OCR
Oxford Cambridge and RSA

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GCSE COMPUTING

A452 Practical Investigation

CONTROLLED ASSESSMENT MATERIAL 3

This assessment may be periodically reviewed. Please check on OCR Interchange that you have the Controlled Assessment material valid for the appropriate assessment session.

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INSTRUCTIONS TO TEACHERS

- Please refer to Section 4 of the GCSE Computing specification for instructions on completing this controlled assessment task.
- The marking criteria should be available to candidates whilst completing the task.
- The quality of written communication will be assessed in the conclusions and evaluation section.
- The total number of marks for this unit is **45**.

INFORMATION FOR CANDIDATES

- This document consists of **4** pages. Any blank pages are indicated.

Teachers are responsible for ensuring that assessment is carried out against the Controlled Assessment set for the relevant examination series (detailed above).

Assessment evidence produced that does not reflect the relevant examination series will not be accepted.

The purpose of this unit is to investigate a topic chosen from a set of options supplied by OCR. In this investigation, there will be an opportunity to look in depth at an aspect of computing that goes beyond the subject matter outlined in A451. The tasks will require a significant element of practical activity, which must be evidenced in the report and which will form a major element of the assessment. The topics will enable practical investigation and some supplementary research to be carried out in a variety of ways. These will include, but are not restricted to:

- practical investigations with hardware or software
- practical investigations with online resources.

Supplementary research may be required and resources may include:

- web-based enquiry
- contact with IT professionals
- research using computer-industry publications.

Candidates should complete all tasks.

JavaScript

Throughout your work, explain fully the thinking that underlies decisions that you have made.

Use screenshots where appropriate to demonstrate your planning, explanations and comments.

All third-party material used to support your work must be properly referenced.

JavaScript is a full-featured, object oriented scripting language that is commonly used to add extra functionality to web pages. The script commands can be embedded in the HTML of a web page or can be saved externally to a separate script file.

The most common uses of JavaScript are to validate web forms and to enable interactivity with the user.

1. Often, a web designer wants a change to happen when a user clicks on a screen object or moves the mouse over it. JavaScript can make changes to the HTML elements.

   Enter and run this script.

```
<!DOCTYPE html>
<html>
<body>

<h1>Change an HTML element</h1>

<p id="msg">Now you see me.</p>

<button type="button"
onclick="document.getElementById('msg').innerHTML = 'Gone!'">
Click Me!</button>

<button type="button"
onclick="document.getElementById('msg').innerHTML = 'Back again!'">
Bring me back!</button>

</body>
</html>
```

   (i) Explain how you ran this script.

   (ii) Explain what each line of the script does.

2. As is the case with most programming languages, in JavaScript you can use arrays in order to store multiple values under the same identifier.

   For example, an array of products can be set up as below for use on an ecommerce web site.

```
var products = ["Printer","Tablet","Router"];
```

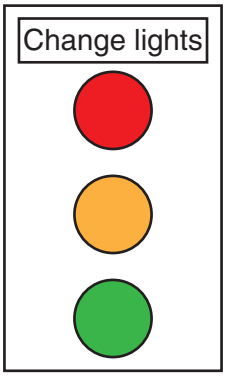
   (i) Set up an array to include the items shown above, plus a few extras of your choice.

   (ii) Write a script that:
   - outputs the items in alphabetical order
   - counts the number of items in the array.

   In each case, plan, implement, test and demonstrate the scripts.

3. Changes made to HTML elements such as images can be useful when producing animations.

   It is possible to display a traffic light sequence on a web page. When the button 'Change lights' is clicked, the lights change according to the sequence.



   (i) Make a list of assets that will be required in order to produce this display.

   (ii) Describe and explain where the assets will be best located.

   (iii) Describe the structure of an array that could be used to handle the traffic light sequence.

   (iv) Write a script that uses the array described in part (iii) to produce an animation of a set of traffic lights such that the lights change in the standard sequence each time the button is clicked.

4. Change the animation script so that the sequence of lights is displayed automatically on a timed basis without user input.

5. Scripts can be embedded in the HTML of web pages or saved externally as script files. Discuss the benefits and drawbacks of each approach.