

QUESTION 3.

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- 7 A small company produces scientific magazines. The owner buys some new desktop computers. The computers are used to store thousands of colour images (diagrams and photographs). All the computers have Internet access.

(a) Name **three** utility programs the company would use on all their computers. Describe what each program does.

1

Description

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2

Description

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3

Description

.....[6]

(b) The images contained in the magazines are produced using either bitmap or vector graphics software.

Give **four** differences between bitmap and vector graphics.

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- (c) Employees using the new computers receive training. At the end of the training, each employee completes a series of questions.

Three answers given by an employee are shown below.

Explain why each answer is incorrect.

- (i) *“Encryption prevents hackers breaking into the company’s computers.”*

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.....[2]

- (ii) *“Data validation is used to make sure that data keyed in are the same as the original data supplied.”*

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- (iii) *“The use of passwords will always prevent unauthorised access to the data stored on the computers.”*

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.....[2]

QUESTION 4.



7 The design of a web-based application can require the use of client-side scripting

(a) Describe what is meant by **client-side scripting**.

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.....[2]

(b) A user requests a web page by keying the Uniform Resource Locator (URL) into the address bar of their web browser.

The requested page contains a client-side script.

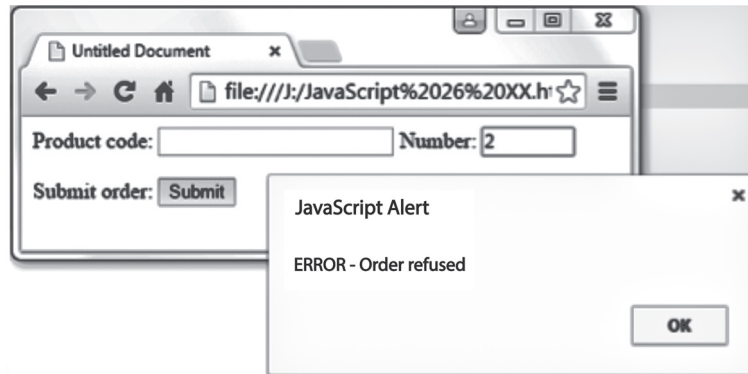
Describe the sequence of steps leading to the display of the web page on the computer screen.

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(c) A web page used for data capture consists of:

- two text boxes for the entry of:
 - a product code
 - the number of items to be purchased.
- a button which is clicked when the user wants to submit this order.



Study the following web page.

```

1 <html>
2 <head>
3 <title>Untitled Document</title>
4 <script language="JavaScript">
5
6 function myButton_onmousedown()
7 {
8   var Message1 = "ERROR - Order refused";
9   var Message2 = "Product code OK";
10  var x = document.forms["form1"]["txtProductCode"].value;
11    if (x == "")
12    {
13      alert(Message1)
14    }
15    else
16    {
17      alert(Message2)
18    }
19  }
20 </script>
21
22 </head>
23 <body>
24 <form name = form1>
25   <label>Product code: </label>
26   <input type="text" name="txtProductCode" >
27   <label>Number: </label>
28   <input type="text" name="txtNumber" size = "5" >
29   <p>
30     <label>Submit order: </label>
31     <input type="button" name="btnSubmit" Value = "Submit"
32
33     onMouseDown = "myButton_onmousedown()" >
34   </p>
35 </form>
36
37 </body>
38 </html>

```



- (i) The developer has used three variables in the JavaScript code. State the
 - 1
 - 2
 - 3 [2]

- (ii) The button has an event whose identifier is `onMouseDown`. When the submit button is clicked, some code is executed.

State the line numbers that contain this code.

From line to line [1]

- (iii) The JavaScript code uses a selection statement.

State the line number that contains the condition.

Line number: [1]

- (iv) Describe the purpose of the validation check that the code performs.

.....

.....[1]

- (v) Name and describe **two** other types of validation check that could be appropriate for this data capture form.

Validation check:

Description

.....

Validation check:

Description

..... [4]

QUESTION 5.



6 Downloading a file from a website is an example of a client-server application.

(a) Describe what is meant by the term **client-server** for this application.

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(b) The following sequence of steps (1 to 5) describes what happens when someone uses their personal computer (PC) to request a web page. The web page consists of HTML tags and text content only. Four of the statements from **A**, **B**, **C**, **D**, **E** and **F** are used to complete the sequence.

A	Browser software interprets the script, renders the page and displays.
B	Browser software renders the page and displays.
C	Browser software compiles the script, renders the page and displays.
D	The web server retrieves the page.
E	The Domain Name Service (DNS) uses the domain name from the browser to look up the IP address of the web server.
F	The web server sends the web page content to the browser.

Write one of the letters A to F in the appropriate row to complete the sequence.

1. The user keys in the Uniform Resource Locator (URL) into the browser software.
2.
3.
4.
5.

[4]

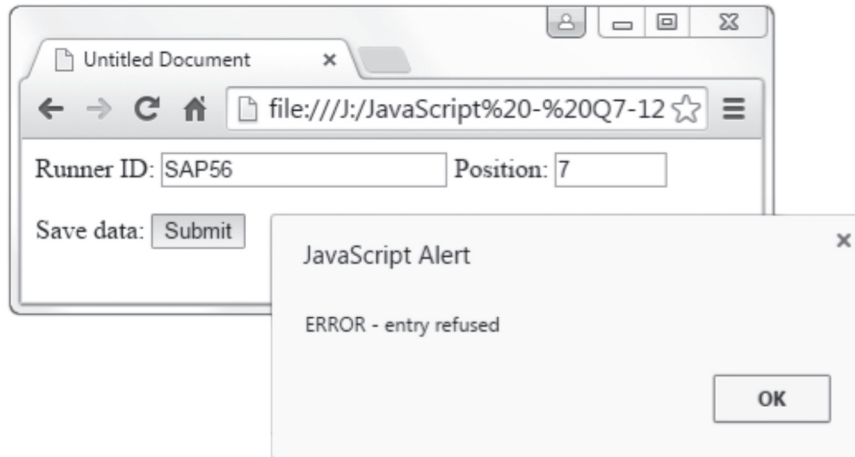


Question 6(c) begins on the next page.



(c) The following web page used for data capture consists of:

- two text boxes for the entry of:
 - a race runner's ID code
 - their finishing position in a race.
- a button that the user clicks to submit this runner's result.



```

1  <html>
2  <head>
3  <title>Untitled Document</title>
4  <script language="JavaScript">
5
6  function myButton_onmousedown()
7  {
8  var Output1 = "Runner ID OK";
9  var Output2 = "ERROR - entry refused";
10
11 var Runner ID = document.forms["form1"]["txtRunnerID"].value;
12 //                               || in Javascript is the 'OR' operator
13 if (RunnerID.substr(0,3) == "VAR" || RunnerID.substr(0,3) == "CAM")
14 {
15     alert(Output1)
16 }
17 else
18 {
19     alert(Output2)
20 }
21 }
22 </script>
23
24 </head>
25 <body>
26 <form name = form1>
27   <label>Runner ID: </label>
28   <input type="text" name="txtRunnerID" >
29   <label>Position: </label>
30   <input type="text" name="txtPosition" size = "5" >
31   <p>
32     <label>Save data: </label>
33     <input type="button" name="btnSubmit" Value = "Submit"
34
35     onMouseDown = "myButton_onmousedown()" >
36   </p>
37 </form>
38
39 </body>
40 </html>

```



- (i) The developer has used three variables in the JavaScript code. State the variables used.
 1.
 2.
 3.

[2]

- (ii) The button has an event whose identifier is `onMouseDown`. When the mouse button is clicked, some code is run.

State the line numbers which contain this code.

From line to line [1]

- (iii) The JavaScript code uses a selection statement.

State the line number which contains its condition.

Line number: [1]

- (iv) Describe the purpose of the validation check that the code performs.

.....
 [1]

- (v) Name and describe **two** other types of validation check which could be appropriate for this data capture form.

Validation check:

Description

.....

Validation check:

Description

.....

[4]



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QUESTION 6.



3 A Local Area Network is used by staff in a hospital to access data stored in a Database Management System (DBMS).

(a) Name **two** security measures to protect computer systems.

- 1
- 2 [2]

(b) A frequent task for staff is to key in new patient data from a paper document. The document includes the patient's personal ID number.

(i) The Patient ID is a seven digit number. The database designer decides to use a check digit to verify each foreign key value that a user keys in for a Patient ID.

When a user assigns a primary key value to a Patient ID, the DBMS adds a modulus-11 check digit as an eighth digit. The DBMS uses the weightings 6, 5, 4, 3, 2 and 1 for calculating the check digit. It uses 6 as the multiplier for the most significant (leftmost) digit.

Show the calculation of the check digit for the Patient ID with the first six digits 786531.

Complete Patient ID[4]

(ii) Name and describe **two** validation checks that the DBMS could carry out on each primary key value that a user keys in for a Patient ID.

- 1 Validation check
- Description
-
- 2 Validation check
- Description
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[4]

QUESTION 7.

3 A Local Area Network is used by school staff who access data stored in a Database System (DBMS).



(a) (i) Explain the difference between security and privacy of data.

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(ii) Give an example for this application where privacy of data is a key concern.

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[1]

(b) Name and describe **two** security measures the Network Manager has in place to protect the security of the data held in the DBMS.

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[4]

(c) A task for staff at the start of the school year is to key in new pupil data from a paper document. The data is entered to a screen form and includes the data verification of some fields.

Describe what is meant by **verification**.

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[2]

QUESTION 8.



- 2 Frankie is a software developer. He is developing a program to manage customer information for a client with an online retail business. He must ensure that data stored about each customer is both secure and private.

(a) State the difference between security and privacy.

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..... [2]

(b) Computer systems can be protected by physical methods such as locks.

Describe **two** non-physical methods used to improve the security of computer systems.

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- (c) A computer uses parity blocks to check the data that has been received is the same as the data that has been transmitted.

The following is an example of a parity block.

	Parity bit	Data						
	1	1	1	1	0	0	0	1
	0	0	0	0	1	1	1	0
	1	1	0	1	1	0	0	1
Parity byte	1	1	0	1	1	0	0	1

- (i) Describe how a parity block check can identify a bit that has been corrupted during transmission.

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- (ii) Give a situation where a parity block check **cannot** identify corrupted bits.

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