General Certificate of Secondary Education
2024

Digital Technology

Unit 2

Digital Authoring Concepts

MV18

[GDG21]

THURSDAY 6 JUNE, AFTERNOON

Time

1 hour 30 minutes, plus your additional time allowance.

Instructions to Candidates

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
You must answer the questions in the spaces provided.
Do not write on blank pages.
Complete in black ink only.
Answer **all ten** questions.

Information for Candidates

The total mark for this paper is 120.
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in Question **3(e)**.

For Question 1 insert the appropriate letter in the space provided.

1 **(a)** Select the statement that correctly describes what the following HTML code will display on a web page.
[1 mark]

```
<table>
    <tr>
        <td>Jane</td>
        <td>Simon</td>
        <td>Alex</td>
    </tr>
</table>
```

A Creates a table with three rows

B Creates a table with three columns

C Creates a table with three data items in one cell

D Creates a blank table with three headings above the table

Answer _____

(b) Select the HTML statement that will correctly display the following text on a web page. [1 mark]

This is my text

A </i></u>This is my text<i><u>

B <bold><i><u>This is my text</b/i></u>

C <it><u>This is my text</u></i>

D <i><u>This is my text</i></u>

Answer _____

(c) Select the HTML that will correctly display the following on a web page.   [1 mark]

- List item 1
- List item 2
- List item 3

A
List item 1
List item 2
List item 3

B
List item 1
List item 2
List item 3

C
List item 1
List item 2
List item 3

D
List item 1
List item 2
List item 3

Answer _____

(d) Select the HTML which will correctly display the words "Here is my paragraph" as red text.   [1 mark]

A   <p style= "colour: red";> Here is my paragraph</p>

B   <p style= "color: red;> Here is my paragraph"<p>

C   <p style= "colour: red"; Here is my paragraph</p>

D   <p style= "color: red;"> Here is my paragraph</p>

Answer _____

2 Digital applications come in many formats, such as gaming or social media.

(a) In the table below, place a tick (✓) beside **two** statements that correctly identify the advantages of including interactive features in online gaming applications.   [2 marks]

Statement	Tick (✓)
Users can customise characters to personalise their gaming experience	
Users need digital devices with large RAM specifications to play the games	
Reliable broadband communication links are needed to support high speed interactions	
Feedback is ongoing and can make the game more interesting for the user	

(b) Describe **one** disadvantage of including live streaming on a social media application.   [2 marks]

_____

_____

(c) Prototyping can be used in developing digital applications.

In the table below, place a tick (✓) beside **two** statements that correctly describe a prototype.
[2 marks]

Statement	Tick (✓)
A partially completed version of a computer application which can be developed further using feedback from the user	
A version of an application used to help discuss user requirements with an end user	
A completed version of an application that is tested before being released to the user	
A new version of an application released to users to help improve security	

3 Alex is designing a new website and database for a local business to sell products online.

Alex must identify the end user of the website before creating the new website and database.

(a) Identify the end user of the website.   [1 mark]

_____

(b) Some of the tools used when designing a new application are listed below:

A – Navigation structure diagram

B – Storyboard

C – Timeline

D – Data dictionary

E – Entity–relationship diagram

In the table below, insert the appropriate letter beside each task to help Alex decide which tool to use.
[5 marks]

Tool	Task to be completed
	Show how tables in the database will be linked together
	Show the sequence of scenes in a movie
	Describe the fields used in a database
	Show the layout of various screens in an application
	Show how the pages in the website will be linked together

(c) Users can enter instructions using a natural language interface.

Use the terms listed below to complete the sentences on natural language interfaces. (Use each term only once.)   [1 mark for each]

keyboard

microphone

program

dictionary

key words

Instructions can be spoken into a _____ or

entered using a _____ .

_____ are looked up in a

_____ .

When the correct word is located a _____

which carries out the correct set of instructions will be

executed by the processor.

(d) Identify **two** disadvantages of using natural language interfaces.   [2 marks]

1. _____

_____

2. _____

_____

(e) The main features of a GUI can make user interaction easier for non-technical users.
Discuss this statement.   [6 marks]

Quality of written communication will be assessed in this question.

_____

_____

_____

_____

_____

_____

_____

_____

(f) In the table below, state whether each statement about natural language interfaces is **True** or **False**.

[2 marks]

Statement	True or False
Many mobile phones use natural language interfaces to allow users to enter instructions	
Most search engines use natural language interfaces to allow users to carry out searches	

Blank Page

(Questions continue overleaf)

4 A small local airport uses a relational database to keep track of daily flights and passengers.

Part of the database is shown below.

FlightTable

FlightNum	Date	DepartureTime	Destination	GateNumber
LN-2234	1 May 2024	12:45	London	1
ML-6654	1 May 2024	13:00	Milan	1
PR-9875	1 May 2024	13:50	Paris	3
ML-5568	21 May 2024	15:20	Milan	1
BR-3698	31 May 2024	16:00	Barcelona	2
LN-4321	1 June 2024	14:30	London	2
RM-4478	2 June 2024	17:22	Rome	3

PassengerFlightTable

PassengerID	Title	Surname	Initial	TelNum	FlightNum	CheckedIn?
P6676	Mr	Jones	M	07765985652	LN-2234	Y
P4785	Ms	Brown	S	07965325874	PR-9875	N
P8765	Miss	Black	W	07632555541	ML-5568	N
P1145	Mr	White	P	07111122354	PR-9875	Y
P4577	Ms	Smith	K	07966584235	ML-5568	N
P5009	Mr	Green	H	07666332252	BR-3698	N

(a) Use the example tables opposite to answer the following questions.

   (i) Identify **one** example of a key field.   [1 mark]

   _____

   (ii) Identify **one** example of a foreign key.   [1 mark]

   _____

   (iii) Name the type of relationship that must be created between the two tables.   [1 mark]

   _____

(b) Relational databases can be used to improve data integrity and reduce data redundancy.

   (i) Explain the term data integrity.   [2 marks]

   _____

   _____

   (ii) Explain the term data redundancy.   [2 marks]

   _____

   _____

(c) The airport would like to create a list of all of the flights during the month of May.

In the table below, place a tick (✓) against the correct criteria for this query.　　[1 mark]

Criteria	Tick (✓)
Between 1/5/24 **Or** 30/5/24	
>30/4/24 **And** <1/6/24	
>=1/5/24 **And** >31/5/24	

(d) (i) Complete the query shown below, to help the airport produce a list that displays only the date and departure time of all flights to Milan.
[1 mark for each]

	Date	DepartureTime	Destination
Criteria			
Show	Yes	Yes	

(ii) Complete the criteria for the query shown below, to help the airport list all flights leaving the airport on 1 May 2024 from Gate 1. [1 mark for each]

	FlightNum	Date	DepartureTime	Destination	GateNumber
Criteria					

[Turn over

(e) Some queries are created using SQL. What do the letters SQL stand for?   [1 mark]

_____

(f) Complete the SQL statement below to help the airport create a list of the title, initial and surname of all passengers for flight PR-9875 who have not yet checked in.

SELECT _____
[1 mark]

FROM PassengerFlightTable

WHERE _____ AND _____
           [3 marks]   [3 marks]

(g) One of the flights has been cancelled. The airport would like to send a letter to let passengers know.

Use the words listed below to describe how a mail merge is completed. (Use each word only once).
[1 mark for each]

database

preview

recipients

insert

Write a letter using a word processed document.

Link the word processed document with the correct

_____ . Select the correct _____ .

Use the mail merge tool to _____ field

headings into the correct location in the letter. Test that

the mail merge has worked correctly by using

_____ before completing the mail merge.

(h) Database applications include a range of additional features and tools.

Complete the table below by identifying the correct tool for each task.

One example has been done for you.   [2 marks]

Task	Tool
Allows users to input data into a database table	
Allows users to display the results of a database query	
Allows the user to quickly carry out repetitive tasks	**Macro**

5 Many developers optimise files before sharing them online.

(a) How does file optimisation affect the following features of a graphics file?

(i) File size   [1 mark]

_____

(ii) Image quality   [2 marks]

_____

_____

(iii) Upload time   [1 mark]

_____

(b) Circle **two** optimised files from the list below:
[2 marks]

MyMovie.mp4

MyImage.bmp

MyImage.png

MySound.wav

(c) Many different file types and applications can now be viewed on different platforms.

Explain how plugins help improve cross-platform compatibility of applications and files.   [2 marks]

_____

_____

(d) PDF files are cross-platform compatible. What do the letters PDF stand for?   [1 mark]

_____

(e) List **three** pieces of advice you would provide for someone developing an application that needed to be cross-platform compatible.   [3 marks]

1. _____

2. _____

3. _____

6 Many online multimedia applications are now interactive.

(a) List **three** types of media you might expect to find in a multimedia application.   [3 marks]

1. _____

2. _____

3. _____

(b) Describe how hypertext and scripting can be used in the development of multimedia applications.
[2 marks for each]

- Hypertext

  _____

  _____

  _____

- Scripting

  _____

  _____

  _____

(c) Use the words listed below to complete the sentences which describe different coding approaches used when scripting. (Use each word only once).
[1 mark for each]

selection

sequencing

repetition

When lines of code can be executed over and over again, based on a condition, this is an example of _____ . When only some lines of code need to be run when a condition is met, this is known as _____ . When lines of code run one after the other in the order they are presented in the script, this is known as _____ .

7 (a) HTML files are used to create web pages.

(i) In the table below, tick (✓) the statement that is true about HTML. [1 mark]

Statement	Tick (✓)
HTML tags are used to define structure in HTML documents	
HTML tags cannot be used to apply style to text in HTML documents	

(ii) Some applications allow users to add content to web page templates and then they automatically create the HTML for the developer.

Give **two** advantages of using applications that automatically create HTML for the user.
[2 marks]

1. _____

_____

2. _____

_____

(b) Use the HTML tags shown to help you complete the table below.
The first example has been completed for you.
[5 marks]

A

B   <title> </title>

C   <h1> </h1>

D   <img src = "___">

E   <body> </body>

F   <p> </p>

Letter	HTML tag purpose
F	**Creates a new paragraph**
	Adds content to the part of the document displayed in the browser window
	Creates the largest heading displayed in the browser window
	Creates a hyperlink
	Contains text that is displayed in the browser tab
	Adds a graphic to the document displayed in the browser window

(c) Many developers use folders to store website content. Give **two** advantages of using folders.　　[2 marks]

1. _____

2. _____

8 Jo creates a website with an online booking form for a dentist's surgery.

- Patients enter their name, select an appointment type and enter a time on a booking form.
- Patients can make check-up or emergency appointments only
- Appointments can only be between 9 am and 3 pm
- Patients must enter their initials and surname on the form
- Patients must enter their dentist's surname on the form

(a) Identify the type of test data Jo is using in each of the test descriptions given below.   [6 marks]

Test description	Type of test data used
Enter an appointment time of 4 pm	
Enter 'check-up' as an appointment type	
Enter an appointment time of 9 am	
Enter an appointment time of 11 am	
Leave the dentist surname field blank	
Enter '1' as the patient's initial	

(b) Explain how Jo can carry out a test on each of the following areas of the website.

(i) Images displayed on the web page.　　[2 marks]

_____

_____

(ii) Navigation buttons to take the user to other pages on the website.　　[2 marks]

_____

_____

Jo uses scripting to help ensure the correct data is entered into the booking form.

- If a patient forgets to enter their name on the form they receive a message saying "Please enter your name"
- When all details are correctly entered the details are saved to a database
- If a time before 9 am is entered an error message will be displayed

(c) (i) Use the information provided above to explain how Jo could use black box testing to test the booking form.   [2 marks]

_____

_____

(ii) White box testing is also used, explain the term white box testing.   [2 marks]

_____

_____

(d) Explain to Jo **one** advantage of using A/B testing. [2 marks]

_____

_____

(e) Explain the difference between alpha and beta testing. [2 marks]

_____

_____

9 (a) Complete the table below by stating whether each of the following statements about evaluation are **True** or **False**.   [5 marks]

Statement about evaluation	True or False
The evaluation helps the developer gain feedback from the end user during the development process	
Design documents are involved in the evaluation process	
Testing evidence is not used during evaluation	
The user requirements play an important role in evaluation	
The programmer is not involved in the evaluation process	

(b) Evaluation is used to ensure that a new application provides an efficient solution to a problem. List **three** features a developer looks for in an efficient solution. [3 marks]

1. _____

2. _____

3. _____

10 Using the terms in the list below, choose **one** term that best matches the definition in the left-hand column. (Not all terms will be used)   [5 marks]

event driven

header

accessibility

grouping

iterative

footer

selection

** **

**
**

Definition	Terms
A development process where functionality is continuously added to an application until it is eventually completed	
A process where user input to an application will decide how the application behaves	
Features added to an application to help meet users' individual needs when interacting with the application	
Used to retrieve only those data items in an application that match specified criteria	
The HTML tag used to add a blank line between sections of text displayed in a browser window	

This is the end of the question paper