



Strathmore
UNIVERSITY

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES
BACHELOR OF SCIENCE IN INFORMATICS AND COMPUTER SCIENCE
END OF SEMESTER EXAMINATION
ICS 2102 WEB APPLICATION

DATE: 19th November 2020

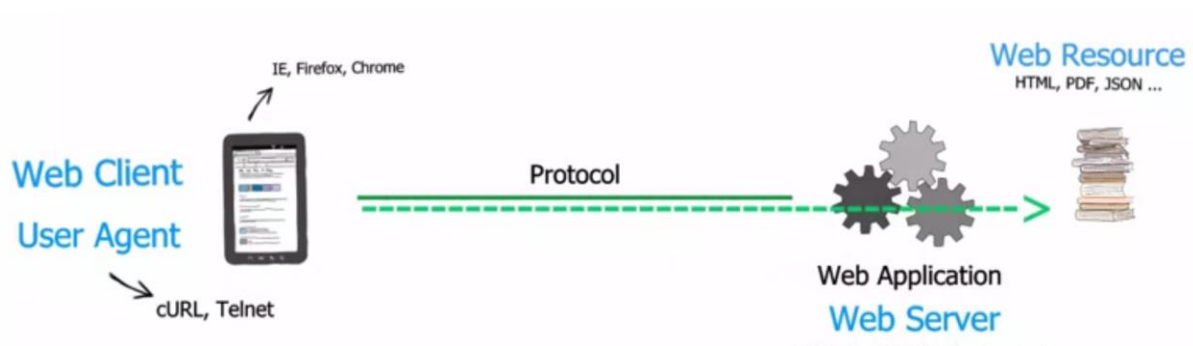
Time: 2 Hours

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 shows a web client and web server interaction process:



- i. Which protocol is applied during the interaction of a web client and web server?
(1 mark)
- ii. Describe the content of the request message sent from the web client to the web server
(3 marks)

iii. Consider the following URL:

```
http://www.cs.strathmore.edu/Courses/ICS2102-  
lab13/test.php/p1%3Dv1.html?p1=v1&name=John+Doe%20%28Sr.%29&p2=/extra
```

Identify the following attributes of the HTTP request that will be made if the browser goes to this URL: Server, Path, Port Number, Parameter names and values (4 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.

- Text on the page uses a font named "Verdana", and is displayed in the color #471C47. The overall default font size is 9pt
- The background image is named "Pelé.png". It appears on the top left corner of the page. It does not **repeat**. Other content of the page is shifted to the right by 300 px
- All heading 3 are **underlined**
- All paragraphs have a letter spacing of 2 px with a text indentation of 20 px

- The section has a dashed solid border, **2px thick** with **color #471C47**. It also has a background color of **#D7EAA3**
- A **1 em space** separates text in the section from its border all round
- The bordered section is **27em wide**
- A **3px-thick** solid border of color **##A690AF** separates the "Promise" content from the "First Goal" content.

The HTML code is provided below:

HTML CODE

```
<body>

    <h1>Pelé</h1>

    <h3>Promise</h3>
    <p>After Brazil's devastating loss in the 1950 World Cup final, a devastated nine-year-old young Dico makes the bold and unlikely promise to his father<br> Someday I will go on to win a World Cup for Brazil.</p>

    <h3>First Goal</h3>
    <p>When the 1957 season started, Pelé was given a starting place in the first team and, at the age of 16, became the top scorer in the league.</p>

</body>
```

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

(10 marks)

C. What is the difference between block elements and inline elements? Give 2 examples each.

(4 marks)

D. What does CSS do if a stylesheet has two different rules with different selectors that match a single HTML element?

(2 marks)

E. Consider the following array

```
Array
(
    [0] => Array
        (
            [user_id] => 1
            [first_name] => Maryanne
            [last_name] => Wanjiru
            [user_email] => mary@gmail.com
            [user_status] => active
        )

    [1] => Array
        (
            [user_id] => 3
            [first_name] => James
            [last_name] => Bond
            [user_email] => bond@gmail.com
            [user_status] => active
        )

    [2] => Array
        (
            [user_id] => 4
            [first_name] => Titus
            [last_name] => Peters
            [user_email] => peters@gmail.com
            [user_status] => active
        )
)
```

Using a **foreach** loop, display the array data in the HTML table as shown below:

(6 marks)

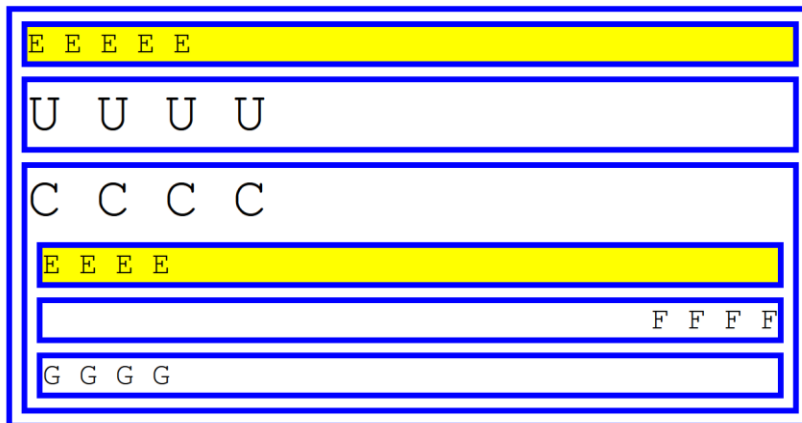
User id	First Name	Last Name	Email	Status
1	Maryanne	Wanjiru	mary@gmail.com	active
3	James	Bond	bond@gmail.com	active
4	Titus	Peters	peters@gmail.com	active

Question TWO (15 marks)

- A. HTTP is a stateless protocol. Describe the meaning of a protocol being stateless
(2 marks)
- B. The TCP/IP protocol suite is used during the interaction between a web browser and a web server. Identify the 4 layers of the protocol suite. For each layer, indicate the protocol that will be used during the communication between web browser and web server. (*Illustrate the protocol suite layers using a diagram*)
(5 marks)
- C. Differentiate between client side programming languages and server side programming languages. Give examples of each
(3 marks)
- D. Using an Illustration diagram, describe the process of the client obtaining the IP address for the hostname www.cnn.com under the assumption that it is not cached at the local DNS server
(5 marks)

Question THREE (15 marks)

- A. Consider the following output and its HTML code



HTML CODE	
<pre> <div> <div class="id">E E E E E </div> <div> U U U U </div> <div class="class"> C C C C <div class="id">E E E E </div> <div id="class">F F F F </div> <div id="G">G G G G </div> </div> </pre>	<ul style="list-style-type: none"> • Text uses Courier New font • All borders shown are 3px thick and blue in color • Elements “E” have yellow background • Element “U” and “C” have font size of 30px • Element “F” appears to the right of the element • All elements have a margin of 5px

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

B. Consider the following HTML code and CSS code applied.

HTML CODE	CSS CODE
<pre> <p class="para1"> Lorem ipsum dolor sit amet, consectetur </p> <p>quis nostrud exercitation ullamco laboris nisi ut </p> </pre>	<pre> p{ text-align: right; color: blue; font-size: 20pt; } .para1{ color: red; } </pre>

- i) Which styles will apply to the first paragraph? **(2 marks)**
- ii) Explain the reason for your answer in B(i) above **(2 marks)**

C. Consider a HTML page with four div elements of class box. Given the HTML code, draw the expected output when CSS code is applied. *(Both HTML code and CSS code have been provided)* **(4 marks)**

```

<div id="A" class="box">A</div>
<div id="B" class="box">B</div>
<div id="C" class="box">C</div>
<div id="D" class="box">D</div>

```

HTML CODE

```

.box {
  height: 100px;
  width: 100px;
  display: inline-block;
  border: 2px solid black;
}

```

CSS CODE

D. Consider the following background properties

```

body {
  background-color: #ffffff;
  background-image: url("img_tree.png");
  background-repeat: no-repeat;
  background-position: right top;
}

```

Use the shorthand property to set the background properties in one declaration

(1 mark)

Question FOUR (15 marks)

A. Consider the following output

- [Strathmore University](#)
- [Kenyatta University](#)
- [Nairobi University](#)

Nairobi University

Write HTML code that will list the links as shown. Once a user hovers on each link, the name of the university should appear.

(4 marks)

B. Consider the following HTML document. This HTML document won't validate, and would generate errors and warnings in the W3C Validator. However, it is possible to make 5 modifications to the HTML to make it pass validation

```

<!DOCTYPE html>
<html lang="en">
  <head>
    <script type="text/javascript" src="index.js"></script>
    <link href="styles.css" rel="stylesheet"/>
  </head>
  <body>
    <h1 "Best page ever!" />
    <div>
      <a>Check out this cool page:
        <href>http://www.pointerpointer.com</href>
      </span>
    </div>
  </body>
</html>

```

- i. Indicate the **5 modifications** we need in order to make it pass validation. Below, briefly **describe the changes that you made**, and why you had to make each change in order to validate. **(5 marks)**

C. Consider the following HTML code and CSS and answer the questions that follow:

HTML CODE

```

<!DOCTYPE html>
<html>
<head>
  <title>

  </title>
  <link rel="stylesheet" type="text/css" href="scene.css">
</head>
<body>
  <h1>Chapter One</h1> <h2>&lt Fair Winds and Black Ships &gt </h2>

  <div id="a">Shipwreck Island was naught but a legend<br> on the Spanish
Main.</div>

  <div id="b">Captain: Do you think I will give away all my secrets ?</div>

  <div class="c e" id="f">Captain: I came upon this little . . . hoard . . .
of Spanish gold last month.</div>

  <div class="d e">Jack: &quot; For a moment there, I
thought you'd stumbled onto the lost treasure of the Incas &quot; </div>
</body>
</html>

```


CSS CODE
<pre> div{ border: 2px solid black; } #b, .c{ display: inline; } .e{ background-color: red; } #a{ text-align: left; } </pre>

- i. Draw a picture of how the following HTML/CSS code will look when the browser renders it on-screen. Indicate a non-white background by by drawing diagonal lines

like 

. Assume that the screen is the size of your answer booklet

(6 marks)

Question FIVE (15 marks)

- A. Differentiate between a cookie and a session in PHP. What the importance of each of them?

(3 marks)

- B. Consider the following code:

```

1 <?php
2
3 session_start();
4
5 if(isset($_SESSION["loggedin"]) && $_SESSION["loggedin"] === true){
6     header("location: welcome.php");
7     exit;
8 }

```

- i) Explain what is happening in each line of code

(4 marks)

- C. Write a **MySQLi – PHP** code to do the following database operations: Make any necessary assumptions for variable values:

- i. Create **4 constant variables** to hold the host name, database user, database password and the database name.

(2 marks)

ii. Create a **MySQLi** connection to the database server. Assign this to a variable.

(2 marks)

iii. Consider the following PHP variables holding data posted by the user.

```
if (isset($_POST["register"])) {  
  
    $firstname=$_POST["fname"];  
    $secondname=$_POST["sname"];  
    $email_address=$_POST["email"];
```

Write code that will insert the data into a table named “users” in the database. (*Use the connection in ii above.*)

(4 marks)