General Certificate of Secondary Education
2019

Digital Technology

Unit 2

Digital Authoring Concepts

[GDG21]   *GDG21*

THURSDAY 16 MAY, AFTERNOON

TIME

1 hour 30 minutes.

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 outside the boxed area on each page or on blank pages.
Complete in black ink only. **Do not write with a gel pen.**
Answer **all twelve** questions.

INFORMATION FOR CANDIDATES

The total mark for this paper is 120.
Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.
Quality of written communication will be assessed in Question **6(h)**.

12282

32GDG2101

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

1 **(a)** Select the statement which correctly describes what is meant by a data dictionary.

    A   A table containing details of file types used in the database

    B   A table listing the field headings used in the database

    C   A table listing the objects created as part of the database

    D   A table containing data to be input into the database

Answer _____ [1]

(b) Select the list of file formats suitable for distributing video files across the internet.

    A   mp4, png, avi, fla

    B   mp3, mp4, mov, avi

    C   avi, mp4, fla, mov

    D   mov, mp3, avi, flv

Answer _____ [1]

(c) Select the answer below which correctly explains the term "merge field" as used during a mail merge process.

    A   The data in a database table to be inserted into a mail merge letter

    B   A place-holder in a merged document which highlights where data was inserted

    C   The field names in a word processed document which show where data is to be inserted

    D   Data items stored in a merged word processed document following a mail merge

Answer _____ [1]

12282

(d) Which statement correctly defines the term entity?

    A   A heading given to an item of data in a database

    B   A single person, object or transaction represented in a database

    C   A control button represented in a menu in a database

    D   A name used to save a new report in a database

<div align="right">Answer _____ [1]</div>

(e) Which statement correctly describes what is meant by the term macro?

    A   A data-type assigned to text-based data types in a database

    B   A small program used to automate repetitive tasks in an application

    C   An icon used to launch the script associated with an interactive web page

    D   A design tool used to edit the properties of a multimedia element

<div align="right">Answer _____ [1]</div>

(f) Select the option which correctly defines the term template.

    A   A set of step-by-step instructions which take a developer through the completion of a task

    B   A piece of software which cannot be edited

    C   A predefined layout of a document which can be edited

    D   A software application used to create multimedia applications

<div align="right">Answer _____ [1]</div>

(g) Select the option below which contains the correct opening and closing tags used to embolden text in a HTML document.

A

B   <bold>

C   <b> <b/>

D

Answer _____ [1]

(h) Select the statement which correctly describes one way the <head> tag can be used in HTML documents.

A   used to display the webpage title in the browser

B   contains the location of multimedia sources used in the document

C   displays the pathway to the index page

D   holds details of additional styles used in the document

Answer _____ [1]

(i) The letters ERD stand for

A   Extreme Relational Diagram

B   Entity Report Dictionary

C   Extreme Report Dictionary

D   Entity Relationship Diagram

Answer _____ [1]

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(Questions continue overleaf)

2 Dominic owns a hair salon and stores data in a database about his clients and appointments. The salon currently stores appointment details using a table. Part of the table is shown below.

TBLAppointments

CustomerNo	Name	Telephone No	Mobile No	Date	Time	Type	StylistName
WAL 001	Bill Walker	02890234578	07791123451	21/03/2019	14.45	Cut	Jean
MAT001	Mary Waters	02897451232	07894561258	22/03/2019	15.45	Perm	Bart
DUD001	Jamie Duddy	02894567894	07884512921	22/03/2019	16.45	Cut	Jean
WAL 001	Bill Walker	02890234578	07791123459	28/03/2019	14.45	Wash	Jean
DUD001	Jamie Duddy	02894567894	07884512911	04/04/2019	12.15	Wash	Bart
DUD001	James Duddy	02894567894	07884512965	16/04/2019	13.15	Colour	Mary
WAL 001	Bill Walker	02890234578	07791123458	24/04/2019	10.15	Cut	Jean

(a) Explain the term data redundancy by making reference to the table above.

_____

_____ [2]

(b) (i) Define the term data integrity.

_____ [1]

(ii) Using the table above, give an example of a data entry error made when entering a customer's name.

_____ [1]

12282

(c) Dominic wants to produce a report listing all appointments between (and including) the 7th May 2019 and 11th May 2019.

Place a tick (✓) against the correct criteria he should use.

Criteria	Tick (✓)
<=7/5/2019 and >=11/5/2019	
7/5/2019 and 11/5/2019	
>=7/5/2019 and <=11/5/2019	

[1]

(d) What do the letters SQL stand for?

_____ [1]

(e) Dominic wants to search TBLAppointments to find all of Bart's appointments. Complete the SQL statement below to allow Dominic to return all of Bart's appointments from the table previously shown.

SELECT *

FROM _____ [1]

WHERE _____ [1] ="Bart";

Dominic has used a database report to create the customer receipt shown below.

CUSTOMER RECEIPT

HAIRTEK

20 High Street
BELFAST
BT1 1DH

TELEPHONE 028 9023 2301

Name	Bill Walker
CustomerNo	WAL001

Date	Time	StylistName	Type	Cost
21/03/2019	10.15	Jean	Wash	£10.00
21/03/2019	10.35	Jean	Cut	£15.00

Sum	£25.00
VAT	£4.38
Grand Total	£29.38

13 April 2018

Page 1 of 1

Grand Total is a field which is calculated on the report.

(f) Describe how Grand Total is calculated in the report.

_____

_____ [2]

3 (a) Describe **two** advantages of prototyping when used to develop an application.

Advantage 1

_____

_____

_____

_____

_____

Advantage 2

_____

_____

_____

_____

_____ [4]

(b) Describe how the end user is involved when developing a prototype for an application.

_____

_____ [2]

[Turn over

4 Testing is an important part of developing a new system.

(a) Explain the following approaches to testing.

(i) Black Box

_____

_____

_____ [2]

(ii) White Box

_____

_____

_____ [2]

(b) Adam is writing a test plan for the following Treatment table. Treatments last no longer than four hours.

TreatmentID ▾	TreatmentType ▾	Duration ▾	Cost ▾
TRT01	Full Colour	00:60	£23.75
TRT02	Up Style	00:45	£28.50
TRT03	Full Colour	01:30	£42.75
TRT04	Shampoo & Set	00:30	£9.98
TRT05	Cut & Blowdry	00:60	£26.60
TRT06	Wash & Blowdry	00:30	£30.40

(i) Complete the grid below to include test data which will produce the expected outcomes when testing the duration field.

Test number	Item to be tested	Reason for test	Test data	Expected outcome
1	Duration field	Valid data	[1]	Value should be accepted.
2	Duration field	Invalid data	[1]	Value should not be accepted.
3	Duration field	Null data	[1]	The user will be prompted to enter a duration for the appointment.

(ii) In the table below tick (✓) the statement which is correct about system testing.

Statement	Tick (✓)
System testing is carried out as the individual components are being developed.	
System testing is carried out when all the individual components have been developed.	

[1]

[Turn over

(c) When a new system is developed both alpha and beta testing can be carried out.

(i) Place a tick (✓) beside **two** statements which are true in relation to beta testing.

Statement	Tick (✓)
Carried out using free-trial versions of the application	
Is the final stage in testing the application	
Simulates the real world environment the application is to be used in	
Is carried out by the end user	

[2]

(ii) Explain how A/B testing is used to test applications.

_____

_____

_____ [2]

12282

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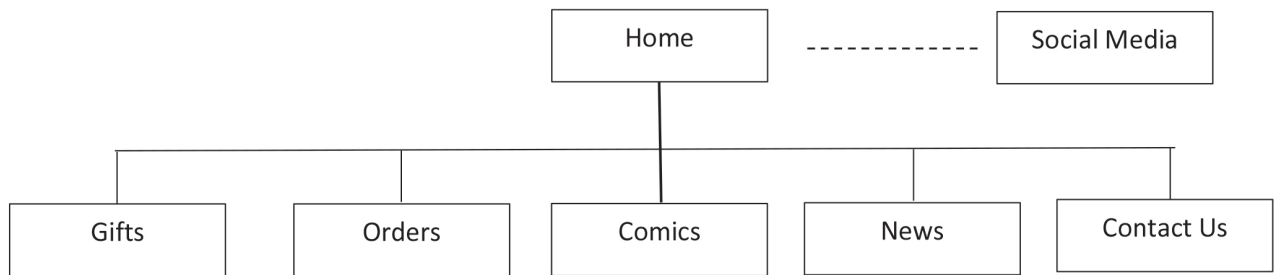
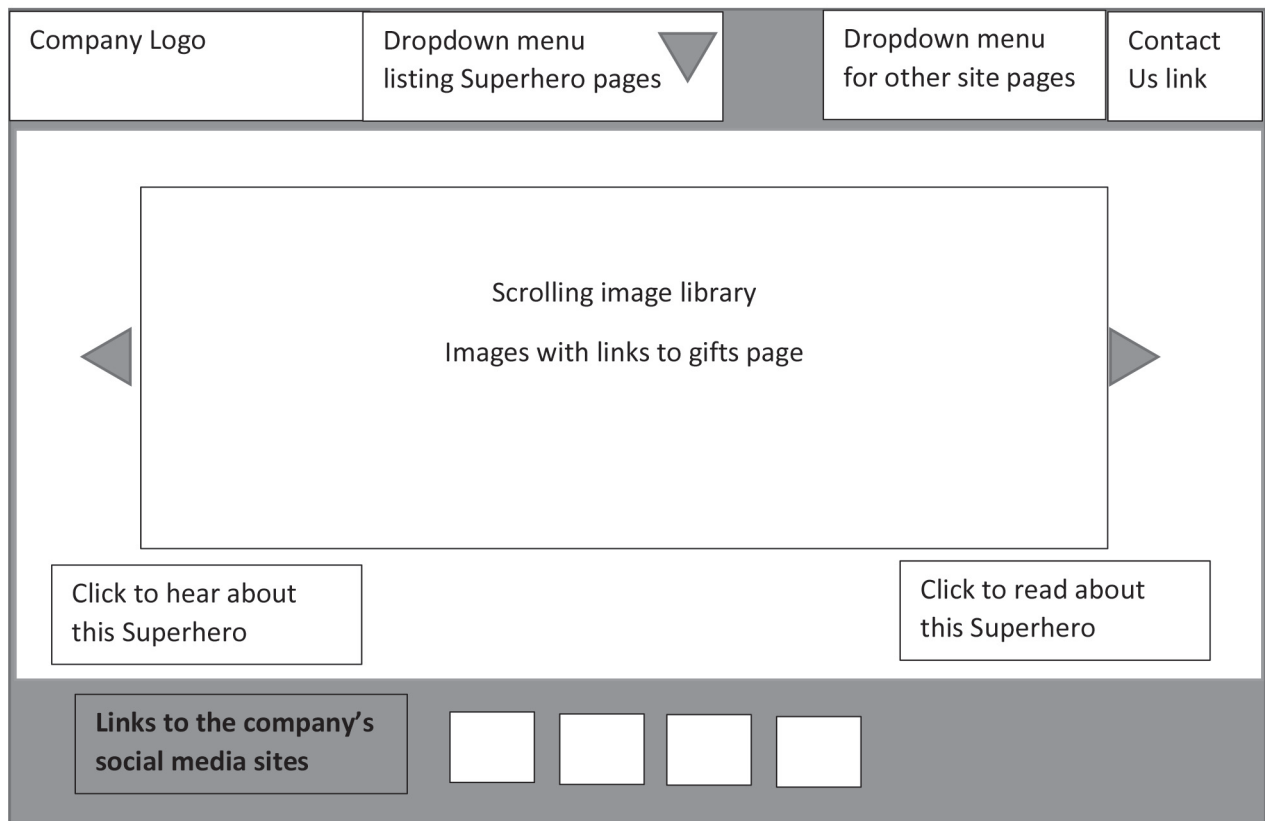**DO NOT WRITE ON THIS PAGE**

(Questions continue overleaf)

5   Alice has been asked to design a multimedia shopping application for a small business (SuperheroGifts4U). The website will sell comics and gifts based around superheroes.

A navigation structure diagram for the application and wireframe for the home page are outlined below.

Navigation Structure Diagram

```
                          ┌──────────┐                    ┌──────────────┐
                          │   Home   │ - - - - - - - - -  │ Social Media │
                          └────┬─────┘                    └──────────────┘
        ┌──────────────┬───────┴──────┬──────────────┬──────────────┐
   ┌─────────┐   ┌─────────┐   ┌─────────┐   ┌─────────┐   ┌──────────────┐
   │  Gifts  │   │ Orders  │   │ Comics  │   │  News   │   │  Contact Us  │
   └─────────┘   └─────────┘   └─────────┘   └─────────┘   └──────────────┘
```

Wireframe for Home Page

Company Logo	Dropdown menu listing Superhero pages ▼		Dropdown menu for other site pages	Contact Us link

Scrolling image library

Images with links to gifts page

◄   ►

Click to hear about this Superhero

Click to read about this Superhero

Links to the company's social media sites

[ ] [ ] [ ] [ ]

12282

(a) Describe how Alice would effectively test each of the following elements of this application:

(i) Animated image gallery

_____

_____ [2]

(ii) Links to social media websites

_____

_____ [2]

(b) Alice creates and tests the home page. The following appears instead of the company logo.

Give **two** possible reasons why this might happen.

1. _____

2. _____ [2]

(c) A form is created to help users secure payments online when buying items.

Scripted elements are used to validate the expiry date on the form.

Expiry Date: dd / mm / yy

Identify **two** ways scripted elements can be integrated into a HTML document.

1. _____

2. _____ [2]

(d) Identify **two** additional interactive features Alice could add to the application to improve the shopping experience for customers.

1. _____

2. _____ [2]

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(Questions continue overleaf)

6 Smartphone technologies employ a range of human–computer interfaces including GUIs, natural language interfaces and touch screen technologies.

(a) Identify **one** feature of a GUI which can make an application easier to use for:

An inexperienced user

_____ [1]

An experienced user

_____ [1]

(b) Identify **two** ways an end user can input instructions into a device with a natural language interface.

1. _____ [1]

2. _____ [1]

(c) Natural language interfaces have many applications in mobile telecommunication devices.

State **two** advantages and **two** disadvantages of using a natural language interface.

Advantages

1. _____

_____

2. _____

_____ [2]

Disadvantages

1. _____

_____

2. _____

_____ [2]

(d) Identify **two** disadvantages of using a touchscreen as an input device for mobile telecommunication devices.

1. _____

_____

2. _____

_____ [2]

[Turn over

Some gaming applications now use motion tracking interfaces to support user input.

(e) Use the words listed below to complete the sentences on motion tracking interfaces. (Not all words will be used)

infra-red   sensors   movement

digital signals   audio signals

Motion tracking interfaces convert _____

into _____.

Some applications have motion tracking systems built into their interfaces.

No markers or _____ are required. These systems

use _____ cameras to detect movement.   [4]

(f) List **two** ways in which the use of motion tracking technology has helped make gaming more accessible for all age ranges.

1. _____

2. _____ [2]

Developers prefer to develop applications which are accessible to all users.

(g) List **two** ways a user can adjust the settings of an application to improve its accessibility.

1. _____

2. _____ [2]

(h) A student is developing an app. Advise the student on how to improve the cross-platform compatibility of the app.

Your answer should include reference to the use of plugin software and PDF files.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____ [6]

7 **(a)** Alexander is developing a computer game. He wants the game to be interactive and provide game players with feedback.

    (i) Identify **two** types of feedback he could include in his game.

        1. _____

        2. _____ [2]

    (ii) Identify **two** advantages of including interactivity and multimedia in a computer game.

        1. _____

        2. _____ [2]

    (iii) Identify **two** disadvantages of including interactivity and multimedia in a computer game.

        1. _____

        2. _____ [2]

Before Alexander can develop the game, he must identify the target audience.

(b) What does the term target audience mean?

_____ [1]

12282

8 Social media applications include many interactive and multimedia features.

(a) Identify **two** interactive and multimedia features used to make the use of social media applications more enjoyable for the end user.

1. _____

_____

2. _____

_____ [2]

(b) Identify **two** ways the use of interactive multimedia in social media applications can cause problems for the end user.

1. _____

_____

2. _____

_____ [2]

9 Sam is creating a website for his Digital Technology controlled assessment.

(a) Explain how Sam would use hypertext in the creation of his website.

_____

_____ [2]

(b) Identify **one** advantage of using folders to organise the content of Sam's website when he is creating it.

_____ [1]

(c) List **three** advantages of using a multimedia authoring application to create a HTML application.

1. _____

2. _____

3. _____ [3]

12282

10 HTML is the language used to allow web page creation.

(a) List **two** advantages of using HTML to create a web page.

1. _____

2. _____ [2]

(b) State the function of the following HTML tags.

(i) <title> </title>

_____

_____

(ii)

_____

_____

(iii) <p> </p>

_____

_____ [3]

[Turn over

The HTML shown below is taken from a code editor and was used to create a web page about penguins.

(c) Use the HTML code shown below to answer the following questions.

```
1 <!DOCTYPE html >
2 <head>
3
4 </head>
5
6 <body>
7
8 <H1>Facts about Penguins</H1>
9 <p><a href="http://www.penguins-world.com">
10 <img alt="Penguin" class="auto-style1" height="600" src="Images/penguin.jpg" width="563" /></a>  </p>
11
12 <table class="auto-style1" style="width: 100%">
13     <tr>
14         <td class="auto-style2" style="width: 201px">Fact Number</td>
15         <td class="auto-style2">Details</td>
16     </tr>
17     <tr>
18         <td class="auto-style2" style="width: 201px">1</td>
19         <td class="auto-style2">Penguins are flightless birds</td>
20     </tr>
21     <tr>
22         <td class="auto-style2" style="width: 201px">2</td>
23         <td class="auto-style2">Penguins do not have teeth</td>
24     </tr>
25     <tr>
26         <td class="auto-style2" style="width: 201px">3</td>
27         <td class="auto-style2">Penguins huddle together to stay warm</td>
28     </tr>
29     <tr>
30         <td class="auto-style2" style="width: 201px">4</td>
31         <td class="auto-style2">Male penguins keep the eggs warm</td>
32     </tr>
33 </table>
34 <p>There are 17 different penguin species.<br> In this site we will look at:-</p>
35 <ul>
36     <li>African Penguin</li>
37     <li>Chinstrap Penguin</li>
38     <li>Emperor Penguin</li>
39     <li>Gentoo Penguin</li>
40     <li>Adelie Penguin</li>
41 </ul>
42
43 </body>
44
45 </html>
46
```

12282

(i) Examine the code and state whether the statements in the table below are TRUE or FALSE.

Statement	TRUE / FALSE
The web page contains a table with 2 rows and 5 columns	
The table will fill the full width of the browser window it is displayed in	
The heading "Facts about Penguins" is displayed in the largest heading style	
The website contains an ordered list with 5 items	

[4]

(ii) Explain how the <br> tag on line 34 will affect how the text is displayed.

_____

_____ [1]

(iii) State what will happen if a user rolls a mouse over the image stored as "penguin.jpg" when the page is viewed in a browser. (See line 10 of the code.)

_____

_____ [1]

(iv) State why line 45 has been highlighted by the authoring package.

_____

_____ [1]

[Turn over

Emma is using scripting to add interactive features to a new website.

(d) She uses the FOR, WHILE and ELSE…IF statements in her Javascript. State whether each statement, in the table below, is an example of a Repetition statement or a Selection statement.

Statement	Repetition / Selection
WHILE	
ELSE…IF	
FOR	

[3]

11 Evaluation is an important stage in the development of a system.

(a) List **two** aims of the evaluation process.

1. _____

2. _____ [2]

(b) Identify **two** individuals who should be involved in the evaluation process.

1. _____

2. _____ [2]

(c) Explain how the following can help in the evaluation process.

(i) User requirements

_____

_____ [2]

(ii) Testing outcomes

_____

_____ [2]

(iii) Design documents

_____

_____ [2]

[Turn over

12282

12 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).

Layout view   Animation   Foreign key   Composite key

Compression   Window   Event-driven   Icon

Pointer   Parameter   Sequencing

Definition	Term
A symbol on screen which tracks actions made by a user with an input device	
Area on screen showing actions being carried out by an application	
Removal of unnecessary data to support file optimisation	
A type of database query where the end user inputs the search criteria each time the query is run	
A field in one table which refers to the key field in another table	
On screen image used to represent a shortcut to a tool or application	
A series of images which play one after another to create the impression of movement	

[7]

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