Open University *of* Mauritius

BSc (HONS) COMPUTER SCIENCE [OUbs033]

EXAMINATION FOR: January - February 2022

MODULE   :   Server Side Web Technologies [OUbs033211]

DATE   :   Saturday 15 January 2022

DURATION   :   2 Hours

INSTRUCTIONS TO CANDIDATES

1. This question paper consists of **THREE (3) QUESTIONS**.

2. Answer **ALL Questions**.

3. Always start a new question on a fresh page.

4. Total marks: **100**

This question paper contains 3 questions and 4 pages.

ANSWER ALL QUESTIONS

QUESTION 1 [45 MARKS]

You are currently working as a software developer at the SIL (State Informatics Ltd) and your team got a project from the Ministry of Health. It's about a centralised web application where an authorised health person can update the number of people affected by COVID-19, the associated death count and the recovery count. The application will be available at **http://covid-19.govmu.org** and at the end of each day, these statistics will be used by the Health Minister for press communication.

The functionality of the web application is as follows:

- The homepage will
  - display the overall stats for each day
  - include a date picker where one can see the statistics at that particular date without reloading the page
  - Accepts a date as a parameter and will load the statistics for that particular date on the initial load
- There will be a login form (no registration form as the account is centrally managed)
- There will be a protected management section where the authorised person can insert or update the following:
  - New cases
  - Death count
  - Recovery count
  - Patient records

  coming from their department.

Note: Due to privacy concerns, only the NID (National Id Number) of the patient will be stored in the database.

a) Based on the URL in the use case:

   i. Explain the structure of the URL,

   ii. Highlight its related issue,

   iii. and propose a solution to address it.

(5 marks)

b) Describe how you will structure this project?

(12 marks)

c) The following terms are usually used in the web development:

- $_POST,
- $_GET,
- $_SESSION,
- $_COOKIE and
- AJAX

   i. Describe each term.

(10 marks)

   ii. and in what specific scenarios will you use them in the above use case?

(5 marks)

d) Describe the structure of the patient table that you will use for storing the above information.

(5 marks)

e) Write the SQL create command to create the above table, paying attention to the field type and default values.

(5 marks)

f) Write the SQL query to get the count of death for a particular date (eg: 02 NOV 2021).

(3 marks)

QUESTION 2 [25 MARKS]

a) Complete the following Perl codes that will print the reverse of a string:

my $string = "\n?sihtdaeruoynac";

(2 marks)

b) Provide **four (4)** examples where cookies can be used.

(4 marks)

c) List down **three (3)** ajax security concerns.

(9 marks)

d) Give **five (5)** examples of how you can target an HTML element using jQuery.

(10 marks)

QUESTION 3 [30 MARKS]

a) Describe **five (5)** categories of attacks and the solution to protect against each one of them.

(15 marks)

b) Describe how you will ensure that these are met when developing a website:

- Confidentiality
- Access control
- Integrity
- availability

(8 marks)

c) State **two (2)** advantages and **two (2)** disadvantages of CGI scripts.

(4 marks)

d) Describe the following CGI variables:

i. SERVER_NAME
ii. REMOTE_HOST
iii. REQUEST_METHOD

(3 marks)