest
- put in seats to encourage people to spend some time in the area
- conduct surveys to find out which plants, mammals, birds, fish, reptiles, insects, worms etc. are living there
- put the results of the survey on the college intranet
- put information boards on the boundary fences to explain how the area will be developed.

The boundary information boards

Tasks 1a and 1b are related to this section.

It was decided to make the information boards from two sheets of A4 paper. One sheet will show a map of the proposed development. The second sheet will have:

- explanatory notes for the features shown on the map
- an outline timetable for the project
- an invitation for volunteers to help.

These sheets will be covered in plastic and fixed to wooden stands.

The animal survey

Tasks 1c, 1d and 2 are related to this section.

It was decided that the best way to record the results of the animal survey is to make a single-table database. The database will have a link to an index page of a web site on the Bankside College intranet which contains multimedia information such as video and sound recordings of the animals. Members of the Wildlife Club will use reference books and Internet searches to find more information about the animals.

Each record will contain fields to:

- identify the animal
- show a photograph of the animal
- identify the animal's food sources
- identify the animal's usual habitat
- show if the animal is resident in the area or not
- show a link to a web page where multimedia information can be found
- give further information about the animal.

The plant survey

Tasks 1e, 1f and 1g are related to this section.

Members of the Wildlife Club conducted surveys to find out which types of plant are in the area. One method used to survey the plants was to divide the area into metre squares and estimate how much of each square was covered by each type of plant. Grass was assumed to cover the area not occupied by other plants. The results were entered into a multipage spreadsheet, using a different sheet for each type of plant. Cover was estimated to the nearest 10%. The numbers were entered as single digits, e.g. 1 means 10%, 5 means 50%.

Extracts from the plant distribution spreadsheet are shown on page 4. The extracts show figures for four common plants in a 10 metre by 10 metre section of the area. Centres should make these extracts available to candidates or supply the same information in some other, appropriate format. The plant types are labelled A to D; candidates may substitute names of appropriate local species if they wish.

Plant distribution spreadsheet extracts

1		3	2	1		1		2	
	1		3		1		1	1	
2	3	2							
1	2	1							
	1		1	2	1				
				2	1				
		1						1	3
						1	2	3	
	1						1		

Plant A

				1	1			1	2
1							1	2	1
2								1	1
	1								
				2					
				2	1				
			1		1				1

Plant B

								1	
2			2	3	1				2
2	2						1	1	1
1								3	2
	1							1	
				1	1				
				1					
					2				2

Plant C

2		1	1	2		1		2	
	1		2	1	1		1	1	
2	4	3							
	1	2	1						1
	1			3	1				
			1	1	2			1	
		2				1		2	4
1						1	3	4	
1	1					1	1		1

Plant D

The spreadsheet is to be used to analyse the distribution of the plants. The spreadsheet and analysis results are to be put onto the Bankside College intranet for viewing by staff and students. Some of the results will be displayed as graphs or charts to make them easier to visualise.

TASKS

Task 1

- (a) **The design of the boundary information boards.** Sketch designs for the **two A4** pages which make up the information boards. In the sketches:
- headings should be given but areas of descriptive text may be shown as blocks
 - the full text of the blocks should be shown on the reverse of the design sheets
 - outline drawings may be used to indicate any graphical components.

The designs should be submitted as two sheets of A4.

(9)

- (b) **Making the information boards.** Make and print the **two A4** pages designed in **Task 1(a)**. They do **NOT** need to be covered in plastic.

Any changes from the designs in Task 1(a) must be clearly indicated.

(2)

- (c) **The web site design.** Sketch a design template for the multimedia pages. In the sketch:
- headings should be given but areas of descriptive text may be shown as blocks
 - the full text of the blocks should be shown on the reverse of the design sheets
 - outline drawings may be used to indicate any multimedia components.

The design should be submitted as one sheet of A4.

(9)

- (d) **Making the web site.** Make and print a web page for **one** animal, using the template designed in **Task 1(c)**.

(4)

- (e) **Using the spreadsheet to analyse plant distribution.** For this task you must use the distribution data given on page 4. It is your responsibility to ensure that you use the correct data for the spreadsheet tasks. For your convenience these extracts may be downloaded from the Edexcel International website. They are given in Excel or CSV formats only.

Create a new page for the spreadsheet. The page is to be used to show if two types of plant tend to grow in the same place. The analysis will use plant A and plant D from the spreadsheet extracts. For cells B2 to I9 from the plant A page, add the cell contents to those of the eight surrounding cells and multiply the result by the cell contents of the corresponding plant D cell, e.g. for cell B2, add A1 ... C3 and multiply by B2 on the species D page.

Repeat the process with the roles of plant A and D reversed.

Print the page on a single A4 sheet.

(4)

- (f) **Using the spreadsheet to analyse grass distribution.** Create a new page for the spreadsheet. Use the page to calculate and display the percentage of grass growing in each one metre square. (Each cell of the spreadsheet represents a one metre square.)
Any functions or formulae must be shown.
The page must be annotated to explain how the calculation works.

Print the page on a single A4 sheet.

(6)

- (g) **Pictorial representation of plant distribution.** Use the spreadsheet page for plant D to design and implement a pictorial method of displaying the percentage of plant D in each metre square. You may use any appropriate spreadsheet facility for this task. The method must be capable of automatic updating if the figures are altered, i.e. methods which involve manual procedures on each cell will not be acceptable.
Any functions, formulae, macros or scripts must be shown. The sheet must be annotated to explain how the method works.

Print the page on a single A4 sheet.

(4)

(Total 38 marks)

Task 2

The Database

- (a) The database holds details of all the types of animals found in the area. Sketch a design for a screen used to input animal details. The screen should be designed to be user-friendly. Annotate your design to explain your choice of:

- field names
- field sizes
- data types
- validation checks
- calculations
- user-friendly features.

The design must be submitted as a single A4 sheet.

(12)

- (b) Build the table and enter data for **20 animals**. The animals should be from a variety of types.

Print the table on a single A4 sheet.

(2)

- (c) The database has a link which opens the index page of the web site. The link is to be activated by clicking a button on the input screen. Create a script or macro which will open the index page of the web site.

NOTE. The index page can be a blank page, named index.htm **It does not need to be printed.**

Print a screen showing the script or macro.

Print a screen showing how the script or macro is connected to and activated by a button.

(4)

- (d) After the database is completed an improvement is suggested. Any individual information pages of the web site can be opened without using an index page. One method of doing this is to create a new view of the database which contains a thumbnail picture of each animal. Clicking a picture will then open the relevant page of the web site. Design and implement this method for **five animals** in your database.

NOTE. The information pages can be blank pages, with appropriate names. **They do not need to be printed.**

Print the new database view on a single A4 sheet.

Print a screen showing how the pictures are linked to the web pages, and how they are activated when clicked.

(4)

- (e) Another method of linking the database to the web pages is to use the button on the data input screen made in **Task 2(c)**. The script or macro which opens the index web page will be replaced by a more complex system that recognises which record is currently being displayed and opens the relevant page of the web site. Design a method of doing this. The design should be in the form of a flowchart or structured English.

The design should be annotated to explain how it works and submitted on a single A4 sheet.
(5)

- (f) Implement the method designed in **Task 2(e)** for the **first five records** in the database.

NOTE. The information pages can be blank pages, with appropriate names. **They do not need to be printed.**

Print and annotate a screen showing any scripts, macros, functions, or other methods which you used to select and open the web pages.
(3)

- (g) Members of the Wildlife Club want people to be able to print out an information sheet about any animal in the database.

Each information sheet is to be printed on a single A4 sheet and is to be set out in a standard format.

Sketch a design for a template for the information sheet.

Submit the following items as evidence:

- the design for the sheet template
- **one** completed sheet
- a screen shot to show that the sheet template is linked to the database.

(8)

(Total 38 marks)

Task 1 and Task 2

Presentation and relevance of submitted material, as specified in the 'Instructions to Candidates' on the front cover.

(Total 4 marks)

TOTAL FOR PAPER: 80 MARKS

END