



Strathmore
UNIVERSITY

FACULTY OF INFORMATION TECHNOLOGY
BACHELOR OF SCIENCE IN INFORMATICS AND COMPUTER SCIENCE/ BACHELOR
OF SCIENCE IN TELECOMMUNICATIONS
END OF SEMESTER EXAMINATION
ICS 2102 /BTC 3103 WEB APPLICATION

DATE: 14th August 2020

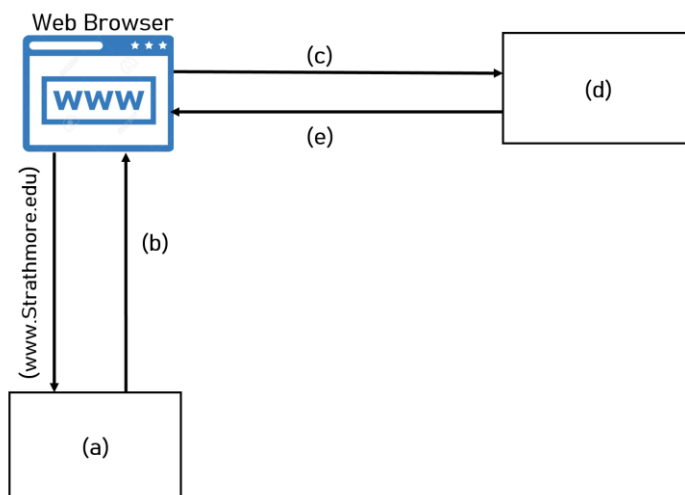
Time: 2 Hours

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

Question ONE (30 marks)

- A. Consider the diagram below which outlines the process of displaying a web page when www.strathmore.edu is typed on the URL of a web browser for the first time.



- i) For each of the letters in parentheses, write a value that best describes the service or communication event the letter is marking. **(2.5 marks)**
- ii) Describe the order of events when www.strathmore.edu is typed on the web browser **(2.5 marks)**

B. Consider the following Output:



- i) Write HTML and CSS code necessary to recreate the output. You are provided with the HTML code. Rewrite the HTML code on your answer booklet by adding div, span elements or id, class attributes that will be used as targets for CSS styling.
- “CSS ZEN GARDEN” is an image named “header.gif” that appears at the top left corner of the page. Other content is shifted to the **right** by **130px** and **140px** down to avoid covering this **background image**.
 - The “Zen Garden” header should not be shown as it has been replaced by the “CSS ZEN GARDEN” image
 - Text on the page uses a font named “**Verdana**”, and is displayed in the color **#471C47**. The overall default font size is **9pt**
 - The “A demonstration of...” paragraph's text is in **italic**.
 - There is a first column of content, **26em wide**, that displays “The Road to Enlightenment” and “Select Design” and so on. Behind that content is the image **toad.jpg** aligned to the bottom-right corner of the area. **1em** of space separates text in this area from the other column to its right.
 - A **3px-thick** solid border of color **##A690AF** separates the “Road to Enlightenment” content from the “Select a Design” content.
 - The links in the “Select Design” area are in **bold**. (Other links on the page are not bold.)
 - There is a second column of content, **21em wide**, that displays “So What is This About?” and “Participation”. It has a **2px-thick** border of color **#471C47** and a

background color of **#A690AF**. **1em** of space separates text in this area from its border on all sides. Headings in the second column are **right-aligned**.

The HTML code is provided below:

HTML CODE

```
<h1>Zen Garden</h1>

<p>A demonstration of ... </p>

<h3>The Road to Enlightenment</h3>
<p>Littering a dark and dreary road lay ...</p>
<p>Today, we must clear the mind ...</p>

<h3>Select a Design</h3>

<ul><li><a href="">Under the Sea!</a> by Eric Stoltz</li>  <!-- the link hrefs don't matter -->
    <li><a href="">Make 'em Proud</a> by Michael McAghon and Scotty Reifsnyder</li>
</ul>

<h3>So What is This About?</h3>
<p>There is clearly a need for CSS to be taken seriously ...</p>
<p>CSS allows complete and total control over the style of a hypertext doc...</p>

<h3>Participation</h3>
<ul><li>Graphic artists only please. You are modifying this page...</li>
    <li>Zen editors modify the style sheet in any way you wish, but not...</li>
</ul>
```

Write both your HTML and your CSS code on the answer booklet.

(10 marks)

- C. Explain the purpose of validating input in a Web Application twice: once in browser and then again in the web server. Give two reasons (1 mark)
- D. Write the anchor tag required to link from the page **links.html** to the page **contact.html** when the files are organized as follows: (2 marks)
- The **contact.html** page is located in a subfolder called "**contact_files**"
 - The **links.html** page is located in a subfolder called "**other_files**"
- E. Consider the following form named **order.php** that allows a user to order for goods by selecting the product through a drop down button and specifying quantity.

Food item:

Quantity:

The forms data is submitted to a page **order_submit.php** via **POST** request method. The page's output in the general successful case is to inform the user that the order was

successful, display a series of images representing what was ordered. For example, if the user orders 5 cookies, your output should display 5 copies of `cookie.jpg`.

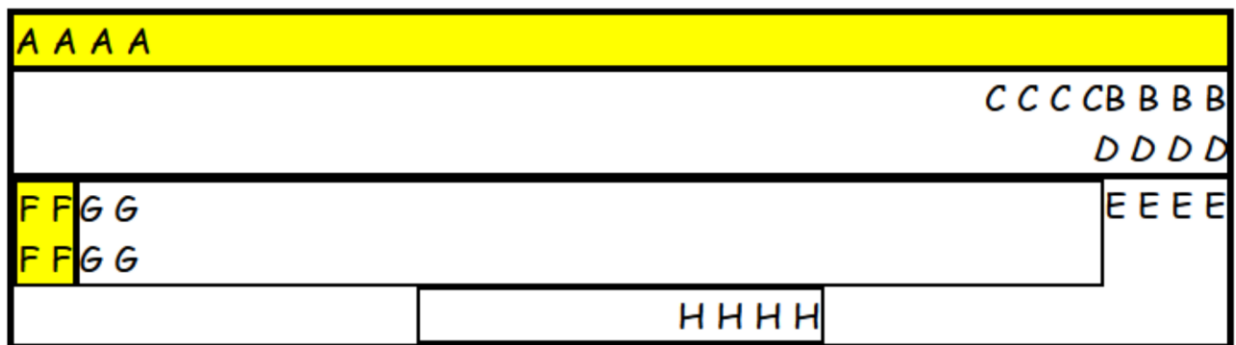
Order successful! Here is what you ordered:



- i) Write HTML code that will produce the form in `order.php` page, which will be used to submit an order to `order_submit.php` (4 marks)
- ii) Write code that will be used to display the order message "Order Successful! Here is what you ordered", with images as displayed above. *Do not use echo or print to display the message.* (5 marks)
- iii) Write a code that will issue an HTTP 400 error, if food item or quantity parameters are not passed to `order_submit.php` page (2 marks)

Question TWO (15 marks) (CSS)

A. Consider the following output and its HTML code:



```
<div>
  <div class="id">A A A A</div>
  <div>
    <span>B B
      B B</span>
    <span id="id">C C C C</span>
    <span class="class">D D D D</span>
  </div>
  <div class="class">
    <span>E E E E</span>
    <div class="id">F F<br />F F</div>
    <div id="class">G G<br />G G</div>
    <div id="H">H H H H</div>
  </div>
</div>
```

Text now uses Comic Sans MS font at the default size.
 All borders shown are 2px thick and black in color.
 The elements "A" and "F" have yellow background.
 The element "D" now has *italic* text.
 The element "H" is now each exactly one third (1/3) of the page width, in the page center; the "H H H H" text appears on the right edge of the element.

- i) Write CSS code that will be used to replicate the appearance. You are not allowed to change the HTML code (6 marks)

B. Describe two ways in which CSS embodies the DRY principle (Don't Repeat Yourself) (2 marks)

C. Label the dimensions in the following CSS code with the side that each dimension

Padding 1px 2px 3px

(1 mark)

D. Write CSS code to remove bullet points from the following unordered list (2 marks)

1. Coffee
2. Tea
3. Milk

```
<ol>  
  <li>Coffee</li>  
  <li>Tea</li>  
  <li>Milk</li>  
</ol>
```

E. Provide a CSS code which sets the style of the first item in an unordered list to be bold and every subsequent item to be in italics. (4 marks)

Question Three (15 marks)

A. Consider the Following HTML Code and its CSS and answer the questions that follow

HTML CODE

```
<!DOCTYPE html>  
<html>  
<head>  
  <title>Scene</title>  
  <link rel="stylesheet" type="text/css" href="scene.css">  
</head>  
<body>  
  <h1>Scene</h1> <h1>#7</h1>  
  
  <div id="a">Elizabeth: Captain Barbosa, I am here to negotiate  
  the cessation of hostilities against Port Royal.  
  </div>  
  
  <div>Barbosa: There are a lot of long words in there, Miss.<br />  
  What is it that you want?  
  </div>  
  
  <div class="b">  
    <div class="c">Elizabeth: I want you to leave</div>  
    <div class="c">and never come back.</div>  
  </div>  
  
  <div class="c" id="d"> Barbosa: I'm disinclin to acquiesce  
  to your request. Means &quot;no.&quot; </div>  
  
</body>  
</html>
```

CSS CODE

//CSS CODE

```
#a { border: 2px solid black;
    float: left;
    padding-right: 3em;
    width: 33%; }

div{
    border: 2px solid;
}


.a #a { background-color: yellow; }

.b div { display: inline; }

.b, .c { text-decoration: underline; }

.b > .c { background-color: yellow; }
```

- i) Draw a picture of how the following HTML/CSS code will look when the browser renders it on-screen. Assume that the HTML is wrapped in a valid full page with a head and body. Indicate a non-white background by shading lightly or by drawing

diagonal lines like . It is possible that some CSS rules shown will not apply to any elements. *Assume that the screen is the size of your answer booklet*

(10 marks)

B. Consider the HTML code below:

```
<html>
  <head>
    <title>Web Page</title>
  </head>
  <body>
    <header id="title-1">
      <h1 id="title-2"><em id="em-1">All the Course Details</em></h1>
    </header>
    <p id="subtitle-1">Topics:</p>
    <ul id="list-1">
      <li id="topic-1">What is the Internet</li>
      <li id="topic-2">How to do the Internet</li>
      <li id="topic-3">How to make the Internet</li>
      <li id="topic-4">Make cool projects:
        <ol id="list-2">
          <li id="hw-1">Make Pies</li>
          <li id="hw-2">Watch Lion King</li>
          <li id="hw-3">Read <em id="em-2">rly rly rly</em> fast</li>
          <li id="hw-4">Push squares around</li>
          <li id="hw-5">Catch 'em all!</li>
        </ol>
      </li>
    </ul>
    <div id="div-1">
      Our course mascot!</img>
    </div>
  </body>
</html>
```

i) Write the ID's of the elements selected by each of the given selectors: **(5 marks)**

- **p**
- **ol li**
- **li em**
- **ul > li**
- **li li**

Question FOUR (15 marks)

Consider the following movie database:

actors			
id	first_name	last_name	gender
433259	William	Shatner	M
797926	Britney	Spears	F
831289	Sigourney	Weaver	F
...			

movies			
id	name	year	rank
112290	Fight Club	1999	8.5
209658	Meet the Parents	2000	7
210511	Memento	2000	8.7
...			

roles		
actor_id	movie_id	role
433259	313398	Capt. James T. Kirk
433259	407323	Sgt. T.J. Hooker
797926	342189	Herself
...		

directors		
id	first_name	last_name
24758	David	Fincher
66965	Jay	Roach
72723	William	Shatner
...		

movies directors	
director_id	movie_id
24758	112290
66965	209658
72723	313398
...	

movies genres	
movie_id	genre
209658	Comedy
313398	Action
313398	Sci-Fi
...	

- A. Write a MySQL query to create a database named: '**Movie**' (1 mark)
- B. Write an SQL statement that will produce all actors who acted in movie named "**Fight Club**" (5 marks)
- C. Write an SQL statement that will produce the names of all actors acting movies in the genre "**Comedy**". (5 marks)
- D. Write an SQL query that will produce the firstname and lastname of directors who have made at least two movies (4 marks)

Question FIVE (15 marks)

Consider the following tables of a system that records data about courses and units offered in a university. The system has interfaces that allows users to add new courses to the database, add new units and map a unit to a course. A unit eg Ethics can be taught in many courses and a course can have many units. **Primary key** of **course_table** is **Course_id**. **Primary Key** of **Units_table** is **Unit_id**

COURSE_TABLE	
Course_id	Course_Name
FIT101	Bachelor of Science in Computer Science
FIT102	Bachelor of Business and Information Technology

UNITS_TABLE		
Unit_id	Unit_Name	Description
ETH101	Ethics	Introduction
COM101	Communication Skills	Introduction

- A. Draw an interface that will be used by a user to map a course to a unit. The interface should allow the user to view names of courses as a drop down and names of units as a drop down (2 marks)
- B. Draw a database table that will be used to store the mappings made in (5A) above. The table should record the date which the mapping was made. Indicate all primary and foreign keys (2 marks)

- C. Write HTML code that will produce the interface drawn in **(5A)** above. Data in the drop downs is populated from the database. Only indicate what will be in the HTML body.
(7 marks)
- D. Write code that will be used to pick the unit – course mapping information submitted using a POST request, and store them in the database table created in **(5B)** above
(4 marks)