Diploma Engineering

Laboratory Manual

Introduction to Web Development (4340704)

Semester-4 of Diploma in Computer Engineering

Enrolment No	
Name	
Branch	
Academic Term	Summer-2025
Institute	Government Polytechnic Porbandar

Directorate of Technical Education

Gandhinagar – Gujarat

GOVERNMENT POLYTECHNIC PORBANDAR

affiliated to

Gujarat Technological University, Ahmedabad

Laboratory Manual

INTRODUCTION TO WEB DEVELOPMENT (4340704)

D. E. Second Year (Semester– IV)

Government Polytechnic - Porbandar

Opp. Airport, National Highway

Porbandar – 360577

DTE's Vision:

To facilitate quality technical and professional education having relevance for both industry and society, with moral and ethical values, giving equal opportunity and access, aiming to prepare globally competent technocrats.

DTE's Mission:

1.Quality technical and professional education with continuous improvement of all the resources and personnel.
2.To promote conducive ecosystem for Academic, Industry, Research, Innovations and Startups
3.To provide affordable quality professional education with moral values, equal opportunities, accessibility and accountability
4.To allocate competent and dedicated human resources and infrastructure to the institutions for providing world-class professional education to become a Global Leader ("Vishwa Guru")

VISION OF THE INSTITUTE

To emerge as a leading polytechnic having value based effective technical education system in the region to meet the future demand of industry and society.

MISSION OF THE INSTITUTE

M1: To impart adequate technical skill and capability to accept challenges and to adopt rapidly changing scenario in technological development as well as to take up higher studies.
M2: Foster close networking with the industry, alumni and the guardians.
M3: Promote professional ethics and human values, integrity, accountability and transparency.
M4: Promote entrepreneurship practices to generate employment opportunities.
M5: Create conductive academic environment.

VISION OF THE DEPARTMENT

To achieve excellence in Computer Engineering by imparting technical and problem-solving skills along with ethical value to meet industrial requirements having social and environmental concerns.

MISSION OF THE DEPARTMENT

M1: To provides a learning ambiance to enhance discipline knowledge, technical skill and problem solving skill

M2: To motivates students for lifelong learning to adapt challenges in rapidly changing technology.

M3: To induces ethical values and spirit of social commitment.

M4: To provide opportunities to promote leadership skill required in Computer Engineering industry's diverse culture.

GOVERNMENT POLYTECHNIC
PORBANDAR

Computer Engineering Department

Certificate

This is to certify that Mr./Ms…….. ……Enrollment No.……..of 4th Semester of Diploma in Computer Engineering of ***Government Polytechnic, Porbandar(627)*** *has satisfactorily completed the term work in course* ***Introduction to Web Development (4340704)*** *for the academic year:* ***Summer-2025*** *Term:* ***Even*** *as prescribed in the GTU curriculum.*

Place: Porbandar

Date: ……

Signature of Course Faculty ***Head of the Department***

Preface

The primary aim of any laboratory/Practical/field work is enhancement of required skills as well as creative ability amongst students to solve real time problems by developing relevant competencies in psychomotor domain. Keeping in view, GTU has designed competency focused outcome-based curriculum -2021 (COGC-2021) for Diploma engineering programmes. In this more time is allotted to practical work than theory. It shows importance of enhancement of skills amongst students and it pays attention to utilize every second of time allotted for practical amongst Students, Instructors and Lecturers to achieve relevant outcomes by performing rather than writing practice in study type. It is essential for effective implementation of competency focused outcome- based Green curriculum-2021. Every practical has been keenly designed to serve as a tool to develop & enhance relevant industry needed competency in each and every student. These psychomotor skills are very difficult to develop through traditional chalk and board content delivery method in the classroom. Accordingly, this lab manual has been designed to focus on the industry defined relevant outcomes, rather than old practice of conducting practical to prove concept and theory.

By using this lab manual, students can read procedure one day in advance to actual performance day of practical experiment which generates interest and also, they can have idea of judgement of magnitude prior to performance. This in turn enhances predetermined outcomes amongst students. Each and every Experiment /Practical in this manual begins by competency, industry relevant skills, course outcomes as well as practical outcomes which serve as a key role for doing the practical. The students will also have a clear idea of safety and necessary precautions to be taken while performing experiment.

This manual also provides guidelines to lecturers to facilitate student-centered lab activities for each practical/experiment by arranging and managing necessary resources in order that the students follow the procedures with required safety and necessary precautions to achieve outcomes. It also gives an idea that how students will be assessed by providing Rubrics.

In our day-to-day lives, we use a number of web applications, such as online ticket or hotel booking, e-commerce, social networks, email, etc. All of these web applications are stored on a remote server, delivered over the Internet and accessed through a browser interface. PHP is an open-source, server-side scripting language designed specifically for web applications. PHP is one of the most popular choices among developers to develop dynamic, interactive, secure and database-driven web applications. In the growing field of Web technologies, it is essential for diploma-passing students to learn the PHP language to help them build web applications. The goal of this course is to develop web development skills in students using the server-side scripting language PHP. Students will learn the integration of HTML, PHP and MySQL database to develop web applications.

Although we try our level best to design this lab manual, but always there are chances of improvement. We welcome any suggestions for improvement.

Programme Outcomes (POs):

Following programme outcomes are expected to be achieved through the practical of the course:

1. **Basic and Discipline specific knowledge:** Apply knowledge of basic mathematics, science and engineering fundamentals and engineering specialization to solve the e*ngineering* problems.
2. **Problem analysis**: Identify and analyse well-defined e*ngineering* problems using codified standard methods.
3. **Design/development of solutions:**Design solutions for e*ngineering* well-defined technical problems and assist with the design of systems components or processes to meet specified needs.
4. **Engineering Tools, Experimentation and Testing:** Apply modern en*gineering* tools and appropriate technique to conduct standard tests and measurements.
5. **Engineering practices for society, sustainability and environment:** Apply appropriate technology in context of society, sustainability, environment and ethical practices.
6. **Project Management:** Use engineering management principles individually, as a team member or a leader to manage projects and effectively communicate about well-defined engineering activities.
7. **Life-long learning:** Ability to analyse individual needs and engage in updating in the context of technological changes *in field of engineering.*

Practical Outcome - Course Outcome matrix

Course Outcomes (COs):

a. *CO1: Develop PHP scripts using variables, operators and control structures.*

b. *CO2: Develop PHP scripts using arrays and functions.*

c. *CO3: Develop PHP scripts by applying object oriented concepts.*

d. *CO4: Develop web pages using form controls with validation to collect user inputs in PHP.*

e. *CO5: Develop and host interactive websites using PHP and MySQL database.*

<table>
<tr><th>Sr. No.</th><th>Experiment/Practical Outcome</th><th>CO1</th><th>CO2</th><th>CO3</th><th>CO4</th><th>CO5</th></tr>
<tr><td></td><td>Environment Setup
i. Install and configure PHP, Web Server and MySQL database using XAMPP/WAMP/LAMP/MAMP.
ii. Create a web page that displays “Hello World.”</td><td>√</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>2</td><td>Form Introduction
i. Create a web page that collects user information using a form and displays it when the user clicks the submit button.</td><td>-</td><td>-</td><td>-</td><td>√</td><td>-</td></tr>
<tr><td>3</td><td>Variables, Operators and Expressions
i. Write a script to implement a simple calculator for mathematical operations.
ii. A company has following payment scheme for their staff:
a. Net Salary = Gross Salary – Deduction
b. Gross Salary = Basic pay + DA + HRA + Medical
c. Deduction = Insurance + PF
Where, DA (Dearness Allowance) = 50% of Basic pay
HRA (House Rent Allowance) = 10% of Basic pay
Medical = 4% of Basic pay
Insurance = 7% of Gross salary
PF (Provident Fund) = 5% of Gross salary
Write a script to take the basic salary of an employee as input and calculate the net payment to any employee.</td><td>√</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
<tr><td>4</td><td>Decision making statements
i. Write a script that reads the name of the car and displays the name of the company the car belongs to as per the below table:
<table>
<tr><th>Car</th><th>Company</th></tr>
<tr><td>Safari, Nexon, Tigor, Tiago</td><td>Tata</td></tr>
<tr><td>XUV700, XUV300, Bolero</td><td>Mahindra</td></tr>
<tr><td>i20, Verna, Venue, Creta</td><td>Hyundai</td></tr>
<tr><td>Swift, Alto, Baleno, Brezza</td><td>Suzuki</td></tr>
</table></td><td>√</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
</table>

<table>
<tr>
<td></td>
<td>ii. Write a script to read the marks of 4 subjects and display the result as per the below instructions:
<table>
<tr><th>GTU GRADE</th><th>Mark-Range</th></tr>
<tr><td>AA</td><td>85 - 100</td></tr>
<tr><td>AB</td><td>75 - 84</td></tr>
<tr><td>BB</td><td>65 - 74</td></tr>
<tr><td>BC</td><td>55 - 64</td></tr>
<tr><td>CC</td><td>45 - 54</td></tr>
<tr><td>CD</td><td>40 - 44</td></tr>
<tr><td>DD</td><td>35 - 39</td></tr>
<tr><td>FF</td><td>< 35 (FAIL)</td></tr>
</table>
a. Each of the four subjects is worth 100 marks.
b. If a student gets less than 35 marks in any subject, then he/she will be marked as FAIL, otherwise he/she will be marked as PASS.
The result contains the grade of each individual subject in tabular format as per the above table.
<u>Loops</u>
iii. Write a script to display Fibonacci numbers up to a given term.
iv. Write a script to display a multiplication table for the given number.</td>
<td></td><td></td><td></td><td></td><td></td>
</tr>
<tr>
<td>5</td>
<td><u>Arrays</u>
i. Write a script to calculate the length of a string and count the number of words in the given string without using string functions.
ii. Write a script to sort a given indexed array.
iii. Write a script to perform 3 x 3 matrix Multiplication.
iv. Write a script to encode a given message into equivalent Morse code.</td>
<td>-</td><td>√</td><td>-</td><td>-</td><td>-</td>
</tr>
<tr>
<td>6</td>
<td><u>Functions</u>
i. Consider a currency system in which there are notes of 7 denominations, namely Rs. 1, Rs. 2, Rs. 5, Rs. 10, Rs. 20, Rs. 50 and Rs. 100. Write a function that computes the smallest number of notes that will combine for a given amount of money.
ii. Write scripts using string functions:
a. to check if the given string is lowercase or not.
b. to reverse the given string.
c. to remove white spaces from the given string.
d. to replace the given word from the given string.
iii. Write scripts using math functions:
a. to generate a random number between the given range.
b. to display the binary, octal and hexadecimal of a</td>
<td>-</td><td>√</td><td>-</td><td>-</td><td>-</td>
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</table>

	given decimal number. c. to display the sin, cos and tan of the given angle. iv. Write a script to display the current date and time in different formats.					
7	**<u>OOP Concepts</u>** i. Write a script to: a. Define a class with constructor and destructor. b. Create an object of a class and access its public properties and methods. ii. Write a script that uses the set attribute and get attribute methods to access a class's private attributes of a class. iii. Write a script to demonstrate single inheritance. iv. Write a script to demonstrate multiple inheritance. v. Write a script to demonstrate multilevel inheritance. vi. Write a script to demonstrate method overriding. vii. Write a script to demonstrate method overloading based on the number of arguments. viii. Write a script to demonstrate a simple interface. ix. Write a script to demonstrate a simple abstract class. x. Write a script to demonstrate cloning of objects.	-	-	**√**	-	-
8	**<u>Forms</u>** i. Create a web page using a form to collect employee information. ii. Extend practical - 8(i) to validate user information using regular expressions. iii. Create two distinct web pages to demonstrate information passing between them using URL - Get method. iv. Create two different web pages to demonstrate information passing between web pages using Hidden variables – Post method.	-	-	-	**√**	-
9	**<u>Session, Cookies</u>** i. Create web pages to demonstrate passing information using Session. ii. Write a script to demonstrate storing and retrieving information from cookies.	-	-	-	**√**	-
10	**<u>Database</u>** i. Create a web page that reads employee information using a form and stores it in the database. ii. Create a web page for employee log-in. iii. Write a script to upload an image to the server. iv. After an employee logs in, create a Home web page that displays basic employee information.	-	-	-	-	**√**

	v. Create a web page to delete employee profiles from the database. vi. Create a web page that allows employees to change their password.					
11	**<u>Email, PDF, JSON</u>** i. Write a script to generate a salary slip for an employee in PDF format. ii. Write a script to send an email. iii. Write a script to convert an associative array into JSON string format and vice versa.	-	-	-	-	**√**
12	**<u>Simple Web Application</u>** Create a simple web application for Employee Management with 3-4 web pages and host it using cPanel and Filezilla.	**√**	**√**	**√**	**√**	**√**

Industry Relevant Skills

The following industry relevant skills of the competency "**Develop Interactive Web application using PHP and MySQL**" are expected to be developed in the student by undertaking the practical of this laboratory manual.

1. Install and configure software as per requirements.
2. Write code for the given problem.
3. Debug program to fix errors.
4. Follow Coding Guidelines.

Guidelines to Teachers

1. Course faculty should demonstrate experiment with all necessary implementation strategies described in curriculum.
2. Course faculty should explain industrial relevance before starting of each experiment.
3. Course faculty should involve & give opportunity to all students for hands on experience.
4. Course faculty should ensure mentioned skills are developed in the students by asking.
5. Utilise 2 hrs of lab hours effectively and ensure completion of write up with quiz also.
6. Encourage peer to peer learning by doing same experiment through fast learners.

Instructions for Students

1. Organize the work in the group and make record of all observations.
2. Students shall develop maintenance skill as expected by industries.
3. Student shall attempt to develop related hand-on skills and build confidence.
4. Student shall develop the habits of evolving more ideas, innovations, skills etc.
5. Student shall refer technical magazines and data books.
6. Student should develop habit to submit the practical on date and time.
7. Student should well prepare while submitting write-up of exercise.

Assessment-Rubrics:

Criteria	% of point	Rubrics
C1: Program Completeness / Correctness	40 %	Excellent (4 marks): Completed programs/scripts correctly as per the requirements.
		Adequate (2-3 marks): Completed programs/scripts correctly with approx. 70% requirements.
		Poor (0-1 marks): Completed programs/scripts correctly with 70% - 50% requirements.
C2: Readability	30 %	Excellent (3 marks):The code is clean, well-organized and very easy to understand.
		Adequate (2 marks):The code is fairly easy to read and understand.
		Poor (0-1 marks):The code is readable only by someone who knows what it is supposed to be doing.
C3: Coding Standards/ Documentation	30 %	Excellent (3 marks): • Coding standards are followed in complete code while naming variables/functions/ classes, explaining the purpose of variables/ functions/classes. • The Complete code is well-documented with comments explaining the code.
		Adequate (2 marks): • Coding standards are followed in most of the code while naming variables/functions/ classes, explaining the purpose of variables/ functions/classes. • Most of the code is documented with comments explaining the code.
		Poor (0-1 marks): • Coding standards are followed in very little code while naming variables/functions/ classes, explaining the purpose of variables/ functions/classes. • Very little code is documented with comments explaining the code.

Progressive Assessment Sheet

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