Introduction to Web Technology
Spring Session 2020

Assignment 3 (10%) due on **Saturday 17 October 2020 at 7:00pm**

Important notices:
Penalties apply to all late work, except if student academic consideration has been granted. Penalties for late submission of assessment items are specified in the subject outline.

If you need an extension, please apply for an Academic Consideration through SOLS on or before the assignment due date.

Plagiarism is treated seriously. If we suspect any work is copied, all students involved are likely to receive zero for the entire assignment.

Submission instructions:
Create a folder to store all your code and images.
Compress your folder into A3.zip and submit it via the Assignment 3 Submission on Moodle.

Assignment specification:
There are 5 assignment questions.

Question 1. (2%) Create a webpage Question1.html. Initially, the web page should display **10 buttons** (and no message) exactly as follow:

When, for example, the button number 0 is clicked, the web page should display the following message under the buttons: `You have entered zero`
When, for example, the button number 8 is clicked next, the message will become: `You have entered zero-eight`
When, for example, the button number 5 is clicked next, the message will become: `You have entered zero-eight-five`
When, for example, the button number 1 is clicked next, the message will become: `You have entered zero-eight-five-one`

And all the buttons work in this similar manner.

Question 2. (2%). Create a webpage Question2.html. The web page should display 2 buttons "Start Animation" and "Stop Animation". Initially, there is no picture shown.

Whenever the button "Start Animation" is clicked, the web page displays a picture of a frog and a picture of a lion **alternately every half a second**. (For example, frog image, half a second later, lion image, half a second later, frog image, half a second later, lion image…)

Whenever the button "Stop Animation" is clicked, then the web page stops the animation. Whatever the picture is currently displayed will stay there on the page.

Question 3 (2%). Create a webpage Question3.html. Prepare 5 images: a frog, a table, a chair, a phone and a car. Use these 5 images to implement a game called "**Click-a-frog**" as follows.

On the web site, there is a button "Start frog game". Whenever the user clicks the button "Start frog game":

- A message appears under the button saying "`Your score is 0`";
- Under the score message, **every half a second,** one of the 5 images appears **randomly**, the image height should be 150 pixels;
- When the user clicks the **frog** image, then the user **wins 1 point**, and the score message should be updated accordingly;
- When the user clicks other images, then the user **loses 1 point**, and the score message should be updated accordingly (the score can become negative number if the user loses too much);
- When the score reaches 5, then the user wins the game and the game stops (images stop changing), the score message should display "`Your score is 5. Game over - You win!`"
- When the score goes down to -5, then the user loses the game and the game stops (images stop changing), the score message should display "`Your score is -5. Game over - You lose!`"

The user can click the button "Start frog game" to play the game again and the score should be reset to 0.

Question 4. (2%) Given the following XML code.
Modify this code to add **internal DTD**.
Save your solution into the file Question4.xml.

```
<?xml version="1.0"?>
<audit campus="Woolloomooloo" year="2000" session="A">
  <subject sid="0769642">
    <code>MATH101</code>
    <title>Calculus</title>
    <statistics>
      <enrol>170</enrol>
      <withdrawn>31</withdrawn>
    </statistics>
  </subject>
  <subject sid="1734231">
    <code>MATH234</code>
    <title>Abstract Algebra</title>
    <statistics>
      <enrol>40</enrol>
      <withdrawn>15</withdrawn>
    </statistics>
  </subject>
</audit>
```

Question 5. (2%) Given the following XML code.
Your task is to write the corresponding XSD code and save it into the file Question5.xsd.

```
<?xml version="1.0"?>
<exam eid="10007629P">
  <contestant cid="00025142">
    <score>156</score>
    <band>C</band>
    <digitalSignature>a720cf8e23bc1256bce2</digitalSignature>
  </contestant>
  <contestant cid="00028906">
    <score>290</score>
    <band>A</band>
    <digitalSignature>7629acbf23be2c1256bc</digitalSignature>
  </contestant>
</exam>
```

END OF THE ASSIGNMENT