



UNIVERSITY OF COLOMBO, SRI LANKA

UNIVERSITY OF COLOMBO SCHOOL OF COMPUTING

DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY (EXTERNAL)

Academic Year 2013/2014 – 2nd Year Examination – Semester 3

IT3504: Web Development Techniques
PART 2 - Structured Question Paper

2nd March 2012
(ONE HOUR)

To be completed by the candidate

BIT Examination Index No:

Important Instructions:

- The duration of the paper is **1 (one) hour**.
- The medium of instruction and questions is English.
- This paper has **3 questions** and **8 pages**.
- **Answer all questions.** All questions **do not** carry equal marks.
- **Write your answers** in English using the space provided **in this question paper**.
- Do not tear off any part of this answer book.
- Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper.
If a page is not printed, please inform the supervisor immediately.

Questions Answered

Indicate by a cross (×), (e.g.

×

) the numbers of the questions answered.

	Question numbers			
	1	2	3	
To be completed by the candidate by marking a cross (×).				
To be completed by the examiners:				

1) (a) Explain the Three-tier architecture explaining the key functions of each layer.

(20 marks)

ANSWER IN THIS BOX

Three-tier architecture is the most commonly used client–server architecture in which the user interface (presentation), functional process logic(business rules), computer data storage and data access are developed and maintained as independent modules, most often on separate platforms

Presentation tier

This is the topmost level of the application. The presentation tier displays information to end user. It communicates with other tiers by which it puts out the results to the browser/client tier and all other tiers in the network. User's GUI rendering will happen on this layer.

Application tier (business logic layer)

The logical tier is pulled out from the presentation tier and, as its own layer, it controls an application's functionality by performing detailed processing. This interacts with both upper and below layers and bridges the gap. Business logic will apply in this layer.

Data tier

This tier consists of database services. Here information is stored and retrieved. This tier keeps data neutral and independent from application servers or business logic. Giving data its own tier also improves scalability and performance.

- (b) State the key components of LAMP solution stack and briefly explain the functionality of each component.

(15 marks)

ANSWER IN THIS BOX

Solution stack is a set of software subsystems or components needed to perform a task without further external dependencies. It consist of operating system, service engine like a web server, database engine to manipulate data and a programming or scripting language to compile and present the data.

Operating system

Provide the platform for the applications to interact with the hardware in the LAMP solution stack, Linux act as the operating system.

Service engine

Provide the anticipated service to the end user, in LAMP model the Apache act as the web server to provide web services to end user.

Database engine

This provides required data manipulation functions and maintains the data storage required for the application. The My SQL is the database engine in the LAMP solution stack.

Script/programming language

The Script/programming language take required data and present it in a manner required by user through the service engine. In the LAMP solution stack the PHP/ Perl or Python provide this functionality by interacting with the databases engine.

- c) Describe the Domain Name System (DNS) and explain the role it plays in the Internet or the world wide web operations.

(15 marks)

ANSWER IN THIS BOX

The Domain Name System (DNS) is a hierarchical distributed naming system for computers, services, or any resource connected to the Internet or a private network.

The DNS provide the translation of names to IP addresses and act as a directory to find the correct IP address to reach the specific service. Due to this reason Internet and its services (eg:- WWW) are highly dependent on DNS.

DNS is a hierarchical system where top level domain hold specific data about its sub domains. Each domain has its own domain registry where individuals or organizations can register their domains. Eg:- for Sri Lankan domains (.lk) domains the LKNIC does the registration process.

- 2) Suppose you are required to display the current price list for an online shop where items are categorised and organized as given below.

Table ItemsData

ItemNo (primary Key)
ItemName
ItemCategory
Unit
PriceCode

Table PriceData

PriceCode (primary Key)
UnitPrice
EffDate

Write HTML/PHP code to display a price list consisting of item number , item name and effective unit price , for an online shop. Items must be ordered according to item category in a tabulated format.

Note: - assume that you already have a working database connection (connection name "\$MYSQL_CONN").

(25 marks)

ANSWER IN THIS BOX

```
<html>
<head>
<meta charset="utf-8">
<title>Untitled Document</title>
</head>

<body>
<table width="600" border="1">
  <tr>
    <td><strong>Item No</strong></td>
    <td><strong>Item Name</strong></td>
    <td><strong>Unit</strong></td>
    <td><strong>Unit Price</strong></td>
  </tr>
</body>
<?php
$Q1 = "SELECT ItemsData.*, PriceData.UnitPrice,
PriceData.EffDate FROM ItemsData
INNER JOIN PriceData ON (ItemsData.PriceCode =
PriceData.PriceCode)
ORDER BY ItemsData.ItemCategory ASC";
```

Continued

```
$Items = mysql_query($Q1,$MYSQL_CONN);
while($i = mysql_fetch_assoc($Items)){
    echo "<tr>
        <td>{$i['ItemNo']}</td>
        <td>{$i['ItemName']}</td>
        <td>{$i['Unit']}</td>
        <td>{$i['UnitPrice']}</td>
        <td>{$i['EffDate']}</td>
    </tr>";
}
?>
</table>
</body>
</html>
```

3) Write a Java Script code to validate following conditions of a phone number for a web application

- Only numbers are allowed
- Can start with country code(94)or 0 with area or operator code (validating operator or area codes is not required)
- Total length must be 10 (without country code) or 11 (with country code)

Note:- you may call your function as “validate”

(25 marks)

ANSWER IN THIS BOX

```
function validate(){
    var number =
document.getElementById("numberField").value;
    var numLength = number.length;
    var numCheck = /^[0-9]+$/;
    if(number.match(numCheck)){ //check
are there any character included....

        if( numLength == 11){ //check
number length is 11 and start with 94...
            if(number[0] == 9 &&
number[1] == 4){
                alert("Valid Number");
            }else{
                alert("Invalid Contry
Code");
            }
        }else if(numLength == 10){ //check
number length is 10 and start with 0...
            if(number[0] == 0){
                alert("Valid Number");
            }else{
                alert("Invalid
Number");
            }
        }else{
            alert("Invalid Field
Length");
        }
    }else{
        alert("Please enter Only Numeric
Values..");
    }
}
```

Continued

