

Strathmore
UNIVERSITY

STRATHMORE UNIVERSITY
FACULTY OF INFORMATION TECHNOLOGY
BACHELOR OF SCIENCE IN COMPUTER NETWORKS AND CYBERSECURITY
END OF SEMESTER EXAMINATION
CNS 2106 – INTERNET PROGRAMMING

DATE: 2nd August, 2024

Time: 13:00-15:00 Hours

Instructions

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

QUESTION ONE [30 Marks]

- a. HTML is a mark-up language used for creating web pages and web applications.
 - i. What is the purpose of the HTML DOCTYPE declaration? [1 Mark]
 - ii. What is the purpose of the "alt" attribute in the "img" tag? [1 Mark]
 - iii. Create a HTML document featuring an unordered list with the following information: Title = "Fruits List"; Subject = "Fruits"; List items = Oranges, bananas, apples, guavas. [3 Marks]
- b. CSS is a style sheet language used for describing the presentation of a document written in HTML.
 - i. Write a piece of code to show how to link an external CSS file to an HTML document. [1 Mark]
 - ii. Write CSS code of a class selector named *students* and sets the text colour to *blue*. [2 Marks]
 - iii. Write CSS code that sets the text colour to *white* and background colour of an HTML element to *black*. [2 Marks]
- c. Java script is an interpreted language that adds interactivity to web pages.

- i. Write a piece of code to show how to link an external Java script file to an HTML document. **[1 Mark]**
 - ii. Write a Java script function named *intProg* that will display the words “CNS 2024” **[2 Marks]**
 - iii. Write HTML code that shows how to call a Java script function named *showAlert* when a button is clicked. **[2 Marks]**
- d. PHP.
- i. Explain the difference between include and require statements in PHP. **[1 Mark]**
 - ii. What is the purpose of the \$_POST superglobal array in PHP? **[1 Mark]**
 - iii. Write a PHP code that will display the words “CNS 2024”. **[1 Mark]**
 - iv. Write a PHP function named add that takes two arguments and returns their sum. **[2 Marks]**
- e. HTTP is a protocol used for transmitting hypertext requests and information between web browsers and web servers.
- i. What is the difference between a GET and POST request in HTTP? **[1 Mark]**
 - ii. What do the status codes 200, 301, 404, and 500 signify? **[4 Marks]**
 - iii. Describe how stateful interaction is achieved between a HTTP client and a HTTP server. **[2 Marks]**
 - iv. Given the following HTTP header, state the function of the three parts of the first line. Also state the purpose of the attributes Accept and Connection. **[3 Marks]**
- ```

GET /index.php HTTP/1.1
Host: www.example.com
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko)
Chrome/90.0.4430.93 Safari/537.36
Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/webp,*/*;q=0.8
Accept-Language: en-US,en;q=0.5
Accept-Encoding: gzip, deflate, br
Connection: keep-alive

```

## QUESTION TWO [15 Marks]

- a. Which element of the \$\_SERVER superglobal variable contains the full URL of the current page? **[1 Mark]**
- b. How can you retrieve the IP address of the client making the current request using the \$\_SERVER superglobal? **[1 Mark]**

- c. What is the primary function of an HTTP proxy server? [1 Mark]
- d. Use a diagram to describe how HTTP Content Distribution Networks (CDN) are used on Internet. [7 Marks]
- e. List and state the use of five HTTP cache-control header attributes. [5 Marks]

**QUESTION THREE [15 Marks]**

- a. Write the HTML code that will produce the web page in Fig. 1.

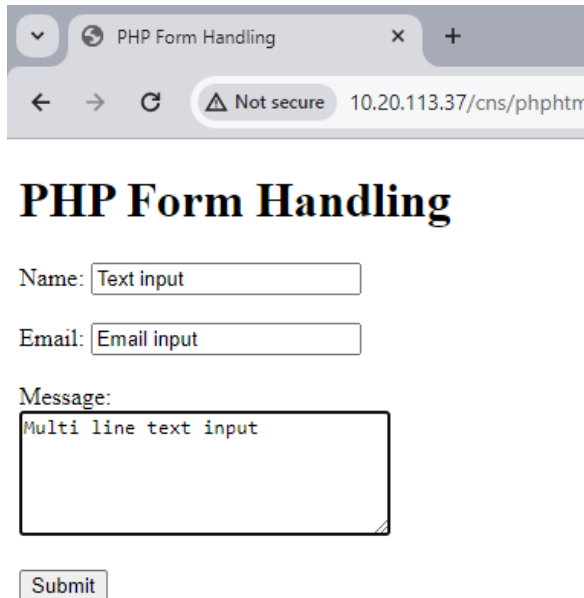


Fig. 1: Illustration of a web page

- b. Write JavaScript code to validate that both fields in Fig. 1 are filled out before allowing the form to be submitted. The code is to be executed when user clicks submit button. Show the Javascript code and modification so the HTML code in (a) above. [5 Marks]
- c. Modify the HTML code in (a) to add a CSS class selector named *regForm* that format the text *Name*, *Email* and *Message* as follows: colour is blue, font is bold and italic. Show the CSS code and modifications to the HTML code. [5 Marks]

**QUESTION FOUR [15 Marks]**

- a. Explain the difference between indexed arrays, associative arrays in PHP, and give an example of each. [3 Marks]
- b. Given the array \$numbers = array(2, 4, 6, 8, 10), write a PHP function to calculate the sum of all elements in the array. [3 Marks]

- c. Give the name of the function used to check if a particular key exists in an associative array. [1 Mark]
- d. Write a PHP script to establish a connection to a MySQL database named **testdb** on a local server with the username **root** and the password **password**. [2 Marks]
- e. Given a table **users** with columns **id**, **username**, and **email**, write a PHP script to fetch and display all records from this table. [3 Marks]
- f. Write a PHP script to update the **email** of a user with **id** 1 in the **users** table to **newemail@example.com**. [3 Marks]

#### QUESTION FIVE [15 Marks]

- a. Using a diagram, illustrate the LAMP architectural model/stack for a web server that is configured on a Linux computer. [7 Marks]
- b. Explain how a website can be configured to allow users from a given organisation's network to access and download PDF files, while requiring all other users to login with a user name and password. [5 Marks]
- c. Given the following multidimensional array, write a PHP function to print the names and grades of all students.

```
$students = array(
 array("name" => "Alice", "age" => 20, "grade" => "A"),
 array("name" => "Bob", "age" => 22, "grade" => "B"),
 array("name" => "Charlie", "age" => 23, "grade" => "C")
);
```

[3 Marks]