

University of Ruhuna - Faculty of Technology
Bachelor of Information & Communication Technology Honours Degree
Level 1 (Semester I) Examination, June/July 2023
Academic year 2021/2022

Course Unit: ICT1153 Web Technologies (Theory)

Duration: 2 hours

Answer All Questions

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1.
 - a. URL stands for *Uniform Resource Locator*.
 - i. Briefly explain what is a URL?
 - ii. Identify the parts of the URL given below.
http://www.telecom.com/contact/numbers.html
 - b. Assume Kamal is asked to develop a website for a bank where all the transactions are facilitated through the system. What is the most suitable communication protocol to be used? Justify your answer.
 - c. Briefly describe the three-tier architecture using a suitable diagram.
 - d.
 - i. Describe the Domain Name System (DNS) and explain its role on the Internet or the world wide web operations.
 - ii. Identify the organization type of the following top-level domains.
 - I. com
 - II. org
 - III. edu
 - e. The HTML Domain Object Model (DOM) is constructed as a tree of Objects.
 - i. List down four (04) uses of HTML DOM.
 - ii. Draw a DOM tree view for the HTML code given below.

```
<html>
<head>
  <title>DOM Tree Example</title>
</head>
<body>
  <h1>Welcome to the DOM Tree Example</h1>
  <div>
    <p> Services </p>
    <ul>
      <li> Web Design </li>
      <li> Mobile Development</li>
    </ul>
  </div>
</body>
</html>
```

```
<li> Software Testing </li>
</ul>
</div>
<script src="script.js"></script>
</body>
</html>
```

2.

- a. Cascading Style Sheets (CSS) can be combined with HTML.
 - i. List four (04) types of CSS selectors and briefly explain each selector using an example.
 - ii. Consider the following HTML code.

```
<html>
  <head>
    <link rel="stylesheet" type="text/css" href=" myStyle.css">
    <title>CSS Test</title>
  </head>
  <body>
    <h1>Introduction to HTML</h1>
    <p>HTML is a language for describing web pages </p>
    <h3>HTML head tag</h3>
    <p>HEAD tag comes after the HTML start tag. It contains a TITLE tag to
    give the document a title displayed on the browser's title bar at the top. </p>
  </body>
</html>
```

Define styles for the following requirements in a separate style sheet, "myStyle.css" (write the required code for the myStyle.css).

- Style heading 1 with
 - Arial font
 - Left alignment
 - Blue color
- Style heading 3 with
 - Yellow background color
 - Italic font style
 - Red color
- Style paragraph with
 - Bold font style
 - Font size 3
 - Blue color
 - Centre alignment
 - Solid 1px Black border

- b. Write a HTML code to get the output as shown in the following figures.

- c. Explain what will happen when the following HTML code is rendered through a web browser.

```
<html>
<body>
  <h2>Change Account Number</h2>
  <form>
    <label for="name">Account Number:</label>
    <input type="text" id="name" value="123456" onchange="alert ('Account number
has been changed!')"><br><br>
    <input type="submit" value="Save Changes">
  </form>
</body>
</html>
```

- d. Draw the expected output of the HTML code given below.

```
<html>
<body>
  <h2>Hotel Management Table</h2>
  <table border="1">
    <tr>
      <th>Room Type</th>
      <th>Availability</th>
      <th>Price (per night)</th>
      <th>Booking</th>
    </tr>
    <tr>
      <td>Single Room</td>
      <td>Available</td>
      <td>$100</td>
      <td><a href="booking.html">Book Now</a></td>
    </tr>
    <tr>
      <td colspan="4">
        <p>Special Offer: 10% discount for stays of 7 nights or more!</p>
      </td>
    </tr>
  </table>
```

```

    </td>
  </tr>
  <tr>
    <td>Double Room</td>
    <td>Available</td>
    <td>$150</td>
    <td><a href="booking.html">Book Now</a></td>
  </tr>
</table>
</body>
</html>

```

3. A scripting language is a computer language with a series of commands within a file that is capable of being executed without being compiled. JavaScript (JS) is one of the most popular scripting languages.

a. List four (04) features of JS and briefly explain two (02) of them.

b. Write the expected output of the following JS code segments.

i.

```

msg = "a";
for(i=1; i<12; i++) {
  if(i==5)
    break;
  document.write(i);
  msg+="a";
}
document.write(msg);

```

ii.

```

x = 10;
y = 6;
x += 10;
y %= 4;
z = x - y;
document.write("The value of z is " + z);

```

iii.

```

let i = 0;
while (i<5) {
  i++;
  if (i===3) {
    continue;
  }
  console.log(i);
}

```

c. The webpage includes three paragraphs and a link named "Change Color". When the user clicks on the link, the font color of paragraphs must be changed as follows.

- The first paragraph must be in red color.
- The second paragraph must be in green color.

- The third paragraph must be in blue color.

The page must appear initially, as shown in Figure 1 below.

Write the HTML code to design the above web page and then write the JavaScript code, including a function to be embedded in the HTML code for the click event of the link.

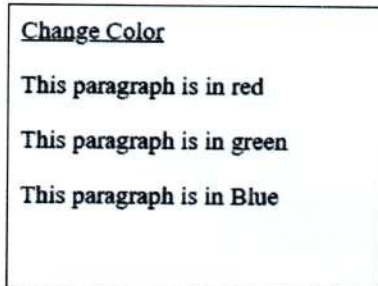


Figure 1

- d. Suppose you create a dynamic web page to validate phone numbers, as shown in Figure2.

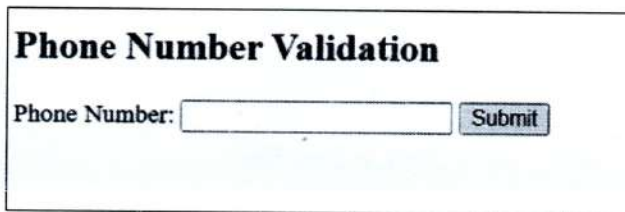


Figure 2

The following conditions must be checked to validate a phone number.

- Only numbers are allowed.
- Can start with the country code (94) or 0 with area or operator code (validating operator or area codes is not required)
- Total length must be 10 (without country code) or 11 (with country code)
Ex: 94 412224111 – 11 digits
0412224111 – 10 digits

Write a JavaScript function to validate phone numbers according to the above conditions.

Note: The name of the function should be "validatePhoneNumber".

- 4.
- a. Extensible Markup Language (XML) was designed to describe data, focusing on what data is.
- i. Write XML code for the scenario given below.
- Book
Title: Harry Potter
Author: J.K. Rowling
Year: 1997

- ii. Write down an external CSS file to add the following styles to the XML code in part a) i).
- Title element's font color = yellow and font size = 20px
 - Background color = green
 - Author and Year elements left margin = 15px
- b. A DTD means Document Type Definition.
- i. Briefly explain the purpose of an XML DTD.
- ii. Write down the external DTD file called beverages.dtd to describe foods with the following elements.
 Root element: beverage
 Child element of beverage: item
 Child elements of item
 name – 1 occurrence
 type – 1 or more occurrences
 price – 1 occurrence
- iii. State the main difference between PCDATA and CDATA components in Document Type Definition (DTD).
- c.
- i. Briefly explain the slideToggle() method used in jQuery.
- ii. Briefly explain the purpose of jQuery Callback function.
- iii. Consider the following HTML and CSS code segments.

```
<script src="jquery-3.6.0.min.js"></script>
<style>
  #content {
    display: none;
    background-color: yellow;
    padding: 10px;
  }
</style>
```

```
<button id="btnSlideDown">Slide Down</button>
<div id="content">
  <p>This content will slide down when the button is clicked. </p>
</div>
```

Write a complete HTML code, including jQuery script, such that when the user clicks on the "Slide Down" button, a yellow color section will be displayed along with a message box "Content is slid down".

Note: You must include the above code lines appropriately in your answer.

.....**End of the paper**.....