



Rewarding Learning

General Certificate of Secondary Education
2022

Centre Number

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Candidate Number

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Digital Technology

Unit 2

Digital Authoring Concepts

MV18

[GDG21]

MONDAY 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(d)**.

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

1 (a) Interactive shopping applications use https to allow users to process secure payments. What do the letters https stand for? [1 mark]

- A** Hypertext transfer protocol secure
- B** Hypertext transmit protocol secure
- C** Hypertext transfer protocol security
- D** Hypertext transmit protocol security

Answer _____

(b) Interactive applications rely on feedback from the end user. Select the correct definition of the term feedback. [1 mark]

- A** Output from a digital application is used as input to another application
- B** Data input to a digital application is converted to digital format
- C** Input from a digital application is affected by output
- D** Data output from a digital application in text based format

Answer _____

(c) Relational database tables can sometimes contain composite keys. Select the correct definition of a composite key. [1 mark]

- A A composite key contains more than one word
- B A composite key appears in more than one table
- C A composite key is made up of more than one field
- D A composite key appears in more than one database

Answer _____

(d) Select the statement which is **True** about mail merge. [1 mark]

- A Mail merge documents are stored as files inside the database application
- B Data is input into a mail merge document manually by the end user
- C Mail merge documents are automatically emailed to the recipient
- D Mail merge documents are template documents which are set up to contain merge fields

Answer _____

(e) Some user interfaces use pointers. Select the correct description of a pointer. [1 mark]

- A** On-screen graphic used to alert the user to a problem
- B** On-screen graphic which provides a shortcut to an application
- C** On-screen graphic which moves around on screen
- D** On-screen graphic used to control a multimedia presentation

Answer _____

2 Molly is designing a website to support **GCSE** revision.

(a) Complete the table below by inserting the correct term beside each description to show how each design tool is used when designing a digital application.

(Not all words shown will be used) [4 marks]

ER Diagram

Storyboard

Data Dictionary

Navigational Structure Diagram

Timeline

User Requirements

Description	Term
Shows the layout of individual screens in a website	
Shows the pathways a user can take through the website	
An outline of the sequence of a movie or animation	
Contains the details of the field headings held in a database	

(b) Molly creates and uses two prototypes, each in a different way.

Name the prototype used in each of the descriptions shown below. [1 mark for each]

(i) One prototype was used only to help Molly decide what tasks the website was expected to perform.

(ii) Another prototype was developed and improved over and over again until the final website was produced.

(c) Give **two** disadvantages of involving the end user in the development of a prototype. [1 mark for each]

1. _____

2. _____

(d) Molly also produces a user requirements document.

List **two** features of a good user requirements document.
[1 mark for each]

1. _____

2. _____

(e) Molly is unsure if she should develop the website using HTML instead of multimedia authoring software.

List **three** advantages of using HTML to develop a website. [1 mark for each]

1. _____

2. _____

3. _____

3 User interfaces come in a variety of formats, for example GUIs.

(a) Complete the table below by stating whether each statement is **True** or **False**. [5 marks]

Statement	True / False
Icons are used to represent tasks or applications	
High specification graphics cards are required to run a GUI	
A lot of training is needed before a GUI can be used properly	
GUI use very little RAM and suit inexperienced users	
Users can select shortcuts using a pointing device	

(b) Some gaming applications use motion tracking interfaces.

List **two** methods developers use to track motion for user input. [1 mark for each]

1. _____

2. _____

(c) An information booth at a local tourist attraction uses a touch screen interface.

Identify **two** advantages and **two** disadvantages of a touch screen for this type of application.

[1 mark for each]

Advantages

1. _____

2. _____

Disadvantages

1. _____

2. _____

4 Most digital applications are now multimedia based.

Identify **two** disadvantages of including multimedia in an online application used on a mobile phone.

[1 mark for each]

1. _____

2. _____

5 Alex has created a relational database to keep track of users' scores and levels for an online game.

(a) Complete the table below by stating whether each statement is **True** or **False**. [3 marks]

Statement	True / False
Relational databases contain more than one table and help increase data redundancy	
Each table in a relational database contains all of the data about an individual person, place or thing	
Relational databases increase data integrity as data is not duplicated unnecessarily	

The diagram below shows the tables Alex will use in his database.

PlayerTBL

Field	Data Type
PlayerID	
FirstName	string
SecondName	string
Password	

GameTBL

Field	Data Type
GameID	integer
GameName	string

Each player can play more than one game

Each game can have more than one player

GameLinkTBL

Field	Data Type
PlayerGameID	integer
PlayerID	
GameID	integer
CurrentLevel	

(b) The diagram below shows the tables Alex will use in his database.

Use the information about the database tables to show the relationships which exist between each table.

[1 mark for each of two relationships]

PlayerTBL

GameLinkTBL

GameTBL

(c) Alex still needs to decide on data types for some fields in the database.

- PlayerID contains letters and numbers, for example A123.
- CurrentLevel can only contain the values 1, 2, 3, 4, 5, 6, 7

Circle the most suitable data type for each field.
[1 mark for each]

PlayerID	String	Character
CurrentLevel	Integer	Real

(d) Gamers must set passwords which:

- start with a capital letter
- contain at least one number
- are at least 8 characters long

Name **three** validation checks Alex could apply to the database field, Password, when it is created in the database. [1 mark for each]

1. _____
2. _____
3. _____

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(Questions continue overleaf)

(e) Alex is setting up a query to help display the PlayerID, FirstName, SecondName and CurrentLevel for all players of a game called Forth Gate.

Complete the missing parts of the query shown on the page opposite that will allow him to select this data.

[1 mark for each]

PlayerID	FirstName	SecondName	CurrentLevel	
PlayerTBL	PlayerTBL	PlayerTBL		"Forth Gate"

Field
Table
Criteria

(f) Using the words shown below, complete the sentences shown to help explain how Alex would use the main features of a database application to help him display the results from this query. (Not all words shown will be used.) [3 marks]

Header **List** **Report** **Text box**
Form **Sort** **Footer**

Alex will use a _____ to display the results of the query.

He would like to display the players' names in order of SecondName so he uses

the _____ facility to do this.

The date is added to the bottom of the printout in the _____ section.

(g) The database contains a number of macros.

In the table below, place a Tick (✓) beside **two** statements that are **True** about macros. [2 marks]

Statement	Tick (✓)
Macros are small buttons the user can click on to help them complete a task	
Macros can be added to forms and reports to help with navigation	
Macros are small computer programs used to complete repetitive tasks	
Macros are written using a special programming language for inputting data into a database	

(h) Queries can be written using SQL (Structured Query Language).

Complete the SQL statement that matches each of the query designs shown below: [1 mark for each]

(i)

Field	PlayerID	FirstName	SecondName
Table	PlayerTBL	PlayerTBL	PlayerTBL
Criteria			

SELECT PlayerID, FirstName, _____

FROM _____

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Do not write on this page

(Questions continue overleaf)

(ii)

Field	PlayerGameID	PlayerID	GameID	CurrentLevel
Table	GameLinkTBL	GameLinkTBL	GameLinkTBL	GameLinkTBL
Criteria			34	5

SELECT PlayerGameID, PlayerID, GameID, CurrentLevel

FROM _____ [1]

WHERE _____ [1] _____ [1] _____ [1]

Blank Page

Do not write on this page

(Questions continue overleaf)

6 Alfie is publishing some of his school project work on the Internet.

Alfie's teacher tells him to save this work in PDF format before he uploads it to the Internet.

(a) Give **two** advantages to Alfie of converting this file to PDF before sharing it online. [1 mark for each]

1. _____

2. _____

The project also contains a movie file. Alfie needs to optimise this file before he shares it online.

(b) (i) Explain what the term optimise means. [2 marks]

(ii) Circle the file below which shows an optimised movie file. [1 mark]

My_movie.mp3 My_movie.mp4 My_movie.TIFF

- (c) Some users may have to download a plugin if they wish to play the movie file Alfie posted online.

What is a plugin? [2 marks]

- (d) By selecting the correct file type Alfie hopes to make sure his files are cross-platform compatible.

What does cross-platform compatibility mean?
[2 marks]

- (e) Part of Alfie's project includes a website. Alfie wants to increase the accessibility of his website.

- (i) When adding images, how can using alt text in the HTML code tag improve accessibility? [1 mark]

- (ii) Apart from using alt text with images, what can Alfie do to improve the accessibility of his website for the following two user groups? [1 mark for each]

Visually impaired: _____

Colour blind: _____

7 Website content is produced using HTML code.

(a) Complete the sentence below. [1 mark]

HTML stands for HyperText _____
Language.

CSS can be used to improve the appearance of websites.

(b) What do the letters CSS stand for? [1 mark]

HTML uses tags.

(c) Complete the table below by stating whether each statement is **True** or **False**. [4 marks]

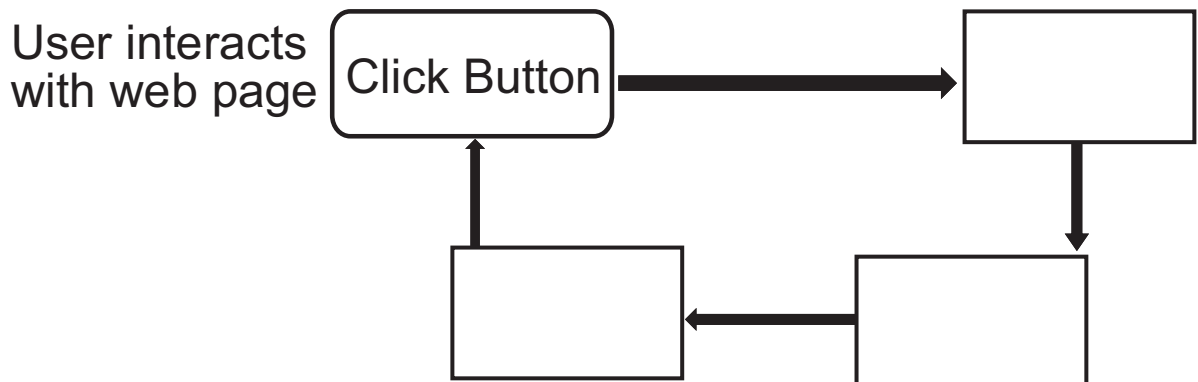
Statement	True / False
All HTML tags must have an end tag	
The tag <h6> is used to add the largest heading size to a HTML document	
HTML uses the tag to embolden text on a web page	
All HTML placed inside <html> </html> is used to add content displayed on web pages	

Interactivity in websites is often controlled using event programming.

The table below contains statements about handling user interactions.

Statement Number	Statement
1	The appearance of the web page is updated / modified
2	Code is executed
3	An event occurs

(d) Insert the statement numbers (1–3) into the correct boxes to complete the diagram below which shows how event programming is used to handle user interactions on a web page. [3 marks]



- (e) HTML documents can be made interactive through the inclusion of additional script.

Explain what the term interactive means. [2 marks]

- (f) Script can be added to the main body of a HTML document or it can be added to the <head> section of a HTML document.

List **two** advantages of adding script to the <head> section of a HTML document. [1 mark for each]

1. _____

2. _____

- (g) The following examples show some script which has been added to a HTML document. State whether each is an example of selection, sequencing or repetition. [1 mark for each]

```
<script>
var a, b, c; // Declare 3 variables
a = 21;     // Assign the value 21 to a
b = 14;     // Assign the value 14 to b
c = a + b   // Assign the sum of a and b to c
</script>
```

(i) _____

```
<script>
var text = " ";
var count = 0;
while (count < 4) {
  text += "<br>The number is " + count;
  count ++;
}
</script>
```

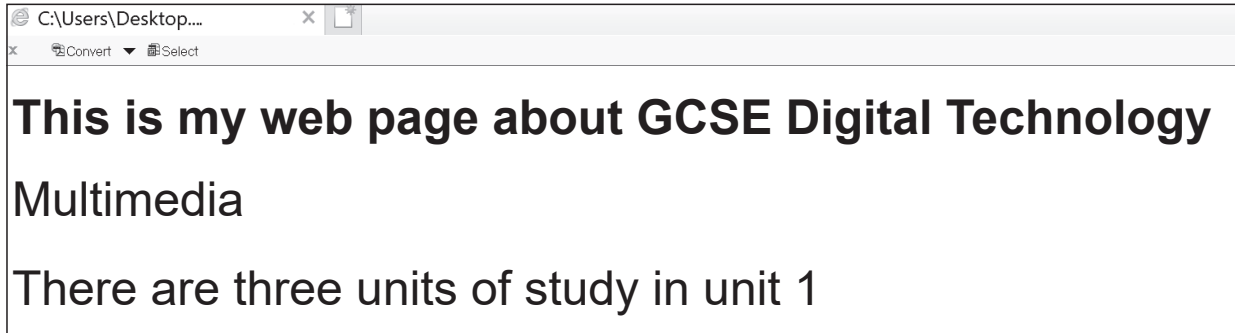
(ii) _____

```
<script>
var date = new Date ( ). getMonth ( );
if(date > 6) {
  greeting = "Exams are over";
} else {
  greeting = "My Exams are not over yet";
}</script>
```

(iii) _____

(h) Write down the letter for the correct block of HTML which would create the web page shown on the opposite page.
[1 mark for each]

Web page



Letter: _____

HTML code

A	B	C
<pre><html> <head> <title> </title> </head> <body> <h1>This is my web page about GCSE Digital Technology</h1> <p>Multimedia</p> <p> There are three units of study in unit 1</p> </body> </html></pre>	<pre><html> <head> <title> Multimedia </title> </head> <body> <h1>This is my web page about GCSE Digital Technology</h1> <p>Multimedia</p> <p> There are three units of study in unit 1</p> </body> </html></pre>	<pre><html> <head> </head> <body> <h1>This is my web page about GCSE Digital Technology</h1> <p>Multimedia</p> <p> There are three units of study in unit 1 </p> </body> </html></pre>

- (i) Write down the letter to show which block of HTML code on the opposite page would create a table with three rows and three columns.





Letter: _____

A	B	C
<pre> <table style="width:100%"> <th> <tr>Firstname</tr> <tr>Lastname</tr> <tr>Score</tr> </th> <th> <tr>James</tr> <tr>Jones</tr> <tr>50</tr> </th> <th> <tr>Karen</tr> <tr>Allison</tr> <tr>23</tr> </th> </table> </pre>	<pre> <table style="width:100%"> <td> <th>Firstname</th> <th>Lastname</th> <th>Score</th> </td> <td> <tr>James</td> <tr>Jones</td> <tr>50</td> </td> <td> <tr>Karen</td> <tr>Allison</td> <tr>23</td> </td> </table> </pre>	<pre> <table style="width:100%"> <tr> <th>Firstname</th> <th>Lastname</th> <th>Score</th> </tr> <tr> <td>James</td> <td>Jones</td> <td>50</td> </tr> <tr> <td>Karen</td> <td>Allison</td> <td>23</td> </tr> </table> </pre>

(j) The folder structure shown below shows the web pages and assets used to create a website on **GCSE Digital Technology**.

> MyWeb >

Name ^

-  assets ←
-  index
-  multimedia_page
-  programming_page

The assets folder contains the following

- logo.jpg
- specification.pdf
- revision_podcast.wav

The website URL is www.mywebsite.com

(i) What do the letters URL stand for? [1 mark]

(ii) Complete the table below by stating whether each statement is **True** or **False**. [3 marks]

Statement	True / False
When the website is loaded the following page will be displayed first <u>http://www.mywebsite.com/index.html</u>	
The following HTML statement will allow the user to open the multimedia page on the website Click here to view the multimedia course	
The following HTML tag will display logo.jpg on the web page 	

8 Testing applications is an important part of the development process.

(a) Complete the table on the opposite page which contains descriptions of the tests carried out by Alice when she completed her Digital Technology project which included a website and a database.

Use the list below to match each test type to its description. (All words will be used) [6 marks]

Alpha **White box** **Black box** **System**
A/B **Beta**

Description	Test Type
Alice needs to test the script used to validate a form on her website	
Alice has produced a new version of the database and wants to test it using sample data before the end user receives it	
Alice has produced a version of the website and would like to release it to a small number of possible users so she can get feedback from them	
Alice has produced two versions of the website and wants to release them to different sets of users so she can compare them	
Alice wants to test the inputs and outputs of her database application to ensure they work correctly and produce the correct results	
Alice wants to test all parts of the application to ensure they meet the end user requirements	

(b) Alice produces a test plan to ensure her system operates correctly.

Identify **four** different types of test data she should include in her test plan. [1 mark for each]

1. _____
2. _____
3. _____
4. _____

- 9 (a) Complete the table below by stating whether each statement about evaluation is **True** or **False**.
[4 marks]

Statement	True / False
Evaluation of a system happens only when the system is complete.	
The end user is never involved in the evaluation process only the programmers are involved in this process.	
To ensure that a system meets its original design criteria an evaluation must be linked to the user requirements.	
Evaluation occurs throughout the development process and is used to improve the system being developed.	

(b) John is creating a website and database for a surfing school which gives lessons on a local beach. The system must allow the staff at the sales stand to:

- register new customers
- make bookings for lessons
- process payments for lessons
- produce a list of all bookings and payments made each day

The system should be reliable, easy to use and should provide the information required quickly.

John will need to evaluate the system.

Complete the table on the opposite page to help John understand what he must do during the evaluation process. [6 marks]

John wants to ensure that...	Why is this important?	Give an example from the information provided opposite
The system is a full and complete solution		
The system is a robust solution		
The system is an efficient solution		

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]

- Grouping** **Footer** **Wizard** **Data Sorts**
- Report** **Logical Operators** **Subform**
- Length Check** **Load Time** **Input Mask**
- Query**

Definition	Term
The time taken to retrieve a multimedia asset from a server and display that asset on a web page in a browser window.	
A set of symbols used in database queries to compare two data values to produce a True / False output.	
Can be used to enter data into more than one table in a database application.	
Provides users with a set format that input data must follow when it is being typed in by the user.	
A software tool which provides step-by-step instructions during the completion of a task.	

This is the end of the question paper

For Examiner's use only	
Question Number	Marks
1	
2	
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4	
5	
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7	
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10	

Total Marks	
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Examiner Number

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