

HONG KONG EXAMINATIONS AND ASSESSMENT AUTHORITY
HONG KONG DIPLOMA OF SECONDARY EDUCATION EXAMINATION 2022

INFORMATION AND COMMUNICATION TECHNOLOGY
PAPER 2C

Multimedia Production and Web Site Development

 **Question-Answer Book**

11:15 am – 12:45 pm (1 hour 30 minutes)

This paper must be answered in English

INSTRUCTIONS

- (1) After the announcement of the start of the examination, you should first write your Candidate Number in the space provided on Page 1 and stick barcode labels in the spaces provided on Pages 1, 3, 5 and 7.
- (2) Answer **THREE** out of four questions. Write your answers in the spaces provided in this Question-Answer book. Do not write in the margins. Answers written in the margins will not be marked.
- (3) Supplementary answer sheets will be supplied on request. Write your candidate number, mark the question number box and stick a barcode label on each sheet, and fasten them with string **INSIDE** this book.
- (4) No extra time will be given to candidates for sticking on the barcode labels or filling in the question number boxes after the 'Time is up' announcement.

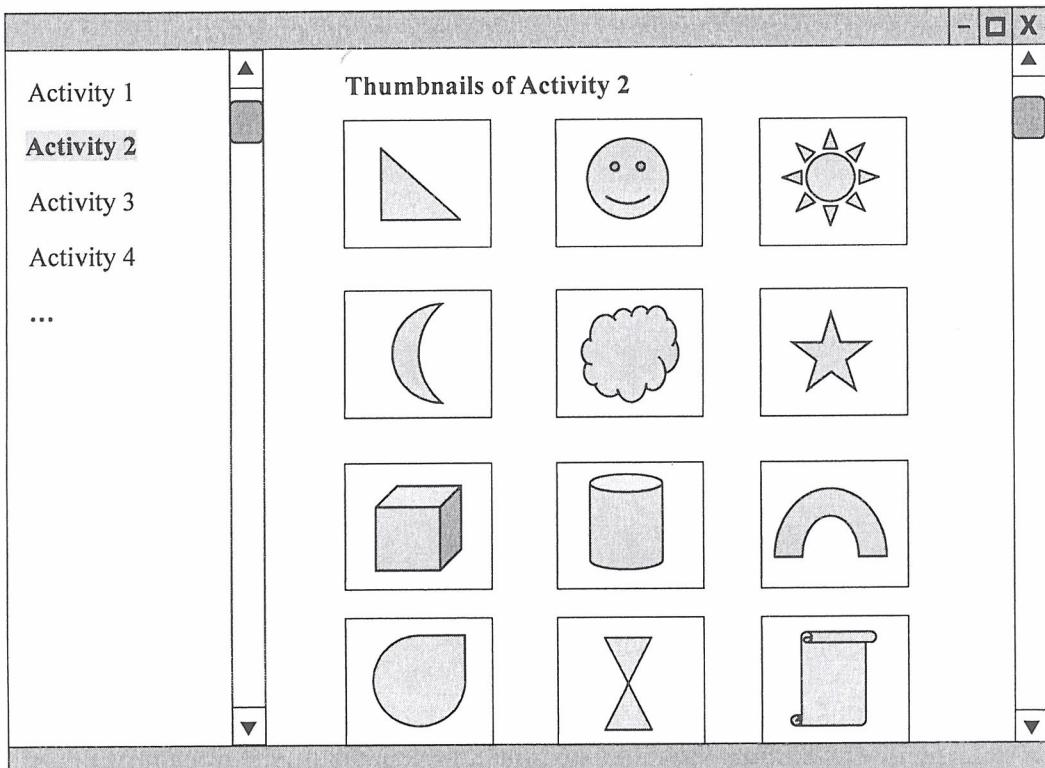
Please stick the barcode label here.

Candidate Number



Answer THREE questions only.

1. Ada develops a web site for a science club to show a large number of photos of its activities. She drafts the design below:



Answers written in the margins will not be marked.

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Please stick the barcode label here.

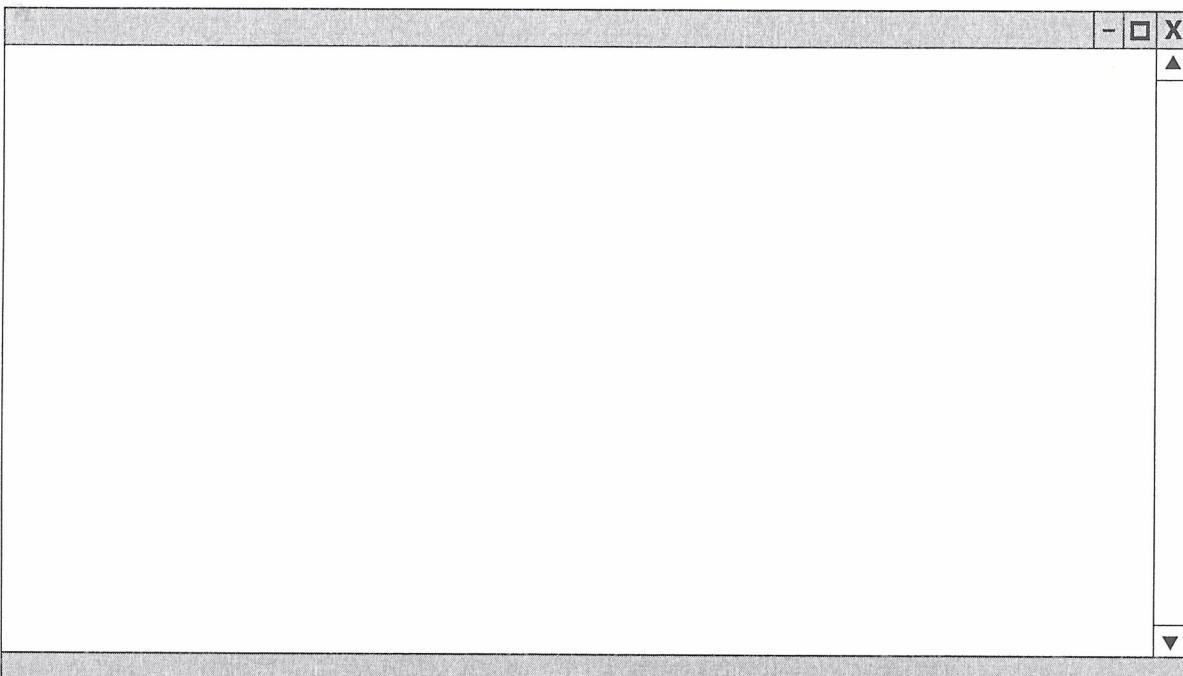
- (a) Some users comment on the design, as follows:

User A: I don't like the design as I need to click on the thumbnails to view bigger photos.

User B: I don't like the design as I need to preview so many photos to find a certain photo.

User C: I spent too much time to find photos of the activities on 1 January 2022.

- (i) Draft a new design for Ada to address the comments and describe briefly how to use the design.

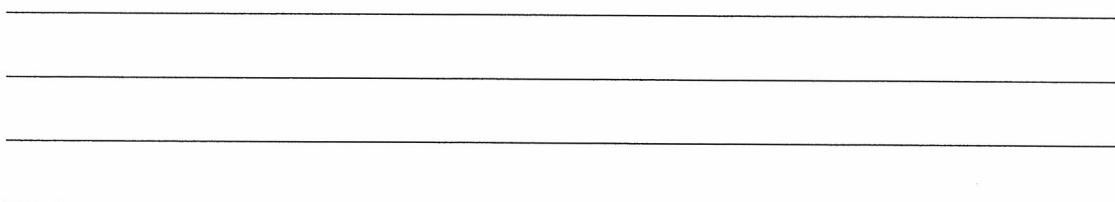


Answers written in the margins will not be marked.

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(3 marks)

- (ii) Ada wants to apply an identical layout to several web pages in one go. Suggest two different methods for her to do this.



(2 marks)

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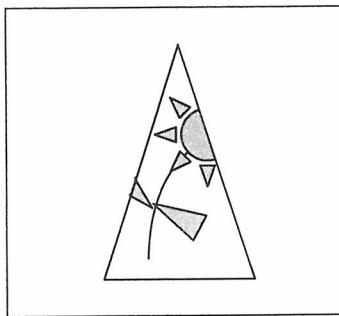
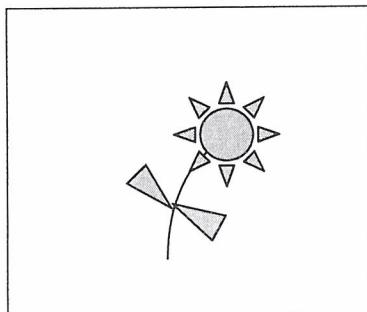
- (b) Ada has a 5×4 inches printed photo of an activity. She scans it with a resolution of 600 dpi.

(i) How many pixels does the scanned image have? _____ (1 mark)

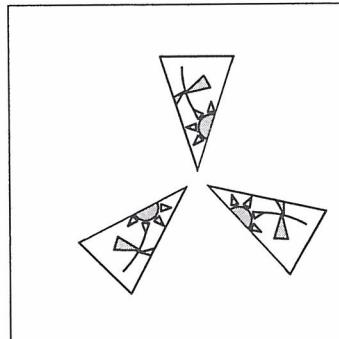
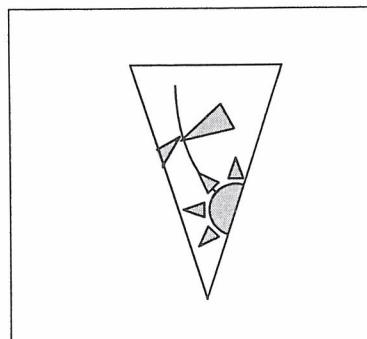
(ii) Ada converts the image to a compressed image. The maximum file size of the compressed image is 1 MB and the compression ratio is 14:1 . Find the maximum colour depth that can be used for the compressed image.

(2 marks)

Ada creates an image P4 from an image P1.



P1



P3

Answers written in the margins will not be marked.

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Please stick the barcode label here.

(c) Write down the steps involved in the following editing processes:

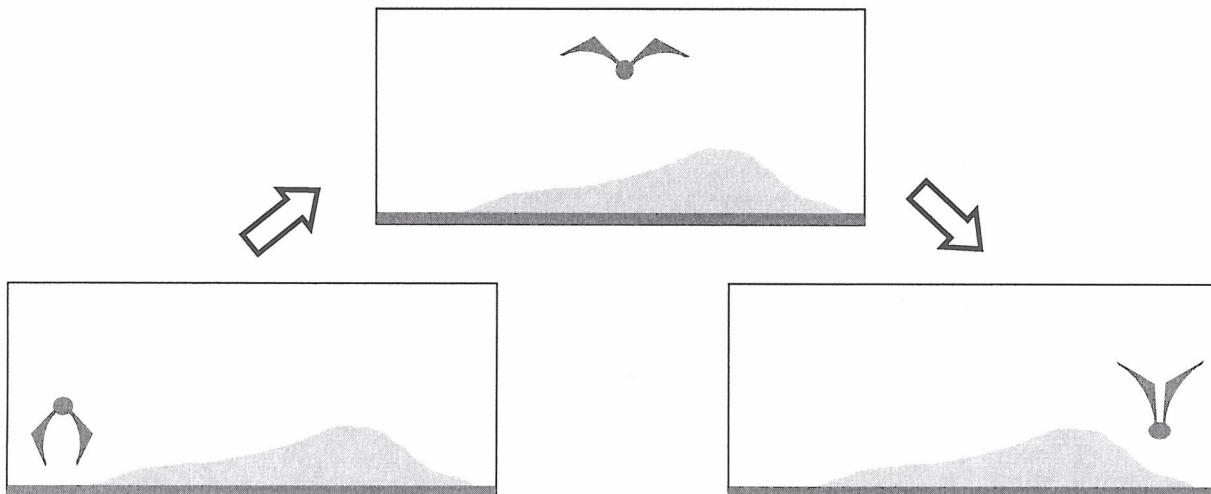
To create P2 from P1: _____

To create P3 from P2: _____

To create P4 from P3: _____

(4 marks)

(d) Ada creates an animation of a flying bird with the use of tweening, as shown below:



Describe how to create the animation efficiently.

(3 marks)

Answers written in the margins will not be marked.

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2. Mr Lee designs a web site for children to play games on.

- (a) Describe two examples of how to use metadata to promote the web site.

(2 marks)

- (b) Mr Lee edits a table on the web page, as shown below:

Original web page:

Game site							
<u>About us</u>							
<table border="1"><thead><tr><th>Name</th><th>Phone No.</th></tr></thead><tbody><tr><td>Mr Lee</td><td>3628 8833</td></tr><tr><td>Ms Chan</td><td>3628 8833</td></tr></tbody></table>		Name	Phone No.	Mr Lee	3628 8833	Ms Chan	3628 8833
Name	Phone No.						
Mr Lee	3628 8833						
Ms Chan	3628 8833						

Edited web page:

Game site							
<u>About us</u>							
<table border="1"><thead><tr><th>Name</th><th>Phone No.</th></tr></thead><tbody><tr><td>Mr Lee</td><td>3628 8833</td></tr><tr><td>Ms Chan</td><td></td></tr></tbody></table>		Name	Phone No.	Mr Lee	3628 8833	Ms Chan	
Name	Phone No.						
Mr Lee	3628 8833						
Ms Chan							

Mr Lee has changed **two** attributes of the table. What are they?

(2 marks)

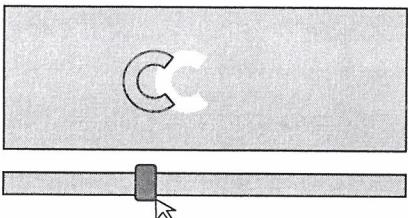
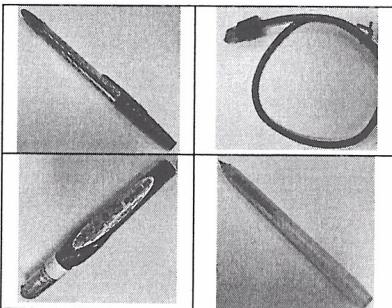
Answers written in the margins will not be marked.

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Please stick the barcode label here.

Login	
Username:	<input type="text"/>
Password:	<input type="password"/> <input type="checkbox"/> I am not a robot
<input type="button" value="Submit"/> <input type="button" value="Cancel"/>	

After clicking on the check box of 'I am not a robot' on the login page above, one of the following tests is shown:

Test 1	Test 2
 Type in the text above: <input type="text"/>	Sequence: 1, 4, 9, 16, x What is the value of x? <input type="text"/>
Test 3	Test 4
Finish the sliding puzzle below: 	Select all images of pens.  <input type="button" value="Confirm"/>

(c) For each test, give a potential difficulty that children users might encounter.

Test 1: _____

Test 2: _____

Test 3: _____

Test 4: _____

(4 marks)

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- (d) Mr Lee creates a ‘paper rock scissors’ online game with the game rules below:

1. Paper  beats rock .
2. Rock  beats scissors .
3. Scissors  beats paper .
4. If both players choose the same object, the round is tied.
5. The player who wins a round will score 1 point. The player who gets 2 points first is the winner.

Choose paper  , rock  or scissors  :		
Player A		Player B
	Round 1	
	Win →	
Total score = 0		Total score = 1
Round 2		
	Win ←	
Total score = 1		Total score = 1
Round 3		
	Tie	
Total score = 1		Total score = 1
Round 4		
	Win ←	
Total score = 2		Total score = 1
The winner is Player A		

He uses the following variables to develop the game.

Variable	Description
round	Stores the number of rounds played.
playerA	Stores Player A’s choice represented by an integer: 3 = Paper  ; 2 = Rock  ; 1 = Scissors 
playerB	Stores Player B’s choice represented by an integer: 3 = Paper  ; 2 = Rock  ; 1 = Scissors 
ScoreA	Stores the total number of rounds won by Player A.
ScoreB	Stores the total number of rounds won by Player B.

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- (i) Complete the following pseudocode for finding the winner.

```
round ← 0
repeat
    playerA ← Player A's choice
    playerB ← Player B's choice
    if( [ ] ) then
        OUTPUT 'Tie'
    else if (playerA = 1) AND (playerB = 3) then
        ScoreA ← ScoreA + 1
    else if (playerA = 3) AND (playerB = 1) then
        ScoreB ← ScoreB + 1
    else if playerA [ ] playerB then
        ScoreB ← ScoreB + 1
    else
        ScoreA ← ScoreA + 1
    round ← [ ]
until (ScoreA = 2) [ ] (ScoreB = 2)
```

(4 marks)

- (ii) Mr Lee sets Player B's choices to be randomly generated by the computer. myRAND(X) is a subprogram that returns a random integer from 0 to (X-1). For example, myRAND(10) generates an integer from 0 to 9.

Use myRAND(X) to assign a random number from 1 to 3 as Player B's choice. Complete the following statement.

playerB ← _____
(1 mark)

- (iii) Mr Lee plans to develop a multi-player version of this online game. He sets up a server at home. Give an advantage and a disadvantage of using this server instead of a web hosting service.

Advantage: _____

Disadvantage: _____

(2 marks)

Answers written in the margins will not be marked.

3. Eva uses a digital video camera to record the events at a school's sports day. The setting of the camera is:

Resolution	3840 × 2160
Frame rate	60 fps
Colour depth	24 bits
Bitrate	30 Mbps

- (a) (i) Estimate the file size in GB of a one-minute uncompressed video. Show your calculation.

(2 marks)

- (ii) Give a drawback of using a high bitrate for video recording.

(1 mark)

Eva uses video editing software with a codec to export a video and transmit it to other computers to view.

- (b) (i) Give two reasons why she needs to use the codec.

(2 marks)

- (ii) Sometimes there will be an updated version of the codec released. Give two reasons for the update.

(2 marks)

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- (c) The software provides three different settings for exporting videos, as follows:

	Setting A	Setting B	Setting C
Resolution	1920 × 1080	1920 × 1200	1920 × 1080
Frame rate	60 fps	30 fps	60 fps
Codec	Codec X version 1	Codec X version 2	Codec X version 2
Streaming buffer	6 MB	3 MB	1.5 MB

Give two reasons for not recommending Setting B.

(2 marks)

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Answers written in the margins will not be marked.

- (d) Eva designs the following web page for playing the videos of the events. When a user clicks on a hyperlink, the corresponding video will be played in a pop-up window.

2021 – 2022 Sports Day

Boys A grade Boys B G

100M	100M
200M	200M
400M	400M
800M	800M
1500M	1500M
3000M	3000M

Boys A Grade – 400M

Comments

Peter: 4A is the best !
Mary: Never give up !
John: The race is exciting !

Submit

- (i) From a technical point of view, give an advantage and a disadvantage of using a pop-up window to play a video.

Advantage: _____

Disadvantage: _____

(2 marks)

- (ii) Suggest two additional web designs on the web page regarding web accessibility.

(2 marks)

- (e) Give a reason to support the use of cookies on the web site for users and the web site owner respectively.

Users: _____

Web site owner: _____

(2 marks)

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4. A company develops a shopping web site for members to sell and buy used textbooks on.
(a) The following web page allows members to post a message when selling a book.

Book Information	
Subject	Mathematics
Book Name	General Algebra
Level	S6
Price	50
Upload Photos	<input type="button" value="Browse"/>
<input type="button" value="Submit"/>	

- (i) Give an advantage of using radio buttons instead of a text box for entering 'Subject'.

(1 mark)

- (ii) Other than radio buttons, suggest an alternative control for entering 'Level' and explain your answer briefly.

(2 marks)

- (iii) Suggest two constraints on the photos for upload.

(2 marks)

The company designs the following web page for members to buy used textbooks on.

Book Bazaar						My Cart 
Subject	Book name	Level	Price	Photo	Add to cart	
Science	Smart Science	1	\$50		<input type="button" value="ADD"/>	
Mathematics	Elite Mathematics	2	\$80		<input type="button" value="ADD"/>	
Geography	Incredible World	3	\$70		<input type="button" value="ADD"/>	

- (b) (i) When a member clicks on an 'ADD' button, he cannot see whether the corresponding book has been added to the shopping cart successfully. Suggest two ways to improve the web page design to fix this issue.

(2 marks)

- (ii) A two-level interdependent select list is added to the web page for members to filter the book list. Give two fields that should be used in the select list.

(1 mark)

- (iii) Give two features that can be added to the web page for members to look for books easily, other than the two-level interdependent select list.

(2 marks)

Answers written in the margins will not be marked.

- (c) Give two advantages of using client-side scripts to make the shopping cart.

(2 marks)

- (d) 100 discount codes will be given to selected members. They can enjoy a 20% discount after entering a discount code. Each code can be used only once. Describe briefly how the company implements this idea using server-side scripts.

(3 marks)

END OF PAPER

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