DUBLIN CITY UNIVERSITY
NATIONAL INSTITUTE FOR DIGITAL LEARNING
OPEN EDUCATION / DCU CONNECTED

MODULE: C1:   IT AND WEB TECHNOLOGY FUNDAMENTALS

PROGRAMME(S):

BSC IN INFORMATION TECHNOLOGY
BSC IN MANAGEMENT OF INFO TECH/INFO SYST
HDIP IN SOFTWARE DEVELOPMENT
CCP Certificate IN SOFTWARE DEVELOPMENT

ASSIGNMENT 2 2020–2021

QUESTION 1 relates to unit 8: Cascading Style Sheets
QUESTION 2 relates to unit 10: Programming with JavaScript and unit 12:
Advanced JavaScript
QUESTION 3 relates to unit 10: Programming with JavaScript
QUESTION 4 relates to unit 11: JavaScript Error Handling and Validation

QUESTION 1 [20 marks]

Write a simple webpage using the HTML5 DOCTYPE specification that includes a webpage title, a button that displays the word *Blue*, and a button that displays the word *Green*.

The webpage must use internal CSS to do each of the following:

- Set the background colour of the webpage to grey.

- Include a background image of your choice to set as an image for the body element and position the image to the top right of the webpage. Use the background-repeat property to set the image so that it won't repeat.

- Define a class called *button* which has a set of properties to style any button.

- Let the first button have class *button* and its own class *button1*. *button1* will set the background colour to blue.

- Let the second button have class *button* and its own class *button2*. *button2* will set the background colour to green.

- Each button class, *button1* and *button2* should have a hover state, so that each button changes to a different colour when the mouse hovers over it.

The answer should include HTML comments, CSS comments, clear code alignment and indentation.

[End of Question 1]

QUESTION 2 **[20 marks]**

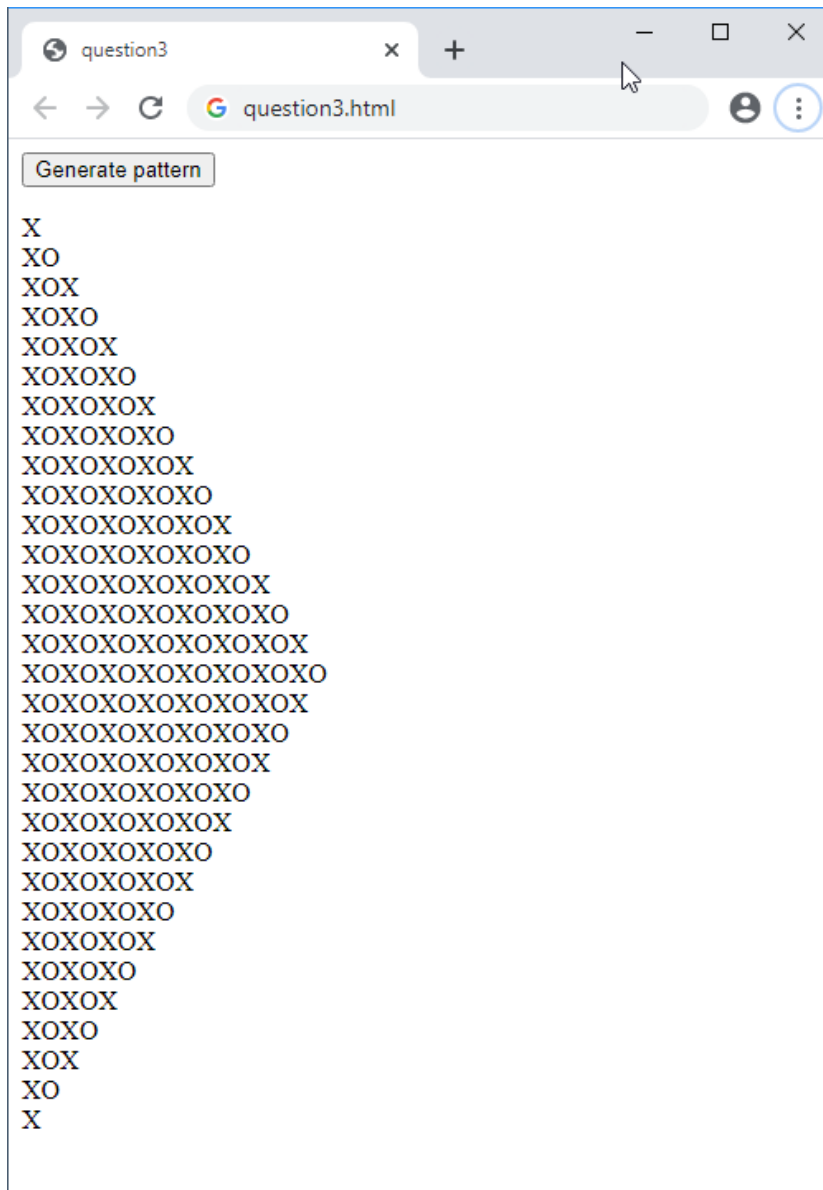Write a webpage using HTML and JavaScript to do the following:

(a) Declare variable *x* and assign it a value of 3. Declare variable *y* and assign it a value of 6. Display the product of these variables in a html element with id = "a".

(b) Declare two variables named *str1* and *str2*. Assign the value of *Orient* to *str1* and *Express* to *str2*. Concatenate the two strings, with a space between each word, and display the result in a html element with id = "b".

(c) Declare an array called *instruments* and assign it four elements: violin, viola, cello, bass. Access and display the third element in the array, in a html element with id = "c".

(d) Construct an object called *employee* with properties *id*, *firstname* and *lastname*. Use a *for..in* loop, and display the properties of the object in a html element with id = "d".

(e) Declare a variable *sum* and initialise it to 0. Write a *for loop* that loops through a block of code 5 times. Include a counter variable called *e* in the *for loop* that decrements by 1 after each loop iteration. The value of the counter variable *e* after the final loop iteration should be 0. The body of the *for loop* should add *e* to *sum* so that on each iteration, *sum* will increase in value. At the end of the loop, display the variable *sum* in a html element with id = "e".

(f) The answer should include the HTML5 DOCTYPE specification HTML comments, JavaScript comments, clear code alignment and indentation.

[END OF QUESTION 2]

QUESTION 3 [20 marks]

Write HTML code to render a webpage so that when the user clicks on a button the code should call a JavaScript function. The function should use a *for loop* with an *if…else* statement in the body of the loop, to build up a string with the following pattern of Xs and Os. When the loop completes, render the string on the webpage.

```
question3                    ×    +              —   □   ×

←  →  C    G  question3.html                        ⊖  ⋮

Generate pattern

X
XO
XOX
XOXO
XOXOX
XOXOXO
XOXOXOX
XOXOXOXO
XOXOXOXOX
XOXOXOXOXO
XOXOXOXOXOX
XOXOXOXOXOXO
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XOXOXO
XOXOX
XOXO
XOX
XO
X
```

The answer should include the HTML5 DOCTYPE specification, HTML comments, JavaScript comments, clear code alignment and indentation.

[END OF QUESTION 3]

QUESTION 4 [40 MARKS]

Write a webpage using HTML, internal CSS and JavaScript to do the following:

Prompt the user to enter their Year of Birth in YYYY format, their Month of Birth in MM format and their Day of Birth in DD format. When the user clicks on the Calculate Age button, a JavaScript function should be invoked. The function should take the user inputs as parameters, and calculate the age of the person based on today's date. Use the JavaScript Date() function to get the current Year, Month and Day.

JavaScript try/throw/catch error handling should be used to validate the user inputs.

The program should perform numerous validation checks. For example, if the year of birth is a leap year, and the user enters a day greater than 29 for the second month of the year, an error message should be displayed.

Note: The code should determine if a year is a leap year based on the Gregorian calendar. In the Gregorian calendar, a year is a leap year if it is evenly divisible by 4 (except for years evenly divisible by 100, which are not leap years unless evenly divisible by 400).

If any of the user inputs are invalid (e.g. non-numeric, incorrect length, month with incorrect number of days, month not in the range 1–12) an error message should be displayed on screen, and the user requested to try again.

The answer should include the HTML5 DOCTYPE specification, HTML comments, CSS comments, JavaScript comments, clear code alignment and indentation.

[END OF QUESTION 4]

See Deliverables section below.

Please note that the use of JQuery will not be accepted for any answer to this assignment.

[END OF QUESTIONS]

Deliverables:

I. The deliverable for question 1 is file called **q1_StudentName.htm**
    Include the image used (e.g. image.jpg) as a deliverable for this question
II. The deliverable for question 2 is a file called **q2_StudentName.htm**
III. The deliverable for question 3 is a file called **q3_StudentName.htm**
IV. The deliverable for question 3 is a file called **q4_StudentName.htm**

You should **upload only one file** (a zipped archive) **for the whole of this assignment.** Name the archive C1_A2_2020_StudentName.zip and add deliverables I, II, III, IV to the archive before uploading it to Loop.

BEFORE SUBMITTING AN ASSIGNMENT, PLEASE READ THE ASSIGNMENT REGULATIONS SECTION IN THE COURSE HANDBOOK

ENSURE THAT YOUR ASSIGNMENT SUBMISSION IS CORRECTLY NAMED e.g. C1_A2_2020_StudentName.zip

REMEMBER TO KEEP A BACKUP COPY OF YOUR ASSIGNMENT (e.g. you could use Google Drive Offline for this)