



# Cambridge IGCSE™

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## INFORMATION AND COMMUNICATION TECHNOLOGY

0417/31

Paper 3 Data Analysis and Website Authoring

May/June 2022

2 hours 30 minutes

You will need: Candidate source files (listed on page 2)

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### INSTRUCTIONS

- Carry out **all** instructions in each step.
- Enter your name, centre number and candidate number on every printout before it is sent to the printer.
- Printouts with handwritten candidate details will **not** be marked.
- At the end of the examination, put all your printouts into the Assessment Record Folder.
- If you have produced rough copies of printouts, put a cross through each one to indicate that it is not the copy to be marked.
- You must **not** have access to either the internet or any email system during this examination.

### INFORMATION

- The total mark for this paper is 80.
- The number of marks for each question or part question is shown in brackets [ ].

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This document has 8 pages.



You have been supplied with the following source files:

j31balloon.csv  
j31balloon.jpg  
j31balloon.mp4  
j31banner.jpg  
j31kenya.htm  
j31maasai.jpg  
j31serengeti.jpg  
j31stylesheet.css  
j31tables.csv  
j31tanzania.htm  
j31text.txt

### Task 1 – Evidence Document

Create a new word-processed document.

Make sure your name, centre number and candidate number will appear on every page of this document.

Save this Evidence Document in your work area as **j2231evidence\_** followed by your centre number\_ candidate number, for example, j2231evidence\_ZZ999\_9999

You will need your Evidence Document during the examination to place screenshots when required.

**Task 2 – Image Editing and File Management****1** Create a new folder called **j2231**

Locate the following files and store them in your *j2231* folder.

**j31balloon.jpg**  
**j31balloon.mp4**  
**j31banner.jpg**  
**j31kenya.htm**  
**j31maasai.jpg**  
**j31serengeti.jpg**  
**j31stylesheet.css**  
**j31tanzania.htm**  
**j31text.txt**

Open the file **j31balloon.jpg** in a graphics package. Edit the image by:

- rotating it 90 degrees clockwise
- reflecting (flipping) it horizontally.

Save this new image in your *j2231* folder, in **.png** format, using the file name **balloon\_** followed by your candidate number, for example, **balloon\_9999**

Display the contents of your *j2231* folder showing the folder name, all file names, file extensions, file sizes, image dimensions and, for the video, the frame height and frame width.

Take a screenshot of this folder making sure that the required information is clearly visible. Place this screenshot in your Evidence Document.

[4]

**EVIDENCE 1**

A screenshot of your *j2231* folder with the required information clearly visible.

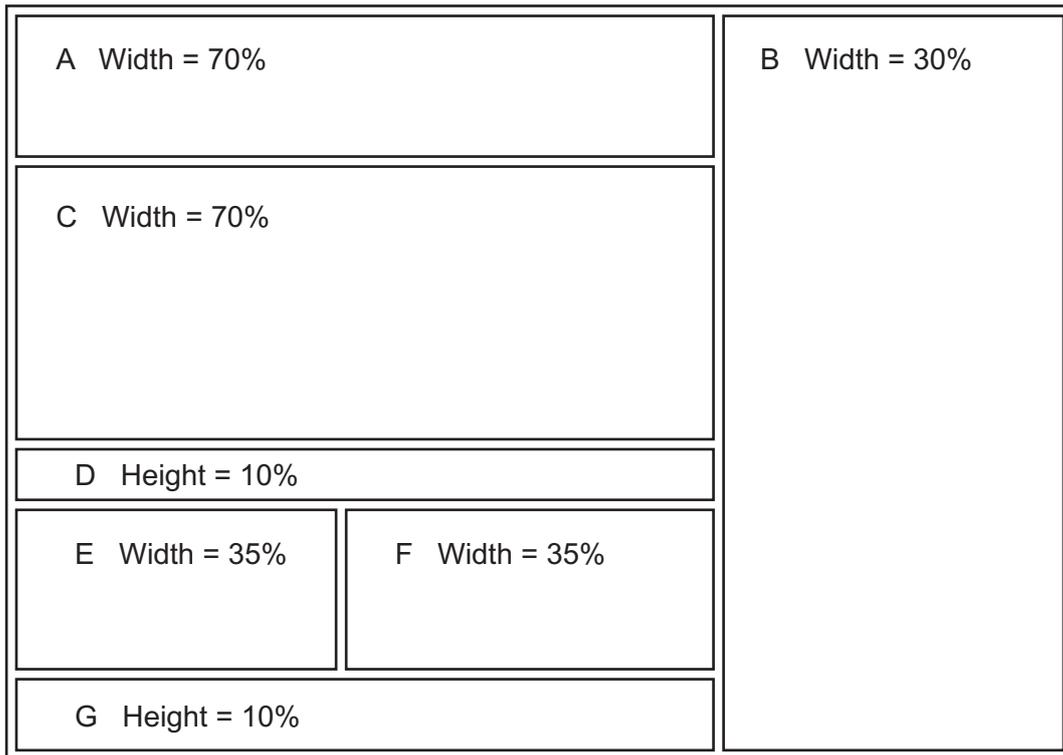
[Total: 4]

### Task 3 – Web Page

You are going to create a web page for *Tawara Balloon Safaris*. The web page and stylesheet must work in any browser. Make sure that your stylesheet contains no HTML. Make sure your HTML and stylesheet are as efficient as possible.

- 2 Create, in your *j2231* folder, a web page called **tbs.htm**

This web page must be created using a single table and must work in all browsers. The table must fit 90% of the width and height of the browser window. The table must have a structure as shown in this diagram:



Each table cell is identified with a letter. Some dimensions are shown. These must be set as percentage values. Do **not** set the height of cells A, B, C, E or F.

The cell contents shown in the diagram must **not** appear on your final web page.

Table borders must appear on the final web page.

[8]

- 3 Set the title of the web page to **Tawara Balloon Safaris** [1]
- 4 Set, in the HTML, the name of the default target window to **\_new** [1]

- 5 Place in cell:
- A the image **j31banner.jpg**
  - B the balloon image saved in step 1
  - C a video tag to display **j31balloon.mp4** so that it fits the width of this cell. Display an automated text-based error message if the browser does **not** support this video type
  - E the image **j31serengeti.jpg**
  - F the image **j31maasai.jpg**
- [9]
- 6 Place inline style attributes into the HTML so that each image, with its aspect ratio maintained, fits the width of the table cell. [1]
- 7 Add appropriate alternate text to all still images. [1]
- 8 Place in cell D the text from the file **j31text.txt**
- Set this text as style h2 [2]
- 9 Enter in cell G the text:
- Click on the images above to enjoy the wonders of Kenya and Tanzania.**
- Web page last edited by:** followed by a space, your name, centre number and candidate number.
- Display the text you have entered as two paragraphs.
- Set all text in cell G as style h3 [4]
- 10 Create a hyperlink from the image *j31maasai.jpg* to open the web page **j31kenya.htm** [2]
- 11 Create a hyperlink from the image *j31serengeti.jpg* to open the web page **j31tanzania.htm** in the browser window that is currently in use. [3]
- 12 Rename the stylesheet **j31stylesheet.css** to **j31stylesheet\_** followed by your centre number\_ candidate number, for example, **j31stylesheet\_ZZ999\_9999**
- Make sure this stylesheet is still in cascading stylesheet file format.
- Attach this stylesheet to your web page. [2]

A trainee has attempted to create the stylesheet for this website. This file contains a number of errors and omissions. All colour codes must be displayed in hexadecimal. Your stylesheet must **not** contain HTML or scripting language.

13 Open and edit the stylesheet you saved in step 12 to meet the following specifications:

Set the background for the web page so that it has a colour with a:

- blue component of **d2**
- red component of **74**
- green component of **ab**

Set the font for styles h1, h2 and h3 so that the browser selects and displays the font **Times CY**. If this font is not available, the browser selects and displays the font **Times New Roman**. If neither of these fonts are available, the browser must display its default serif font. Set the text in styles h1, h2 and h3 to black.

Set style h1 so the text is centre aligned with a 16-point font.

Set style h2 so the text is fully justified with a 12-point font.

Set style h3 so the text is left aligned with a 10-point font.

Set each table margin individually to 5% of the width and height of the browser window.

Set all table cell padding to 10 pixels.

Set all table borders and gridlines to be:

- visible
- separated
- solid
- black
- 1 pixel wide.

Set the spaces between the borders of all table elements to 10 pixels.

Correct and edit the comment at the start of the stylesheet to contain your name, centre number and candidate number.

Save this stylesheet in your *j2231* folder.

Take a screenshot to show the file name and all contents of your stylesheet and place this in your Evidence Document. Make sure the file name and all contents are clearly visible.

[27]

## EVIDENCE 2

A screenshot of your stylesheet with the required information clearly visible.

**14** Save your web page.

Display your web page in a browser. If necessary resize it so that:

- all the page can be seen
- all text can be easily read
- the address bar is visible.

Take screenshot evidence showing your web page in the browser. Place this in your Evidence Document.

**EVIDENCE 3**

Screenshot evidence of your web page in the browser with the table contents and background elements clearly visible.

Take a copy of the HTML source and place this in your Evidence Document.

[1]

**EVIDENCE 4**

A copy of your HTML source.

[Total: 62]

**Task 4 – Printing the Evidence Document**

Save and print your Evidence Document.

**PRINTOUT 1**

Make sure your **name**, **centre number** and **candidate number** appear on every page of your Evidence Document.

**Task 5 – Spreadsheet**

*You are going to create a spreadsheet to display data about safety equipment required for a hot air balloon.*

**15** Open and examine the file **j31tables.csv** in a spreadsheet package. This file will be used but must **not** be edited.

Open and examine the file **j31balloon.csv** in a spreadsheet package. Save this as a spreadsheet with the filename **Balloon\_** followed by your centre number\_candidate number, for example, **Balloon\_ZZ999\_9999**

Place in the header:

- left aligned, your name, centre number and candidate number
- right aligned, the automated file name with no file path.

[2]

16 Enter a formula in cell B5 to look up the equipment item using the item number in cell B4 for the value and the external file *j31tables.csv* for the array. [5]

17 Enter a formula in cell B7 to display the date and name of the employee who checked the item of safety equipment, using the balloon name, item number and external file *j31tables.csv* [4]

18 Print your spreadsheet showing the formulae.  
Make sure:

- it is in landscape orientation
- the row and column headings are displayed
- the contents of all cells are fully visible.

[1]

**PRINTOUT 2**

Make sure that you have entered your **name**, **centre number** and **candidate number** on the spreadsheet showing the formulae.

19 Enter into cell B3 the text **Beta**

Enter into cell B4 the number **2**

Save your spreadsheet.

Print the entire spreadsheet showing the values.

Make sure the:

- printout fits on a single page
- contents of all cells are fully visible
- row and column headings are **not** displayed.

[2]

**PRINTOUT 3**

Make sure that you have entered your **name**, **centre number** and **candidate number** on the spreadsheet showing the values.

[Total: 14]

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**INFORMATION AND COMMUNICATION TECHNOLOGY**

**0417/31**

Paper 3 Data Analysis and Website Authoring

**May/June 2022**

MARK SCHEME

Maximum Mark: 80

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**Published**

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the May/June 2022 series for most Cambridge IGCSE, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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This document consists of **8** printed pages.

**Generic Marking Principles**

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

**GENERIC MARKING PRINCIPLE 1:**

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

**GENERIC MARKING PRINCIPLE 2:**

Marks awarded are always **whole marks** (not half marks, or other fractions).

**GENERIC MARKING PRINCIPLE 3:**

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

**GENERIC MARKING PRINCIPLE 4:**

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

**GENERIC MARKING PRINCIPLE 5:**

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

**GENERIC MARKING PRINCIPLE 6:**

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

## Evidence document

31 > j2231

Name	Date modified	Type	Size	Height	Width	Frame height	Frame width
balloon_9999.png	13/09/2020 16:33	PNG File	10,944 KB	6000 pixels	2099 pixels		
j31balloon.jpg	13/09/2020 16:28	JPG File	2,272 KB	6000 pixels	2099 pixels		
j31balloon.mp4	02/04/2020 10:48	MP4 File	5,774 KB			480	854
j31banner.jpg	02/04/2020 11:37	JPG File	1,819 KB	666 pixels	4000 pixels		
j31kenya.htm	05/04/2020 10:25	HTML Document	1 KB				
j31maasai.jpg	04/04/2020 10:28	JPG File	137 KB	500 pixels	1500 pixels		
j31serengeti.jpg	04/04/2020 10:24	JPG File	316 KB	500 pixels	1500 pixels		
j31stylesheet.css	06/04/2020 09:54	CSS File	1 KB				
j31tanzania.htm	05/04/2020 10:30	HTML Document	1 KB				
j31text.txt	04/04/2020 11:08	Text Document	1 KB				

Screen shot includes folder name **j2231**, image dimensions, frame width, frame height, file names, file extensions & sizes 1 mark  
 Saved as balloon\_9999 in .png format 1 mark

```

j31stylesheet_ZZ999_9999.css - Notepad
File Edit Format View Help
/* Last edited by A Candidate, ZZ999, 9999 for Tawara Balloon Safaris */

body                {background-color:#74abd2;}

h1,h2,h3           {font-family: "Times CY", "Times New Roman", serif;
                    color: #000000;}

h1                 {text-align: center;
                    font-size: 16pt;}

h2                 {text-align: justify;
                    font-size: 12pt;}

h3                 {text-align: left;
                    font-size: 10pt;}

table              {border-collapse: separate;
                    border-spacing: 10px;
                    margin-left:5%;
                    margin-right:5%;
                    margin-top:5%;
                    margin-bottom:5%;}

table,td           {border: 1px solid #000000;}

td                 {padding: 10px;}

```

Comment	/* Candidate details at top	1 mark
	*/ corrected	1 mark
body {...}	background-color: #74abd2	1 mark
h1,h2,h3 {...}	font-family: "Times CY"	1 mark
	, "Times New Roman"	1 mark
	, serif	1 mark
	color: #000000	1 mark
	all 3 correct fonts & colour in h1, h2, h3	1 mark
	3 styles using single selector	1 mark
h1 {...}	text-align:center;	1 mark
	font-size: 16pt	1 mark
h2 {...}	text-align:justify;	1 mark
	font-size: 12pt	1 mark
h3 {...}	text-align:left;	1 mark
	font-size: 10pt	1 mark
table {...}	border-collapse: separate;	1 mark
	border-spacing:10px;	1 mark
	margin-left:5%	1 mark
	margin-right:5%	1 mark
	margin-top:5%	1 mark
	margin-bottom:5%	1 mark
table,td {...}	border-width:1px	1 mark
	border-style:solid	1 mark
	border-color:#000000	1 mark
	All using single selector	1 mark
td {...}	padding:10px;	1 mark
CSS syntax	Correct css syntax	1 mark

The screenshot shows a web browser window with the following content:

- Browser Address Bar:** file:///D:/CIE/0417/2022/June\_2022\_0417\_31/Worked/j2231/tbs.htm
- Page Title:** Tawara Balloon Safaris
- Header:** A banner image with the text "Tawara Balloon Safaris" in yellow, featuring a dog and a black dog.
- Video Player:** A video player showing a landscape with a timestamp of 00:00 / 00:08.
- Text Block:**

Tawara Balloon Safaris offer amazing early morning trips across the Maasai Mara and Serengeti national parks. Watch the animals in their element, from the air, as you silently drift overhead. As a company we have over 25 years' experience of ballooning and employ only fully qualified and experienced pilots. Our ground crew will collect you from your camp and meet you at the end of the safari with a leisurely champagne breakfast in the bush.
- Image Thumbnails:**
  - Serengeti:** A thumbnail image showing a herd of animals in a savanna.
  - Maasai Mara:** A thumbnail image showing three giraffes.
- Text Block:**

Click on the images above to enjoy the wonders of Kenya and Tanzania.  
Web page last edited by: A Candidate ZZ999 9999
- Large Image:** A large image of a hot air balloon with orange, yellow, and red stripes, floating over a savanna landscape.

**Click on the images above to enjoy the wonders of Kenya and Tanzania.  
Web page last edited by: A Candidate ZZ999 9999**

In browser, address visible	1 mark
Separated table & cell borders visible	1 mark
3 left still images visible in correct cells	1 mark
Balloon image in right cell	1 mark
Rotated through 90° clockwise	1 mark
Horizontal reflection (flip)	1 mark
Video visible	1 mark
Text placed from source file	1 mark
In style h2	1 mark
Line 1 text entry 100% accurate	1 mark
Web page last edited by: A Candidate ZZ999 9999	1 mark
Split as 2 paragraphs in h3	1 mark

<pre> &lt;!DOCTYPE html&gt; &lt;html&gt; &lt;head&gt;   &lt;Title&gt;Tawara Balloon Safaris&lt;/title&gt;   &lt;base target="_new"/&gt;   &lt;link rel="stylesheet" type="text/css" href="j31stylesheet_ZZ999_9999.css"&gt; &lt;/head&gt; &lt;body&gt;   &lt;table style="width:90%;" border="1"&gt;     &lt;tr&gt;       &lt;td colspan="2" style="width:70%;"&gt;         &lt;img src="j31banner.jpg" alt="Banner for Tawara Balloon Safaris" style="width:100%" /&gt;       &lt;/td&gt;       &lt;td rowspan="5" style="width:30%;"&gt;         &lt;img src="balloon_9999.png" alt="Image of a hot air balloon" style="width:100%" /&gt;       &lt;/td&gt;     &lt;/tr&gt;     &lt;tr&gt;       &lt;td colspan="2" style="width:70%;"&gt;         &lt;video width="100%" controls&gt;           &lt;source src="j31balloon.mp4" type="video/mp4"&gt;           Your browser does not support this video file type.         &lt;/video&gt;       &lt;/td&gt;     &lt;/tr&gt;     &lt;tr&gt;       &lt;td colspan="2" style="width:70%; height:10%"&gt;         &lt;h2&gt;Tawara Balloon Safaris offer amazing early morning trips across the Maasai Mara and Serengeti national parks. Watch the animals in their element, from the air, as you silently drift overhead. As a company we have over 25 years' experience of ballooning and employ only fully qualified and experienced pilots. Our ground crew will collect you from your camp and meet you at the end of the safari with a leisurely champagne breakfast in the bush.         &lt;/h2&gt;       &lt;/td&gt;     &lt;/tr&gt;     &lt;tr&gt;       &lt;td style="width:35%"&gt;         &lt;a href="j31tanzania.htm" target="_self"&gt; </pre>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">         Title accurate and in head section 1 mark          &lt;base target="_new"&gt; in head section 1 mark       </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">         Stylesheet attached in head section ... 1 mark          ... renamed as j31stylesheet_ZZ999_9999.css 1 mark       </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">         Table style="width:90%" no letters visible 1 mark       </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">         Row 1 left style="width:70%" colspan=2 1 mark          Row 1 right style="width:30%" rowspan=5 1 mark       </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">         Row 2 colspan=2 1 mark       </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">         Row 2 video &lt;...&gt; tag used ... 1 mark          ... width="100%" 1 mark          ... Source&lt;...&gt; tag used ... 1 mark          ... src="j31balloon.mp4" 1 mark          ... type="video/mp4" 1 mark          ... Appropriate error message 1 mark       </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;">         Row 3 colspan=2 1 mark       </div> <div style="border: 1px solid black; padding: 5px;">         Hyperlink anchor around j31serengeti.jpg 1 mark          href="j31tanzania.htm" 1 mark          target="_self" 1 mark       </div>
--	--

```

    
  </a>
</td>
<td style="width:35%">
  <a href="j31kenya.htm">
    
  </a>
</td>
</tr>
<tr>
  <td colspan="2" style="width:70%; height:10%">
    <h3>Click on the images above to enjoy the wonders of Kenya and
Tanzania.<br>
Web page last edited by: A Candidate ZZ999 9999
    </h3>
  </td>
</tr>
</table>
</body>
</html>

```

Hyperlink	anchor around j31maasai.jpg	1 mark
	href="j31kenya.htm"	1 mark

4 still images	Appropriate alt text	1 mark
	style="width:100%"	1 mark

Mark from any printout  
 Header Candidate details on left 1 mark  
 File name **Balloon\_ZZ999\_9999** with no path on right 1 mark

A Candidate, ZZ999, 9999

Balloon\_ZZ999\_9999.xlsx

	A	B
1	Balloon equipment checklist	
2		
3	Balloon name:	Beta
4	Item number:	2
5	Equipment item:	=VLOOKUP(B4,j31tables.csv!\$A\$3:\$B\$15,2,0)
6		
7	Checked:	=VLOOKUP(B3,j31tables.csv!\$D\$4:\$Q\$11,B4+1,0)

B5 =VLOOKUP( ... ) 1 mark  
 B4 1 mark  
 j31tables.csv 1 mark  
 !\$A\$3:\$B\$15 1 mark  
 ,2,0 1 mark  
 B7 =VLOOKUP(B3, ... ) 1 mark  
 ,j31tables.csv 1 mark  
 !\$D\$4:\$Q\$11 1 mark  
 ,B4+1,0 1 mark  
 Landscape, row & col heads & fully visible 1 mark

A Candidate, ZZ999, 9999

Balloon\_ZZ999\_9999.xlsx

Balloon equipment checklist

Balloon name: Beta  
 Item number: 2  
 Equipment item: portable lights  
 Checked: 22 February 2022 by Naserian

Values  
 Data entered for **Beta** and **2** with correct results 1 mark  
 Single page fully visible with no row & column headings 1 mark