



Ahsanullah University of Science and Technology (AUST)
Department of Computer Science and Engineering

LABORATORY MANUAL

Course No.: CSE 3100
Course Title: Software Development-IV

For the students of 3rd Year, 1st semester of
B.Sc. in Computer Science and Engineering program

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COURSE OBJECTIVES

After successful completion of this course, the students should be able to

- Understand the basic concepts of HTML, CSS, PHP and JavaScript) and tools used for web development;
- Understand the concepts of MySQL database and designing library like Bootstrap;
- Perform the design of websites and web applications.
- Adapt modern tools and techniques to develop PHP based web application.

PREFERRED TOOL(S)

1. Sublime text
2. notepad++
3. XAMPP Server,
4. MySQL

TEXT/REFERENCE BOOK(S)

1. Learning PHP, MySQL and JavaScript with jQuery, CSS and HTML5, 4th Edition by Robin Nixon, O'Reilly Media.
2. PHP Cookbook, Solutions and Examples for PHP programmers, 3rd Edition by Adam Trachtenberg, David Sklar, O'Reilly Media.

ADMINISTRATIVE POLICY OF THE LABORATORY

1. Students must perform class assignment tasks individually.
2. Viva will be taken for each assignment and marks on assignment will substantially depend on viva.
3. Students must show their project progress before final submission.
4. Plagiarism is strictly forbidden and will be dealt with punishment.

Session 1

OBJECTIVES:

- i. Getting acquainted with major components of a C program Understand the principles of creating a web page using html and CSS
- ii. Learn the language of the web: HTML and CSS

HTML: HTML stands for Hypertext Markup Language. HTML is a Client-side language and Very lightweight. HTML is also known as the skeleton of a webpage.

```
/* Instruction: Observe, Type, Compile and Run */
/*Exam of a HTML web page*/

<!DOCTYPE html>
<html>
  <head>
    <title>First Page</title>
  </head>
  <body>
    <h1>First Heading</h1>
    <p>First paragraph.</p>
  </body>
</html>
```

HTML Important Elements

- i. Creates headlines (h1=largest, h6=smallest)
<h1></h1> → <h6></h6>
- ii. Creates a new paragraph: <p> </p>
- iii. Used to format block content: <div> </div>
- iv. Creates an unordered list:
- v. Creates a list item:
- vi. Adds image:
- vii. Creates a hyperlink: [hyperlink Text]

HTML Attributes

Class - The class attribute specifies one or more class names for an element.

Example:

```
<h1 class="title">Welcome</h1>
<h2 class="second-title title">Hello World</h2>
```

ID - The id attribute specifies a unique id for an HTML element

Example:

```
<h1 id="main-title"></h1>
```

CSS: CSS stands for Cascading Style Sheets. CSS describes how HTML elements are to be displayed on screen. Mainly used to design web page. It is a Client-side language.

Insert CSS in web page:

There are three ways of inserting CSS:

- i. External style sheet
- ii. Internal style
- iii. Inline style

External style sheet

```
<head>  
<link type="text/css" rel="stylesheet" href="mystylesheet.css" />  
</head>
```

Internal style

```
<head>  
  <style>  
    h1 {  
      color: red;  
      margin-left: 10px;  
    }  
  </style>  
</head>
```

Inline style

```
<h1 style="color: red; margin-left: 10px;">First Heading</h1>
```

CSS Syntax

```
h1 {  
  color: red;  
  margin-left: 10px;  
}
```

Here,
h1 - Selection
color: red; - declaration
color - property
red - value

CSS Important Property

- i. background
- ii. color
- iii. padding
- iv. margin
- v. border
- vi. width
- vii. height
- viii. font-size
- ix. font-weight
- x. text-align

EXERCISES: Building Your First Web Page – Design a web page using HTML & CSS.

Session 2

OBJECTIVES:

- i. Responsive Web design
- ii. Bootstrap

Responsive Web design: Responsive Web Design is about using HTML and CSS to automatically resize, hide, shrink, or enlarge, a website, to make it look good on all devices (desktops, tablets, and phones). A responsive web design will automatically adjust for different screen sizes and viewports.

To create a responsive website, add the following <meta> tag to all your web pages:

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

Responsive Web Design – Frameworks – Bootstrap

Bootstrap is a CSS framework which uses HTML, CSS and jQuery to make responsive web pages. Bootstrap is an open source toolkit for developing with HTML, CSS, and JS and it's a world's most popular front-end component library. Bootstrap has light but powerful plugin built on jQuery.

Bootstrap Starter template

```
<head>
  <meta charset="utf-8">
  <meta name="viewport" content="width=device-width, initial-scale=1, shrink-tofit=no">
  <link rel="stylesheet" href="css/bootstrap.min.css" />
  <link rel="stylesheet" href="css/main.css" />
  <title>Bootstrap</title>
</head>

<body>
  <h1>Welcome</h1>
  <script src="js/jquery.min.js"></script>
  <script src="js/popper.min.js"></script>
  <script src="js/bootstrap.min.js"></script>
</body>
```

Bootstrap Elements

Containers: Containers are the most basic layout element in Bootstrap and are required when using our default grid system.

```
<div class="container">
  <!-- Content here -->
</div>
```

Grid System: Bootstrap's grid system uses a series of containers, rows, and columns to layout and align content.

```
<div class="container">
  <div class="row">
    <div class="col-md-4"> One of three columns </div>
    <div class="col-md-4"> One of three columns </div>
    <div class="col-md-4"> One of three columns </div>
  </div>
</div>
```

Bootstrap Component

Alert:

```
<div class="alert alert-primary" role="alert"> A simple alert </div>

alert-secondary | alert-success | alert-danger | alert-warning | alert-info| alert-light| alert-dark

<div class="alert alert-warning alert-dismissible fade show" role="alert">
  <strong>Holy guacamole!</strong>
  You should check in on some of those fields below.
  <button type="button" class="close" data-dismiss="alert" aria-label="Close">
    <span aria-hidden="true">&times;</span>
  </button>
</div>
```


Button

```
<button type="button" class="btn btn-outline-primary">Primary</button>
```

```
btn-lg | btn-sm | btn-block
```

Collapse

```
<p>  
  <a class="btn btn-primary" data-toggle="collapse" href="#collapseExample" role="button"  
    aria-expanded="false" ariacontrols="collapseExample">  
    Link with href  
  </a>  
</p>  
  
<div class="collapse" id="collapseExample">  
<div class="card card-body">[your_content]</div>  
</div>
```

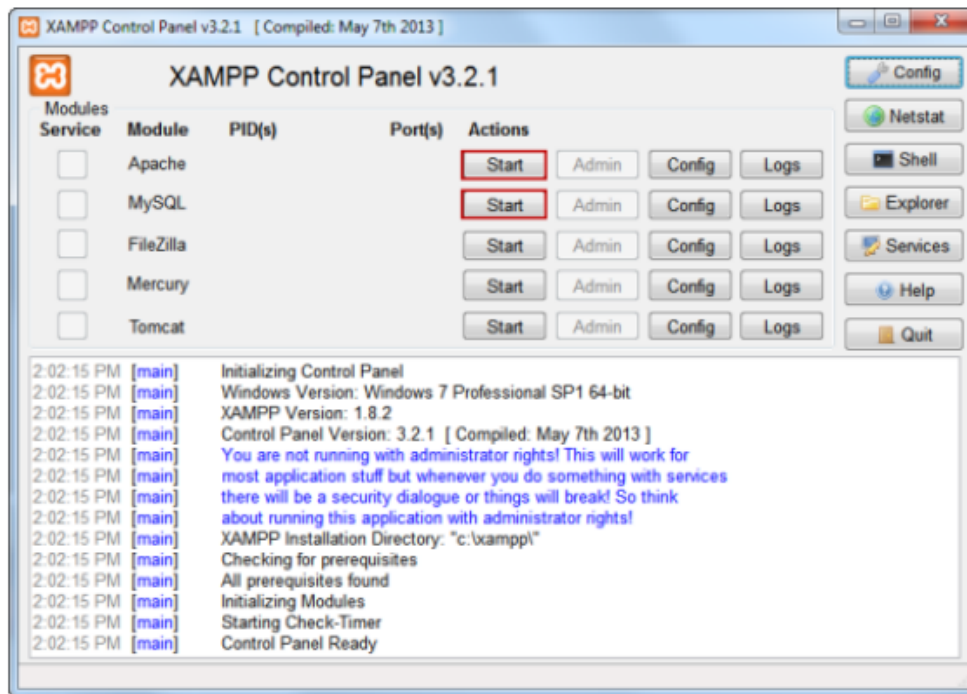
EXERCISES: Building a responsive Web Page – Design a responsive web page using HTML, CSS & Bootstrap.

Session 3

OBJECTIVE:

- i. Introduction to XAMPP server
- ii. Introduction to PHP

XAMPP: XAMPP (/ˈzæmp/ or /ˈɛks.æmp/) is a free and open-source cross-platform web server solution stack package developed by Apache Friends, consisting mainly of the Apache HTTP Server, MariaDB database, and interpreters for scripts written in the PHP and Perl programming languages.



PHP: PHP is an acronym for "PHP: Hypertext Preprocessor". It is a widely-used and open source scripting language. PHP scripts are executed on the server

PHP Syntax

```
<?php
    // PHP code goes here
?>
```

PHP Variables Declaration

```
<?php
    $txt = "Hello world!";
    $x = 5;
    $y = 10.5;
?>
```

PHP Constant

```
<?php
    define("GREETING", "Welcome to W3Schools.com!");
    echo GREETING;
?>
```

PHP if.....else Statement

```
<?php
    $t = date("H");
    if ($t < "20") {
        echo "Have a good day!";
    }
?>
```

PHP Loops

```
/* While Loops*/

<?php
    $x = 1;
    while($x <= 5) {
        echo "The number is: $x <br>";
        $x++;
    }
?>
```

```
/* For Loops*/

<?php
    for ($x = 0; $x <= 10; $x++)
    {
        echo "The number is: $x <br>";
    }
?>
```

PHP Function

```
<?php
    function firstFunction() {
        echo "Hello world!";
    }

    firstFunction(); // call the function
?>
```

PHP Array

```
$university = array("BUET", "DU", "AUST");

$age = array("Peter"=>"35", "Ben"=>"37", "Joe"=>"43");

• Foreach
foreach($arr as $key=>$val){...}
```

PHP SORTING ARRAY

- sort() - sort arrays in ascending order
- rsort() - sort arrays in descending order
- asort() - sort associative arrays in ascending order, according to the value
- ksort() - sort associative arrays in ascending order, according to the key
- arsort() - sort associative arrays in descending order, according to the value
- krsort() - sort associative arrays in descending order, according to the key

EXERCISES: Project selection and build your project web page using HTML, CSS and Bootstrap.

Session 4

1. OBJECTIVES:

- i. PHP form
- ii. Store data into CVS file

PHP Form

```
<form action ="" method="" ></form>

/* Form Element */
- Input
    <input type="" name="" value="" class="" />

- Textarea
    <textarea name=""></textarea>

- Select
<select name="">
    <option value=""></option>
</select>

/* INPUT Type */
• Text
• Password
• Radio
• Checkbox
• Reset
• Submit
```

PHP GET and POST method

```
GET - $_GET['']
POST - $_POST['']
```

File Upload

```
<input type="file" name="fileToUpload" id="fileToUpload">

<form action="upload.php" method="post" enctype="multipart/form-data">
```

```
/*upload.php file*/
```

```
$target_dir = "uploads/";  
$target_file = $target_dir . basename($_FILES["fileToUpload"]["name"]);  
move_uploaded_file($_FILES["fileToUpload"]["tmp_name"], $target_file)
```

CSV File Read

```
function readCSV($csvFile){  
    $file_handle = fopen($csvFile, 'r');  
  
    while (!feof($file_handle) ) {  
        $line_of_text[] = fgetcsv($file_handle, 1024);  
    }  
    fclose($file_handle);  
    return $line_of_text;  
}
```

CSV File Write

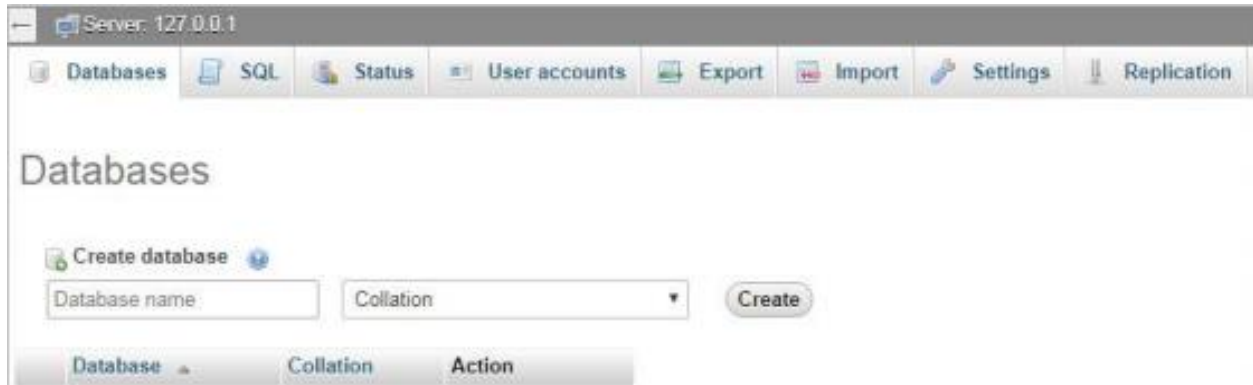
```
$filename ='FinalMissingData.csv';  
$new_csv = fopen($filename, 'w');  
$resOrder = array(  
    0 => "ID",  
    1 => "Name",  
    2 => "Email",  
    3 => "Password"  
);  
fputcsv($new_csv, $resOrder);
```

EXERCISES: Create a form which will take input (name, email, phone, message) from user. Store these data in a CSV file/DB. Create a list view page with user ID (table view).

Session 5 & Session 6

OBJECTIVE:

- i. Introduction to Databases with PHP



DB Connection

/*Connection Start*/

```
<?php
    $host = 'localhost';
    $user = 'root';
    $password = '';
    $db = 'lab';
    $link = mysqli_connect($host, $user,
                          $password, $db);
?>
```

/*Connection End*/

```
<?php
    mysqli_close($link);
?>
```

Data Query

/*Select Query*/

```
<?php
    $email = 'trrizvi07@gmail.com';
    $sql = 'SELECT * FROM user WHERE user_email='.$email; $result = mysqli_query($link,
    $sql) or die(mysqli_error());
?>
```

```
/* Data Fetch*/
```

```
<?php
    $snoOfData = mysqli_num_rows($result);
    while($row = mysqli_fetch_row($result)){
        print_r($row);
    }
?>
```

```
/* Insert Query*/
```

```
• <?php
    $user_name = 'Tanzilur Rahman';
    $user_email = 'trrizvi07@gmail.com';
    $password = md5('123456');
    date_default_timezone_set('Asia/Dhaka');
    $currentTime = date('Y-m-d H:i:s');

    $sqlInsert = 'INSERT INTO user (user_name, user_email, password, status, date_created)
    VALUES ("'.$user_name.'", "'.$user_email.'", "'.$password.'" ,1, "'.$currentTime.'" )';

    $resultInsert = mysqli_query($link, $sqlInsert) or die(mysqli_error($link)); $lastInsertID =
    mysqli_insert_id($link);
?>
```

PHP Session, Cookies & Redirect

```
*/PHP Session*/
```

```
<?php
    session_start();
?>
```

```
*/PHP Cookies*/
```

```
<?php
    $cookie_name = "user";
    $cookie_value = "John Doe";
    setcookie("TestCookie", $value, time()+3600);
?>
```

```
*/PHP Redirect*/
```

```
<?php
    header('Location: http://www.aust.edu/'); die;
?>
```


Final Project Requirement: You must include following page/ content to your final project.

- Home Page
- About Us Page
- Contact Page
- Login & Registration Option
- User Profile Page
- All Service/All Product Page
- Service/Product Details Page

Session 7

1. OBJECTIVES:

- i. Introduction to Virtual Host
- ii. Introduction to Java Script
- iii. Introduction to MVC & CMS

Virtual Host

Location

C:\xampp\apache\conf\extra\ httpd-vhosts.conf

```
<VirtualHost *:80>
    DocumentRoot
    "C:/xampp/htdocs"
    ServerName localhost
</VirtualHost>
<VirtualHost *:80>
    DocumentRoot
    "C:/xampp/htdocs/project_folder_name" ServerName aust.edu
    <Directory
        "c:/xampp/htdocs/project_folder_name">
        Order allow, deny
        Allow from all
    </Directory>
</VirtualHost>
```

Virtual Host**Location**

C:\Windows\System32\drivers\etc\hosts
127.0.0.1 aust.edu

Java Script

```
<script src="js/jquery.min.js"></script>
<script src="js/custom.js"></script>

$(document).ready(function(){
    $(' .message .close').on('click', function(){
    $(' .message').hide();
    })
})
```

MVC: MVC is a software approach that separates application logic from presentation. In practice, it permits your web pages to contain minimal scripting since the presentation is separate from the PHP scripting. The Model represents your data structures.

Example: Laravel, CodeIgniter, CakePHP, Symfony, Zend

CMS: CMS means Content Management System. CMS allows developers to develop modules and applications using core library functions, with PHP as the primary programming language. It provides capabilities for multiple users with different permission levels to manage (all or a section of) content, data or information of a website project, or internet / intranet application.

An example of a CMS application is a Web Application that provides the following administration, control panel or website management functionalities:

- i. Create, Edit, Publish, Archive web pages
- ii. Create, Edit, Publish, Archive articles
- iii. Create, Edit, Publish, Archive press releases
- iv. Create, Edit, Publish, Archive blogs
- v. Add / Edit events into an Event Calendar
- vi. Add / Edit Inventory (products), description, product specifications, prices, photos, etc.
- vii. Enter, Edit, or View orders and print packing slips and invoices
- viii. View reports and statistics site data
- ix. Create and Edit system users which have different permission levels to different section(s) of the above administration

Example: WordPress, Drupal, Joomla, Magento

FINAL Project Submission

Students develop their projects in a group consists of three members. There will be a viva and Q/A session after project submission.