KOLEJ UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF COMPUTING AND INFORMATION TECHNOLOGY

ACADEMIC YEAR 2021/2022

OCTOBER EXAMINATION

AMIT2043 WEB SYSTEMS AND TECHNOLOGIES

SATURDAY, 9 OCTOBER 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 an open book final online assessment. You MUST answer the assessment questions on your own without any assistance from other persons.
- You must submit your answers within the following time frame allowed for this online assessment:
  - The deadline for the submission of your answers is **half an hour** from the end time of this online assessment.
- Penalty as below **WILL BE IMPOSED** on students who submit their answers late as follows:
  - 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.
  - 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.
- Extenuation Mitigating Circumstance (EMC) encountered, if any, must be submitted to the Faculty/Branch/Center 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.

Final Online Assessment Submission
Course Code:
Course Title:
Signature:
Name of Student:

Student ID:
Date:

AMIT2043 WEB SYSTEMS AND TECHNOLOGIES

Question 1

```
<html>
   <head><title> FOA Question 1 </title>
   </head>
   <body>
      <h1>Time Portal</h1>
      <?php
           echo "The current time is ".date('h:i:s A');
      ?>
   </body>
</html>
```

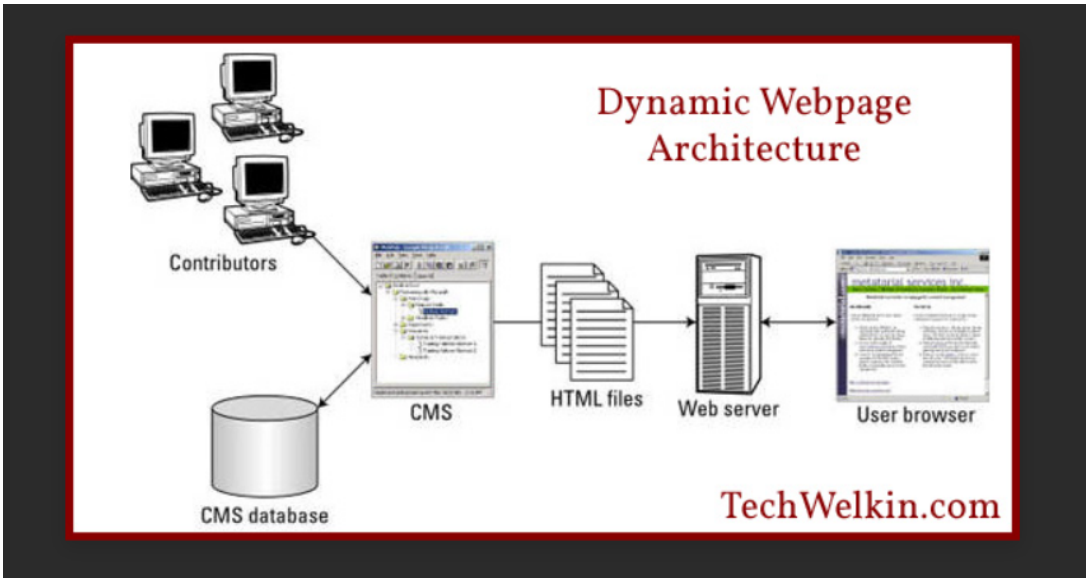
Figure 1: Web Page A

a) Web pages come in various shapes and sizes. However, they can be generally categorised into 2 main categories.

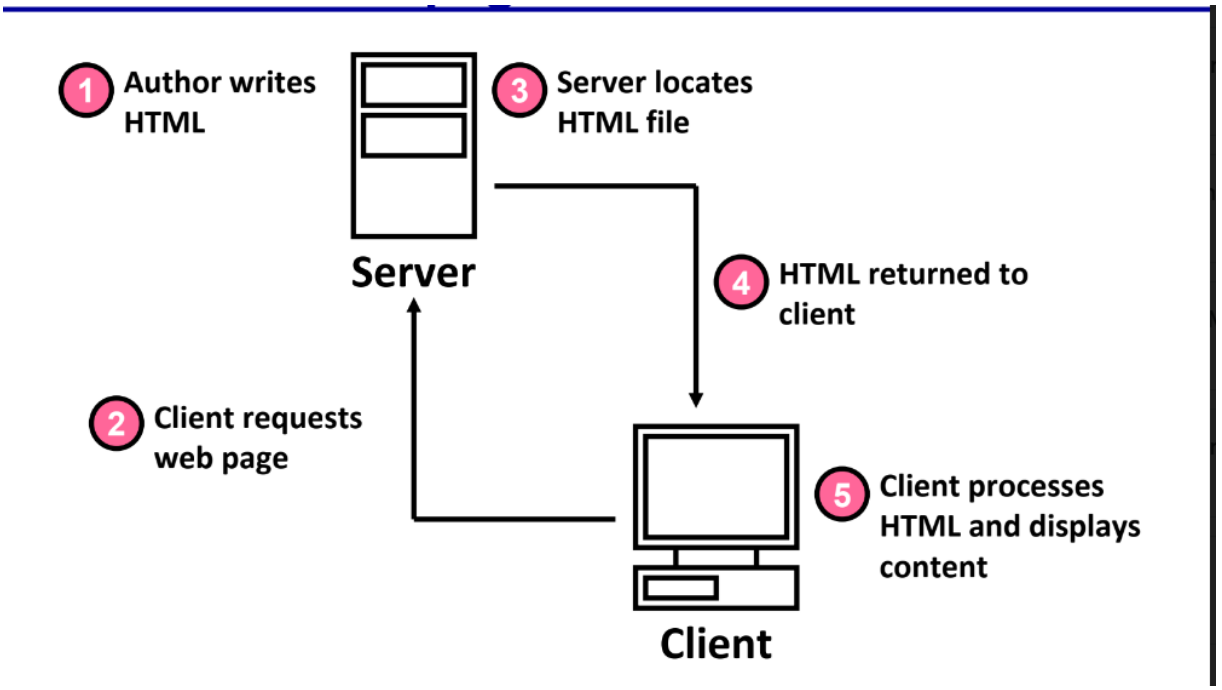
Based on Figure 1, name the category of Web Page A. (2 marks)

- Dynamic Web Page

b) With the aid of a hand-drawn diagram, explain how Web Page A is served. (6 marks)



-if question ask Static:



c) "Web Page A is more powerful as compared to the opposite category of web page."
Do you agree with the statement above? Provide **TWO (2)** justification to support your answer. (4 marks)
-Dynamic web page display the content in runtime
-It can process more functionality than static webpage

d) Surf the Internet and find **ONE (1)** web page that is in the same category as Web Page A and another **ONE (1)** web page that falls under another category of the web page. Take a screenshot of the web page and state its URL in your answer. (4 marks)

e) Web Page A is hosted with an Apache Server located in Taiwan. When a user accesses the web page, the result displayed on the screen is not correct.

Identify **ONE (1)** possible reason why the result displayed is incorrect and write code to solve the problem. (5 marks)

-The time zone is set as default by the server.

-date_default_timezone_set('Asia/Kuala_Lumpur');

f) Write a snippet of PHP code to retrieve system time. Then shows "**Happy Day**" if the time is after 12 pm of the day and shows "**Good Day**" if otherwise.

You should use the ternary operator as the decision-making operator in your code. (4 marks)

```
$checkday = date('h') > 12 ? "Happy day" : "Good Day";
```

[Total: 25 marks]

Question 2

a) "PHP is a widely-used general-purpose programming language for web development, and it is a loosely-typed programming language, unlike many scripting languages."

(i) Discuss how a loosely-typed programming language is different from a strongly-typed programming language. Give an example of code for each type of programming language in your discussion. (6 marks)

-Loosely-typed programming language can be use to defined the variable in a simple way

Example: $value = 3, $value1 = 'word'

-Strongly-typed programming language must defined the value of the variable

Example: int value = 3, String value = 'word'

(ii) "Loosely-typed programming language is better compared to strongly-typed programming language."

Provide **THREE (3)** justifications to support the statement above. (6 marks)

-Flexible in declaring variable

-Same variable can be used in different way

-Faster and less memory consumption

(iii) “Loosely-typed programming language is rather difficult to identify if an error occurs due to passing a floating-point value to a piece of code that expects to be working on an integer value.”

Analyze the situation above and propose **ONE (1)** solution to handle it. In your proposal, include the relevant PHP code to prove your concept. (3 marks)

-$x = 78.9

-var_dump($x)

b) PHP supports multidimensional arrays, which is an array that contains one or more arrays. Table 1 below shows the Covid-19 vaccines information in a multidimensional array.

Index	Value
0	Key: Company — Value: Oxford Uni – AstraZeneca Key: Type — Value: Viral vector Key: Doses — Value: 2 Key: Storage — Value: Regular fridge temperature
1	Key: Company — Value: Pfizer – BioNTech Key: Type — Value: RNA Key: Doses — Value: 2 Key: Storage — Value: -70C
2	Key: Company — Value: Moderna Key: Type — Value: RNA Key: Doses — Value: 2 Key: Storage — Value: -20C

Table 1: Multidimensional Array - $vaccines

(i) Create a multidimensional array named **`$vaccines`** and assign all the values as in Table1. (4 marks)

```
$vaccine = array(
    array("Oxford Uni - AstraZeneca", "Viral vector", 2, "Regular
      fridge temperature"),
    array("Pfizer - BioNTech", "RNA", 2, "-70C"),
    array("Moderna", "RNA", 2, "-20C"),
)
```

Question 2 b) (Continued)

(ii) Referring to Figure 2, write code to loop and print all the values in the **`$vaccines`** array to an HTML table.

0	**Company** => Oxford Uni – AstraZeneca **Type** => Viral vector **Doses** => 2 **Storage** => Regular fridge temperature
1	**Company** => Pfizer – BioNTech **Type** => RNA **Doses** => 2 **Storage** => -70C
2	**Company** => Moderna **Type** => RNA **Doses** => 2 **Storage** => -70C

Figure 2: Multidimensional Array Sample Output

Note: The output produced should look identical to Figure 2.

(6 marks)

```
<?php
$vaccine = array(
    array("Oxford Uni - AstraZeneca", "Viral vector", 2, "Regular
fridge temperature"),
    array("Pfizer - BioNTech", "RNA", 2, "-70C"),
    array("Moderna", "RNA", 2, "-70C"),
)
?>
<html>

<head>
    <style>
        table,
        th,
        td {
            border: 1px solid black;
        }

        th {
            width: 80px;
            text-align: left;
```

```
        }

        table {
            border-spacing: 1px;
        }
    </style>
</head>

<body>
    <table>
        <?php
        $category = array("Company", "Type", "Doses", "Storage");
        $i = 0;
        foreach ($vaccine as $v) {
            echo "<tr>";
            echo "<th>" . $i++ . "</th>";
            echo "<td>";
            for ($j = 0; $j < count($v); $j++) {
                echo "<strong>" . $category[$j] . "</strong> => " .
$v[$j] . "<br>";
            }
            echo "</td>";
            echo "</tr>";
        }
        ?>
    </table>
</body>

</html>
```

[Total: 25 marks]

Question 3

Figure 3 and Figure 4 are the registration forms shown in the design view and code view. The registration form allows players to sign up for the online game competition - "King's Glory". A database table named **Players** has been created in the MYSQL database with all the necessary fields, as shown in Table 2.

Based on the information given in Figure 3, Figure 4 and Table 2, answer the following questions to complete the registration function.

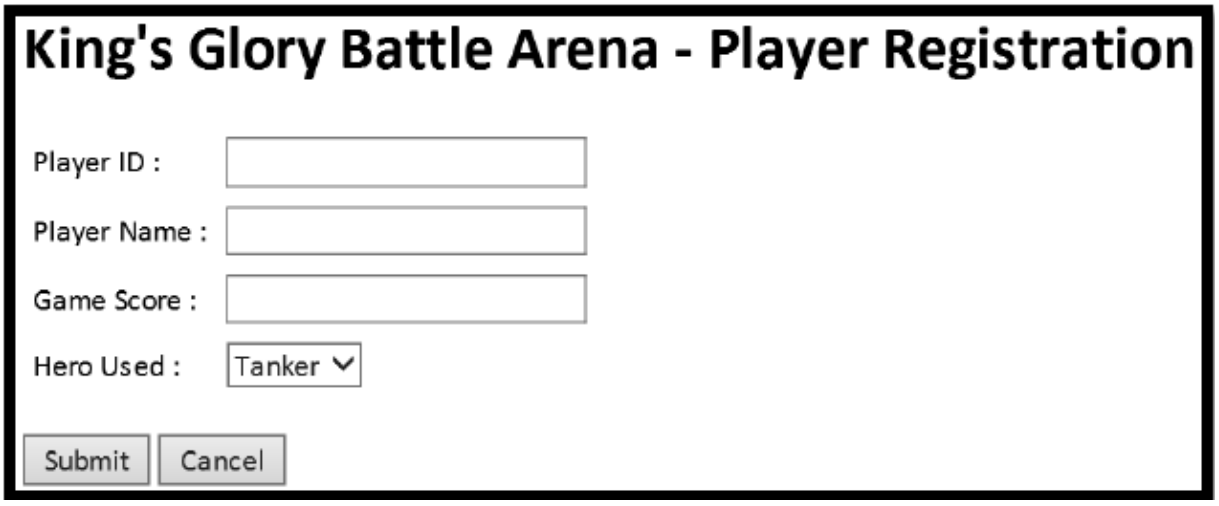


Figure 3: Player Registration Form – Design View

Question 3 (Continued)

```
<h1>King's Glory Battle Arena - Player Registration</h1>

  <form action="" method="POST">
      <table cellpadding="5" cellspacing="0">
          <tr>
            <td>Player ID :</td>
            <td><input type="text" name="pID" value="" /></td>
          </tr>
          <tr>
             <td>Player Name :</td>
            <td><input type="text" name="pName" value="" / </td>
          </tr>
          <tr>
            <td>Game Score :</td>
            <td><input type="text" name="score" value="" /></td>
          </tr>
          <tr>
              <td>Hero Used :</td>
              <td><select name="hero">
                      <option>Tanker</option>
                      <option>Mage</option>
                      <option>Fighter</option>
                  </select>
              </td>
          </tr>
      </table>
      <br />
      <input type="submit" name="submit" value="Submit" />
      <input type="reset" value="Cancel" />
  </form>
```

Figure 4: Player Registration Form – Code View

Primary Key	Null	Auto Increment	Column Name	Data Type	Size

√		√	player_id	INTEGER	
			player_name	VARCHAR	100
			game_score	DOUBLE	
			hero_used	VARCHAR	100

Table 2: Players Table Structure

a) Create constants to hold the following database server information

username	root
password	pass
hostname	localhost
database_name	gloryking

b) Based on the constants created in Q3 a), write code to establish connection to MYSQL. (4 marks)

```php
<?php
define($username, "root");
define($password, "pass");
define($hostname, "localhost");
define($database_name, "gloryking");

// Create connection
$conn = new mysqli($hostname, $username, $password, $database_name);

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

Question 3 (Continued)

c) Create variables to retrieve user input when the form is submitted. Exclude unnecessary white space when retrieving the inputs. (4 marks)

```php
$pID = trim($_POST["pID"]);
$pName = trim($_POST["pName"]);
$score = trim($_POST["score"]);
```

d) Examine the following validation requirements and use the preg_match function to validate the submitted user input:

Field	Validation Requirements
pName	• Contains only uppercase and lowercase alphabet and space. • The first three characters must be an alphabet. • *NOTE: You should achieve the validation rules using **ONE (1)** preg_match function and return **`true`** if the input fulfills the validation rules. Else, return **`false`**.*
score	• Only two decimal places allowed. • Values before the decimal point must be at least 1 number. • Example: 5.09 *NOTE: You should achieve the validation rules using **ONE (1)** preg_match function and return **`true`** if the input fulfills the validation rules. Else, return **`false`**.*

(10 marks)

```php
<?php
$pID = trim($_POST["pID"]);
$pName = trim($_POST["pName"]);
$score = trim($_POST["score"]);
$hero = trim($_POST["hero"]);
$pNamevalidcheck = $pNamevalidthreecheck = $scorevalidcheck = 0;
$checkError = false;

if ($_SERVER["REQUEST_METHOD"] == "POST") {
    if (!preg_match("^(?![a-z]*([a-z])\1{2,})[a-z]{3,}+$", $pName))
{
        $pNamevalidcheck = 1;
        $checkError = true;
    }
```

```
        if (!preg_match("/^[1-9]{1,3}(\.[0-9]{1,2})?$/", $score)) {
            $scorevalidcheck = 1;
            $checkError = true;
        }

        if($checkError){
            return false;
        }else{
            return true;
        }
    }
    ?>
```

e) Write code to insert the registration data into the ***Players*** table. (3 marks) [Total: 25 marks]

```
        $sql = "INSERT INTO players (player_id, player_name,
game_score, hero_used) VALUES ('$pID', '$pName', '$score', '$hero')";
        $result = $conn->query($sql);
        ?>
```

Question 4

a) GET, and POST methods are commonly used as the HTTP request method in web programming for web clients to communicate with web servers. In your own words, describe how a GET method is different from a POST method. (4 marks)

- The "POST" method embeds the form data in the request message
- The "GET" method appends the form data to the URL specified in the form's action attribute

b) Choose an appropriate HTTP request method for each of the operation scenarios below:

(i) To insert a new product record. (1 mark)

-POST

(ii) To sort product records in ascending order by a given field. (1 mark)

-GET

(iii) To update an existing product record. (1 mark)

-POST

(iv) To filter product records by product category. (1 mark)

-GET

AMIT2043 WEB SYSTEMS AND TECHNOLOGIES

Question 4 b) (Continued)

(v) To delete an existing product record. (1 mark)

-POST

c) HTTP is a stateless protocol. Each HTTP request is processed independently and does not require the HTTP server to retain the information or status of each user. To overcome this limitation, PHP provides several state management techniques such as Cookie and Session.

Give **ONE (1)**suitable state management technique that can be applied for each of the following scenarios:

(i) A shopping cart that stores order information with a capacity larger than 4KB on the sales order web page. (1 mark)
-Cookie

(ii) Customize the user's screen background color preference on a website. (1 mark)

-Session

(iii) Securely store important information such as the user id and pass the value from one page to another. (1 mark)

-Cookie

(iv) Tracking the web pages visited by a user. (1 mark)

-Cookie

d) Examine Figure 5 and Figure 6. After that, write jQuery to complete the following questions.

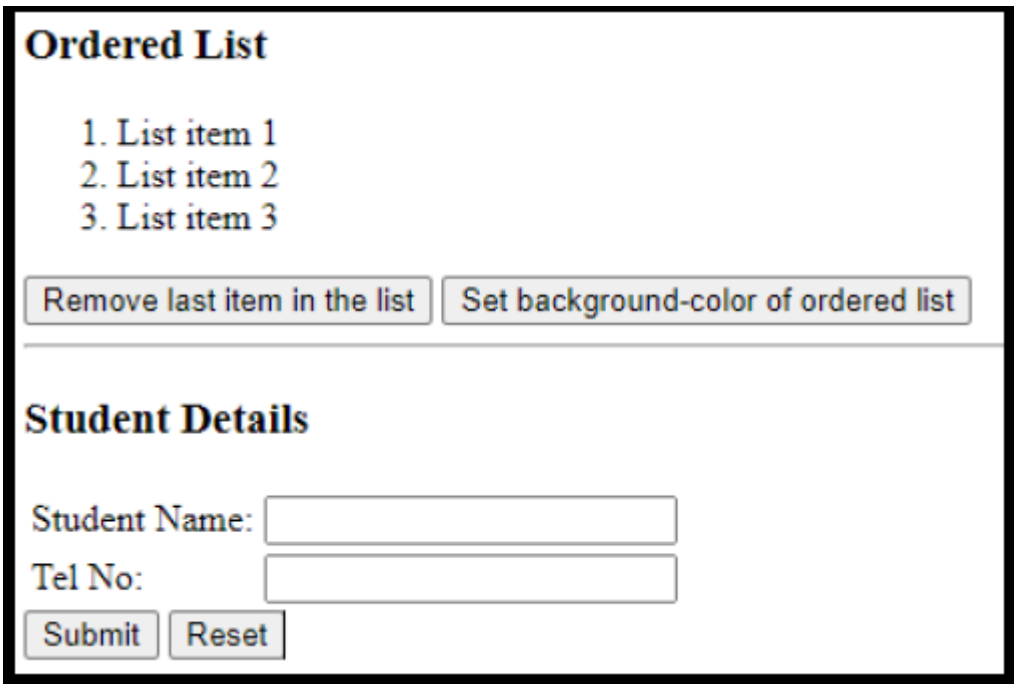


Figure 5: Web Page B – Design View

Question 4 d) (Continued)

```
<html>
    <head>
        <title>FOA Q4 d)</title>
        <script src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js"></script>

    </head>
    <body>
        <h3>Ordered List</h3>
        <ol id="ordered">
            <li>List item 1</li>
            <li>List item 2</li>
            <li>List item 3</li>
        </ol>

        <button id="btn1">Remove last item in the list</button>
        <button id="btn2">Set background-color of ordered list</button>
        <hr/>
        <div id="page_content">
            <h3>Student Details</h3>
            <form id="Iform" name="form" method="get">
                <table>

                    <tr>
                        <td>Student Name:</td>
                        <td><input id="studName" type="text" name="studName"/></td>
                    </tr>

                    </tr>
                    <tr>
                        <td>Tel No:</td>
                        <td><input id="phone" type="text" name="phone"/></td>
                    </tr>

                </table>

                <input type="submit" id="submit" name="submit" value="Submit">
                <input type="reset" id="reset" name="reset" value="Reset"><br>

            </form>
        </div>
    </body>
</html>
```

Figure 6: Web Page B – Code View

(i) When the button "**Remove last item in the list**" is clicked, remove the last item in the ordered list. (4 marks)

```
$("#btn1").click(function() {
    $("#orderedList").children().last().remove();
});
```

(ii) When the button "**Set background-color of ordered list**" is clicked, set the ordered list's background color to 'cyan'. (4 marks)

```
$("#btn2").click(function() {
    $("#orderedList").css("background-color", "cyan");
});
```

(iii) Set the background color of the respective input field to gray "**#CCCCCC**" when the input field gets focus. (4 marks)

```
$("input").focus(function(){
    $(this).css("background-color", "#CCCCCC");
})
```

[Total: 25 marks]

//complete code

```
<html>

<head>
    <title>FOA Q4 d)</title>
    <script
src="https://ajax.googleapis.com/ajax/libs/jquery/3.5.1/jquery.min.js">
</script>
    <script>
        $(document).ready(function() {
            $("#btn1").click(function() {
                $("#orderedList").children().last().remove();
            });
            $("#btn2").click(function() {
                $("#orderedList").css("background-color", "cyan");
            });
            $("input").focus(function(){
                $(this).css("background-color", "#CCCCCC");
            })
        });
```

```
    </script>
</head>

<body>
    <h3>Ordered List</h3>
    <ol id="orderedList">
        <li>Item 1</li>
        <li>Item 2</li>
        <li>Item 3</li>
    </ol>
    <button id="btn1">Remove last item in the list</button>
    <button id="btn2">Set background-color of ordered list</button>
    <hr>
    <div id="page_content">
        <h3>Student Details</h3>
        <form id="Iform" name="form" method="get">
            <table>
                <tr>
                    <td>Student Name:</td>
                    <td><input type="text" name="studName"
id="studName" value=""></td>
                </tr>
                <tr>
                    <td>Tel No:</td>
                    <td><input id="phone" type="text"
name="phone"></td>
                </tr>
            </table>
            <input type="submit" id="submit" name="submit"
value="Submit">
            <input type="reset" id="reset" name="reset"
value="Reset"><br>
        </form>
    </div>
</body>

</html>
```