KOLEJ UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF COMPUTING AND INFORMATION TECHNOLOGY

ACADEMIC YEAR 2021/2022

DECEMBER EXAMINATION

<u>AMIT2043 WEB SYSTEMS AND TECHNOLOGIES</u>

FRIDAY, 24 DECEMBER 2021 TIME: 9.00 AM – 12.00 NOON (3 HOURS)

DIPLOMA IN SCIENCE (INTERNET TECHNOLOGY)
DIPLOMA IN INFORMATION TECHNOLOGY

Instructions to Candidates:

Answer **ALL** questions in the requested format or template provided.

- This is a final online assessment. You MUST answer the assessment questions on your own without any assistance from other persons or resources.
- You must contact the lecturer immediately should there be any disruption to the video conferencing during the final online assessment.
- It is your responsibility to ensure all pages of the answer script are submitted. You will not be notified for any missing pages or incorrect submission of answer script.
- You must submit your answers within the following time frame allowed for this online assessment:
  - The deadline for the submission of your answers is **<u>half an hour</u>** from the end time of this online assessment.
- Penalty **<u>WILL BE IMPOSED</u>** on students who submit their answers late as follows: o The final marks of this online assessment will be reduced by 10 marks for answer scripts that are submitted within 30 minutes after the deadline for the submission of answers for this online assessment.
  - o The final marks of this online assessment will be downgraded to zero (0) mark for any answer scripts that are submitted after one hour from the end time of this online assessment. ● Extenuating Mitigating Circumstance (EMC) encountered, if any, must be submitted to the Faculty/Branch/Centre within 48 hours after the date of this online assessment. All EMC applications must be supported with valid reasons and evidence. The UC EMC Guidelines apply.

FOCS Additional Instructions to Candidates:
- Include your **FULL NAME**, **STUDENT ID** and **PROGRAMME OF STUDY** in your submission of answer.
- Read all the questions carefully and understand what you are being asked to answer. ● Marks are awarded for your own (original) analysis. Therefore, use the time and information to build well-constructed answers.

STUDENT'S DECLARATION OF ORIGINALITY
By submitting this online assessment, I declare that this submitted work is free from all forms of plagiarism and for all intents and purposes is my own properly derived work. I understand that I have to bear the consequences if I fail to do so.

Question 1

a) Explain why the following variable names are invalid:

(i) $my-variable (1 mark)

- Variable name cannot have '-'

(ii) $another Variable (1 mark)

- Variable name cannot have space

(iii) $2ndVariable (1 mark)

- Variable name cannot start with digit

(iv) $last.Variable (1 mark)

- Variable names cannot have '.'

(v) $(myVar) (1 mark)

- Variable name cannot have brackets

b) Table 1-1 shows the state codes in MyKad for Malaysians who are born in Johor.

Table 1-1: State Codes of Johor.

State	State Codes
Johor	01, 21, 22, 23, 24

Write a PHP function named **checkJohorBirthPlace** that takes an argument, the identity card number. The function returns **true** if the birthplace code in the 7th and 8th digit of the 12-digit MyKad number is a state code shown in Table 1-1, otherwise returns **false**. (10 marks)

```php
<!DOCTYPE html>

<html>


<head>
    <meta charset="UTF-8">
    <title>Birth Place</title>
</head>


<body>

    <?php
    function checkJohorBirthPlace($identityNumber){
        $checkStateCodes = array("01", "21", "22", "23", "24");
        // this get 01
        $stateCode = substr($identityNumber, 6, 2);

        if (in_array($stateCode, $checkStateCodes)) {
            return true;
        } else {
            return false;
        }
    }

      echo  checkJohorBirthPlace("030512011234")  ?  "Johor"  :  "Not
Johor";


    ?>
</body>
</html>
```

c) Figure 1-1 and Figure 1-2 are the fruit lists shown in design view and code view respectively. The page contains a simple form with a text box where the user can type a word. The form submits back to the same page as a POST request.

Write the PHP code that matches the exact or partial word. For example, if the user submits the word "an", it will remove the list containing the word "an" such as banana and durian. You need to use **strpos** and **array_splice** functions to complete this.

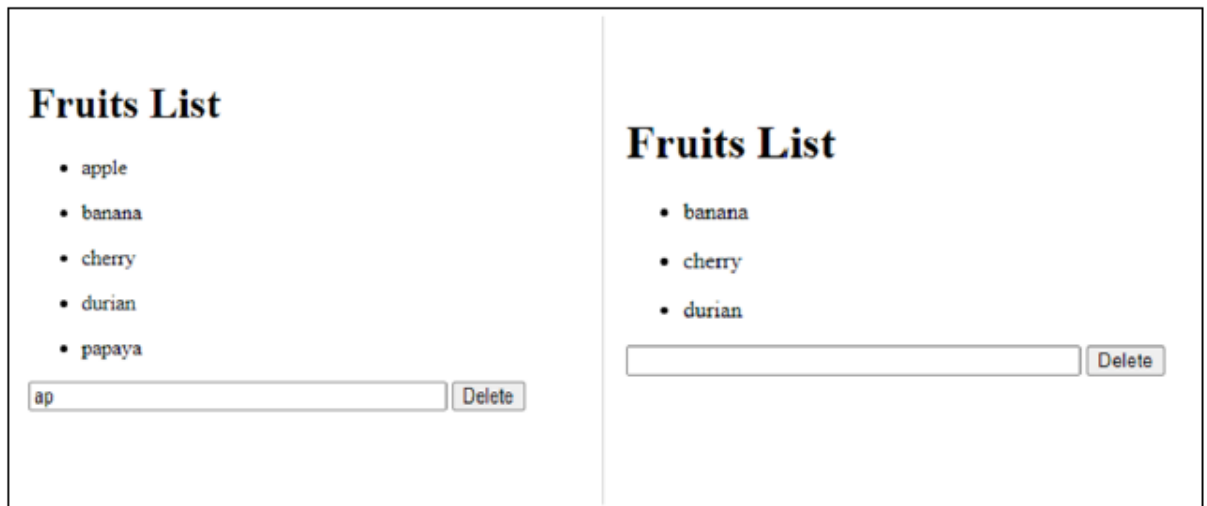Figure 1-1 shows the page as the user types the word "ap" and after clicking the Delete button.

Figure 1-1: The design view before and after the word "ap" submitted.

Question 1 c) (Continued)

```php
<?php
$fruits = array("apple", "banana", "cherry", "durian", "papaya");
?>
<html>
 <head><title>Fruits List</title></head>
 <body>
<h1>Fruits List</h1>
<?php
foreach ($fruits as $value)
{
printf('<ul><li>%s</li></ul>', $value);
}
?>
</body>
<form method="post">
<input type="text" name="delete" size="40" maxlength="50" />
<input type="submit" name="submit" value="Delete" />
</form>
</body>
</html>
```

Figure 1-2: The code view of the fruit list form.

(10 marks)

```php
<?php
$fruits = array("apple", "banana", "cherry", "durian", "papaya");


    if($_SERVER["REQUEST_METHOD"] == "POST"){
        $search = $_POST["delete"];
        foreach($fruits as $fruit){
            //format = strpos(string,find)
            //used for = if found will return the index of the string
else return false
            if(strpos($fruit, $search) !== false){
                //format = array_splice(array, start, length)
                //used for = delete the element in the array
                array_splice($fruits, array_search($fruit, $fruits),1);
            }
        }
    }
?>
```

[Total: 25 marks]

Question 2

Figure 2-1 is the username and password submission form shown in the design view. The submission form allows users to update the password if the username exists in the database. A database table named **Users** has been created in MySQL database with all the necessary fields, as shown in Table 2-1.

Based on the information given in Figure 2-1 and Table 2-1, answer the following questions to complete the form submission function.

Figure 2-1: The design view of the username and password submission form.

Table 2-1: Users Table Structure.

Field	Type	Null	Key	Extra
user_id	int(10) unsigned	No	Primary	auto_increment
username	varchar(100)	No		
password	char(40)	No		

Question 2 (Continued)

a) Write the code by using the preg_match function to validate the following validation requirements and the submitted user input as shown in the following Table 2-2:

Table 2-2: Validation requirements of username and password.

Field	Validation Requirements
Username	• Minimum 3 letters. • Contains only lowercase alphabet. • Not allow the string with at least **THREE** consecutive repeated letters. For simplicity, restrict the regular expression to the letters a, b, c, d, and e. **Allow:** abcdeabc aabbccdd aabbaabb **Not allow:** a o abcd<u>eee</u>a *NOTE: You should achieve the validation rules using **ONE** (1) preg_match function and return **true** if the input fulfilled the validation rules. Else, return **false**.*
Password	• Minimum 6 digits. • Not allow the digits with at **THREE** consecutive numbers in ascending order **Allow:** 001122 013467 098653 111111 **Not allow:** 9 <u>012</u>000 5<u>78</u>955 125<u>345</u> *NOTE: You should achieve the validation rules using **ONE** (1) preg_match function and return **true** if the input fulfilled the validation rules. Else, return **false**.*

s

(10 marks)

```php
<?phpaaaaaaa
if ($_SERVER["REQUEST_METHOD"] == "POST") {
    $usernamesaa = $_POST["username"];
```

```php
        $password1 = $_POST["password"];
        $password2 = $_POST["passwordagain"];
        $namelengthcheck = $namelowercheck = $namerepeatcheck = 0;
        $passwordlengthcheck = $passwordrepeatcheck =
$passwordagaincheck = 0;
        $checkerror = false;
        //refer: https://www.w3schools.com/php/php_regex.asp
        //want know how it work: https://regexr.com/32ffh
        if (preg_match("^(?![a-e]*([a-e])\1{2,})([a-e]{3,})+$",
$username)) {
            $namerepeatcheck = 1;
            $checkerror = true;
        }

        if (strlen($password1) < 6) {
            $passwordlengthcheck = 1;
            $checkerror = true;
        }

        if ($passwordlengthcheck == 0) {
            $passwordArray = str_split($password1);
            for ($i = 0; $i < count($passwordArray) - 1; $i++) {
                if ($passwordArray[$i] + 1 == $passwordArray[$i + 1]) {
                    if ($passwordArray[$i + 1] + 1 == $passwordArray[$i
+ 2]) {

                        $passwordrepeatcheck = 1;
                        $checkerror = true;
                        break;

                    }

                }

            }

        }

        if ($password1 != $password2) {
            $passwordagaincheck = 1;
            $checkerror = true;
        }

        if ($checkerror) {
            return false;
        } else {
            return true;
        }

    }
```

```
    ?>
```

b) Use the ternary operator to write the PHP code to validate the "Password" and "Password Again". Named the "Password" as $password1 and "Password Again" as $password2 as shown in Figure 2-1. If both are matched, assign the password to the variable named $password and encrypt it with **md5()** function. Else, do nothing. (6 marks)

```
        //ternary operator means shorthand if else

        $encrypt = ($password1 == $password2) ? md5($password1): null;
```

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Question 2 (Continued)

c) Given that the database server information of servername, username, password, and database name are *localhost*, *admin*, *abc123*, and *fakebook* respectively. Write code to establish connection to MySQL. (4 marks)

```php
<?php
$servername = "localhost";
$username = "admin";
$password = "abc123";
$dbname = "fakebook";

// Create connection
$conn = new mysqli($servername, $username, $password, $dbname);

// Check connection
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
?>
```

d) Write code to update the username and password to the **Users** table. Display a message to the users when the update either succeeded or failed. (5 marks)

```
$sql = "UPDATE Users SET username = 'amogus' password = '111111' WHERE
      user_id = 1;
$result = $conn->query($sql)? "succeeded" : "failed";
```

[Total: 25 marks]

Question 3

a) To use a session, what function must be placed before any HTML code on the PHP page? (1 mark)

session_start()

b) What will be created automatically when a session is created? (1 mark)

A session cookie will be created automatically when a session is created

c) How do one remove the cookies? (1 mark)

setcookie("admin", "abc123", time() - 3600);

d) The HTML page shown in Figure 3-1 link to jQuery contains some errors. Find all the bugs that exist in Figure 3-1 and suggest a solution for each bug.

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Question 3 d) (Continued)

```
<html><head>
<title>jQuery Debug</title>
<script src="jQuery/jquery-1.9.1.min.js"></script>
<style> .red { background-color:#FF999; } </style>
</head><body>
<button id="Bold">Bold</button>
<button id="italic">Italic</button>
<button id="Hide">Hide</button>
<button id="AddClass">Add Class</button>
<button id="Blue">Blue</button>
<script type="text/javascript">
$("#Bold").click(function()
{
$("#bold").css("font-weight", "bold")
})
$("#Italic").click(function()
{
$("#Italic").css("font-style", "italic")
})
$("#Hide").click(function(){
$("#Hide").Hide();
});
$(".AddClass").click(function(){
$(".AddClass").addClass("red");
});
$("#Blue").click(function()
{
$("#Blue").css("bg-color", "blue")
})
</script></body></html>
```

Figure 3-1: Code view of a HTML page

(12 marks)

- $("#bold").css("font-weight", "bold") change to $("#Bold").css("font-weight", "bold")
- $("#Italic").click(function() change to $("#italic").click(function()
- $("#Italic").css("font-style", "italic") change to $("#italic").css("font-style", "italic")
- $("#Hide").Hide(); change to $("#Hide").hide();
- $(".AddClass").click(function() change to $("#AddClass").click(function()
- $(".AddClass").addClass("red"); change to $("#AddClass").addClass("red");
- $("#Blue").css("bg-color", "blue") change to $("#Blue").css("background-color", "blue")

e) Refer to Figure 3-2 and Figure 3-3 shown below, write jQuery script to animate the div object in a square direction such as moving down, right, up and left when the move button is clicked.

```
<html>
<head>
 <title>jQuery Animation</title>
 <script src="jQuery/jquery-1.9.1.min.js"></script>
</head>
<body>
 <button id="move">move</button>
 <div
style="background:#98bf21;height:100px;width:100px;position:absolute;"></div>
</body>
</html>
```

Figure 3-2: The code view of a move button and a square

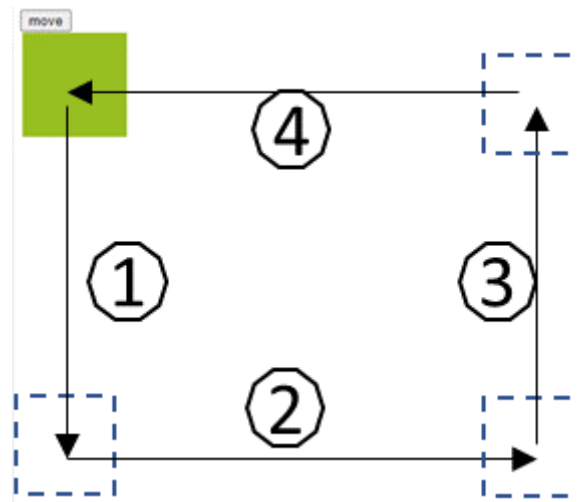**Question 3 e) (Continued)**

Figure 3-3: Illustration of the animation when the move button is pressed.

(10 marks)

```
$(document).ready(function() {
    $("#move").click(function() {
        $("div").animate({top: '+=200px',});
        $("div").animate({left: '+=250px',});
        $("div").animate({top: '-=200px',});
        $("div").animate({left: '-=250px',});
    });
});
```

[Total: 25 marks]

Question 4

a) Refer to Figure 4-1, create an instance of the XMLHttpRequest object named **xmlhttp**. Then use the XMLHttpRequest object to make an asynchronous call to a server page named **update.php** and define a callback function that will be executed automatically when the server response is received. Evaluate the server's response in the callback function.

```
<form method='post'>
 <p>Select your programme:
 <select name="programme"
onchange="updateContent(this.value)">  <option
value="">---Select a programme---</option>
 <option value="CS">Computer Science</option>
 <option value="IT">Information Technology</option>
 </select>
 </p>
 <p>Select an elective subject:
 <select name="elective" id="elective">
 <option value=""></option>
 </select>
 </p>
 <input type='submit' name='submit' value='submit' />
</form>
```

Figure 4-1 Code view of a simple elective subject selection application.

(14 marks)

```html
<html>
<head>
    <title>TODO supply a title</title>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <script>
        function updateContent(val) {
            var xhttp = new XMLHttpRequest();
            var url = "getList.php?p=";
            xhttp.onreadystatechange = function() {
                if (this.readyState === 4) {
                    document.getElementById("elective").innerHTML =
this.responseText;
                }
            };
            xhttp.open("GET", url.concat(val), true);
            xhttp.send();
        }
    </script>
```

```html
</head>

<body>
    <form method='post'>
        <p>Select your programme:
            <select name="programme"
onchange="updateContent(this.value)">
                <option value="">---Select a programme---</option>
                <option value="CS">Computer Science</option>
                <option value="IT">Information Technology</option>
            </select>
        </p>
        <p>Select an elective subject:
            <select name="elective" id="elective">
                <option value=""></option>
            </select>
        </p>
        <input type='submit' name='submit' value='submit' />
    </form>
</body>

</html>
```

```php
<?php
//getList.php
if(isset($_GET['p'])){
    $programme = $_GET['p'];
    $electives = array();
    if($programme == "CS"){
        $electives = array("CS101", "CS102", "CS103", "CS104",
"CS105");
    } else if($programme == "IT"){
        $electives = array("IT101", "IT102", "IT103", "IT104",
"IT105");
    }
    echo "<option value=''>---Select an elective---</option>";
    foreach($electives as $elective){
        echo "<option value='$elective'>$elective</option>";
    }
}
?>
```

b) Describe in detail with your own words, what will happen when the above script is executed properly without any error? (6 marks)

- No Fuck theory

c) Besides Google Suggest, find **ONE (1)** web page that applies AJAX and describe it. Take a screenshot of the web page (with AJAX application) and state its URL in your answer. (5 marks)

- No Fuck theory

[Total: 25 marks]