

WEB TECHNOLOGY UNIT – 5 PYQ➤ **MAY / JUN 2022****Q5)****a) Identify and explain steps involved in connecting to MySQL with PHP. [9]**

To connect MySQL with PHP, follow these steps:

1. Establish Connection:

Use `mysqli_connect()` or `new mysqli()` to connect to the database.

```
php                                                                    Copy Edit

$conn = mysqli_connect("localhost", "username", "password", "database_name");
```

2. Check Connection:

Use `mysqli_connect_error()` or `$conn->connect_error` to check if the connection is successful.

```
php                                                                    Copy Edit

if (!$conn) {
    die("Connection failed: " . mysqli_connect_error());
}
```

3. Execute Queries:

Use `mysqli_query()` to run SQL commands like SELECT, INSERT, etc.

```
php                                                                    Copy Edit

$result = mysqli_query($conn, "SELECT * FROM users");
```

4. Process Results (if SELECT):

Use `mysqli_fetch_assoc()` or similar functions to read query results.

```
php                                                                    Copy Edit

while($row = mysqli_fetch_assoc($result)) {
    echo $row["name"];
}
```

5. Close the Connection:

Always close the connection using `mysqli_close()` .

```
php
mysqli_close($conn);
```

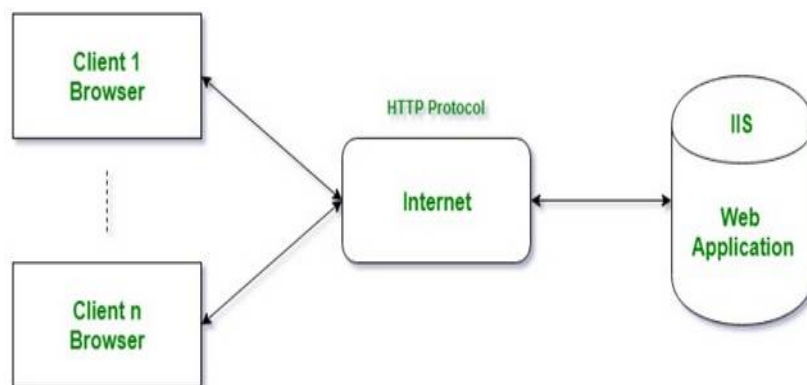
b) Write short notes on : [9]

i) Overview of ASP. NET

ii) Overview of C#

i) Overview of ASP.NET:

1. ASP.NET is a **server-side web application framework** developed by Microsoft.
2. It is used to create **dynamic websites, web applications, and web services**.
3. It runs on the **.NET Framework** and supports programming languages like **C#** and **VB.NET**.
4. It includes features like **built-in controls, form handling, and session management**.
5. ASP.NET supports the **MVC (Model-View-Controller)** architecture for structured app development.
6. It enhances **performance and security** by compiling code and managing resources efficiently.



Just to make answer big else no need of diagram !

ii) Overview of C#:

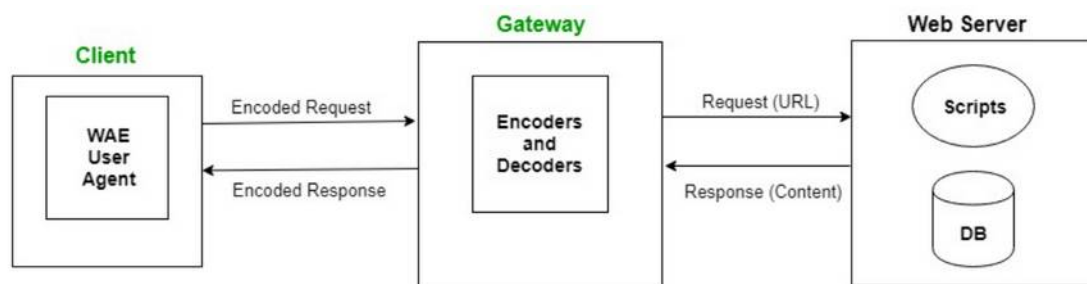
1. C# is a **modern, object-oriented programming language** developed by Microsoft.

2. It is mainly used to develop **Windows and web applications** within the .NET platform.
3. C# supports **OOP principles** like classes, inheritance, polymorphism, and interfaces.
4. It includes features such as **exception handling, strong data typing, and automatic memory management**.
5. C# combines the **efficiency of C++** with the **simplicity of Java**, making it beginner-friendly.
6. It is widely used in **ASP.NET development, game development (Unity), and enterprise software**.

Q6)

a) Explain in detail WAP Architecture & WML. [9]

❖ WAP architecture :



WAP (Wireless Application Protocol) enables mobile devices to access internet content using lightweight protocols suitable for limited bandwidth environments.

Main Components:

1. **Mobile Device (Client)**
 - Has a microbrowser that can render **WML** (Wireless Markup Language).
 - Sends an **encoded request** via the WAP protocol.
2. **WAP Gateway / Proxy**
 - Acts as a **bridge** between mobile and web servers.
 - **Encodes/decodes** data between WAP and HTTP.
 - Converts requests into **HTTP** and content into **WML** for mobile.
3. **Web Server**
 - Hosts **scripts** and **WML files**.
 - Processes HTTP requests and returns data/content.
4. **Internet**

- Standard web where server resources are located.
- Delivers content back to mobile devices via the gateway.

❖ **WML (Wireless Markup Language):**

- WML is similar to HTML but designed specifically for small screen devices.
- It follows XML syntax rules and is used to create WAP pages.

Key Features:

1. Uses cards and decks (a deck contains multiple cards).
2. Each card represents a single interaction screen.
3. Supports text, hyperlinks, input fields, and navigation.
4. Lightweight and optimized for low-bandwidth mobile networks.
5. Example :

```
xml                                                                    Copy Edit
<wml>
  <card id="welcome" title="WAP">
    <p>Welcome to WAP service!</p>
  </card>
</wml>
```

b) Explain functions in PHP with example & session management. [9]

1. Functions in PHP

- A **function** is a block of code that performs a specific task and can be reused.
- PHP has **built-in functions** and also supports **user-defined functions**.

✓ Syntax:

```
php                                                                    Copy Edit

function functionName($parameter1, $parameter2) {
    // Code to execute
}
```

✓ Example:

```
php                                                                    Copy Edit

<?php
function greet($name) {
    echo "Hello, " . $name;
}
greet("Himanshu");
?>
```

2. Session Management in PHP

- A **session** is used to store user data across multiple pages.
- Unlike cookies, session data is stored **on the server**

1. Start session:

```
php  
  
session_start();
```

 Copy  Edit

2. Set session variables:

```
php  
  
$_SESSION["username"] = "Himanshu";
```

 Copy  Edit

3. Access session variables:

```
php  
  
echo $_SESSION["username"];
```

 Copy  Edit

4. Destroy session (logout):

```
php  
  
session_destroy();
```

 Copy  Edit

➤ **NOV / DEC 2022**

Q5

a) Explain the following with respect to PHP [9]

(i) Arrays (ii) Functions (iii) Control Statements

(i) Arrays in PHP

- Arrays store **multiple values in a single variable**.
- PHP supports **Indexed**, **Associative**, and **Multidimensional** arrays.

1. **Indexed Arrays** – uses numeric index.

php

Copy

Edit

```
$fruits = array("Apple", "Banana", "Mango");
```

2. **Associative Arrays** – uses named keys.

php

Copy

Edit

```
$marks = array("Math" => 90, "Sci" => 85);
```

3. **Multidimensional Arrays** – arrays inside arrays.

php

Copy

Edit

```
$students = array(  
    array("Himanshu", 90, 80),  
    array("Aman", 85, 75)  
);
```

(ii) Functions in PHP

- Functions are **reusable blocks of code** that perform specific tasks.
- They reduce **code repetition** and improve modularity.
- PHP allows **user-defined and built-in functions**.

Syntax:

php

Copy

Edit

```
function greet($name) {  
    echo "Hello, " . $name;  
}  
greet("Himanshu");
```

- PHP also has many **built-in functions** like `strlen()`, `array_push()`, etc.

(iii) Control Statements in PHP

- Control statements manage the execution flow of a script.
- Types include Conditional Statements, Loops, and Jump Statements.

Control statements manage the **flow of execution**.

1. **Conditional Statements:**

- `if`, `if-else`, `if-elseif-else`, `switch`

```
php
if ($a > $b) { echo "A is greater"; }
```

2. **Loops:**

- `for`, `while`, `do-while`, `foreach`

```
php
for($i = 0; $i < 5; $i++) { echo $i; }
```

3. **Jump Statements:**

- `break`, `continue`

b) How does an array work in PHP? Explain with example. [9]

- An array is a **data structure** used to store **multiple values in a single variable**.
- PHP arrays automatically assign indexes (numeric or associative) to store and retrieve data efficiently.
- Arrays are dynamic – you can add or remove elements at runtime.
- Arrays can be traversed using loops like `for`, `foreach`, or `while`.

✓ Types of Arrays in PHP:

1. **Indexed Array** – Uses numeric indexes.

```
php Copy Edit

$fruits = array("Apple", "Banana", "Mango");
echo $fruits[0]; // Output: Apple
```

2. **Associative Array** – Uses named keys.

```
php Copy Edit

$marks = array("Math" => 90, "Sci" => 85);
echo $marks["Math"]; // Output: 90
```

3. **Multidimensional Array** – Array of arrays.

```
php Copy Edit

$students = array(
    array("Himanshu", 90, 80),
    array("Aman", 85, 75)
);
echo $students[0][0]; // Output: Himanshu
```

Working:

- PHP stores array elements in memory with an index or key.
- You can access, update, or loop through values easily.
- Built-in functions like `count()`, `array_push()`, and `sort()` help manage arrays.

Key Array Functions in PHP

1. **count()** - Get the number of elements

```
php Copy Download

echo count($fruits); // Outputs: 3
```

2. **array_push()** - Add elements to the end

```
php Copy Download

array_push($fruits, "Mango");
```

3. **array_pop()** - Remove last element

php

 Copy  Download

```
array_pop($fruits);
```

4. **array_merge()** - Combine arrays

php

 Copy  Download

```
$allFruits = array_merge($fruits, ["Mango", "Grapes"]);
```

5. **foreach()** - Loop through array

php

 Copy  Download

```
foreach($fruits as $fruit) {  
    echo $fruit . "\n";  
}
```

Q6

a) Explain object-oriented way to connect MySQL database with PHP. [9]

- PHP offers an object-oriented way to connect to MySQL using the **MySQLi (Improved) extension**.
- It is more secure, reusable, and supports OOP principles.

Syntax

php

 Copy  Edit

```
$mysqli = new mysqli("hostname", "username", "password", "database");
```

Steps Involved

1. Create MySQLi Object

```
php
$conn = new mysqli("localhost", "root", "", "test_db");
```

Copy Edit

2. Check Connection

```
php
if ($conn->connect_error) {
    die("Connection failed: " . $conn->connect_error);
}
```

Copy Edit

3. Execute SQL Query

```
php
$sql = "SELECT * FROM users";
$result = $conn->query($sql);
```

Copy Edit

4. Fetch and Display Data

```
php
if ($result->num_rows > 0) {
    while($row = $result->fetch_assoc()) {
        echo "Name: " . $row["name"] . "<br>";
    }
}
```

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5. Close Connection

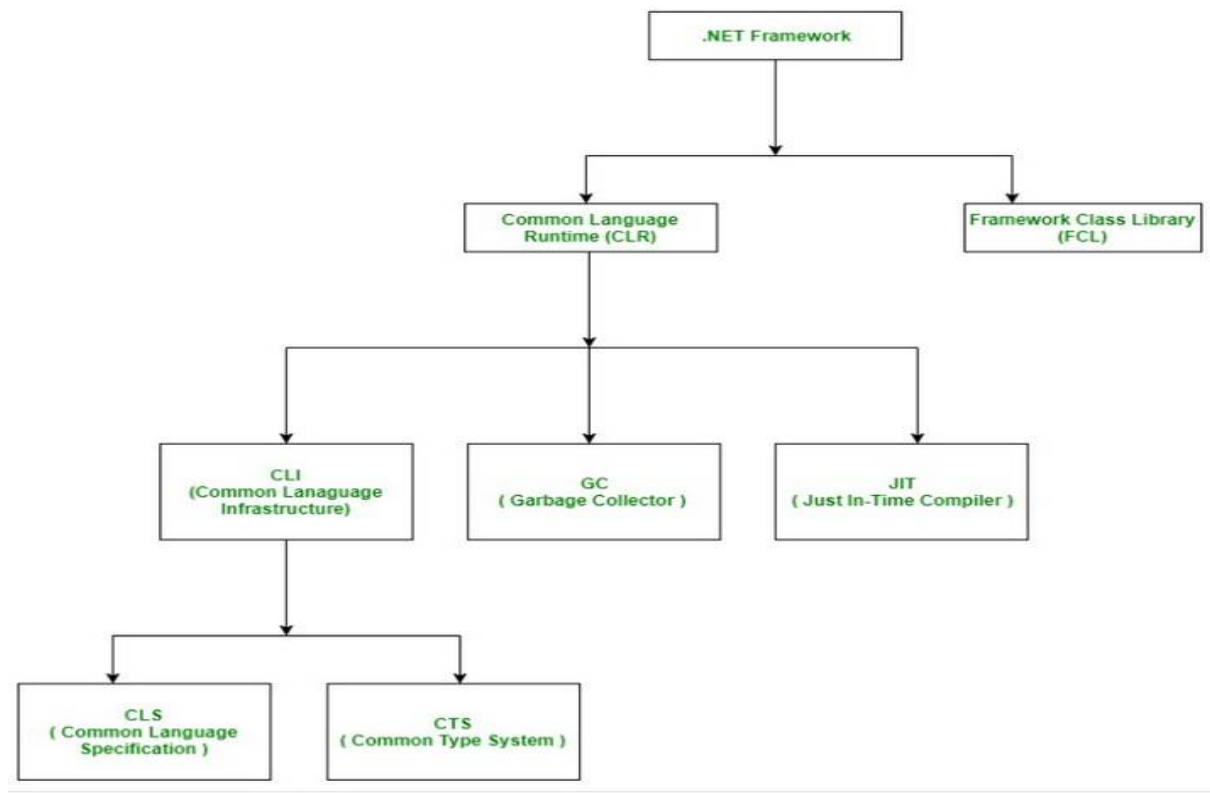
```
php
$conn->close();
```

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Use of OOP Benefits

Methods like `$conn->query()` , `$conn->close()` use objects for better code structure and maintainability.

b) Draw and explain .NET framework with CLR, CLI. [9]



The **.NET Framework** is a software development platform that provides a managed environment for building and running applications. It mainly consists of two parts: the **Common Language Runtime (CLR)** and the **Framework Class Library (FCL)**.

- **Common Language Runtime (CLR):** This is the execution engine of the .NET Framework. It manages memory, handles security, and executes applications.
- Inside CLR:
 - **Common Language Infrastructure (CLI):** Defines the rules for language interoperability and includes:
 - **Common Language Specification (CLS):** A set of base rules that all .NET languages must follow.
 - **Common Type System (CTS):** Defines data types and their behavior for language compatibility.
 - **Garbage Collector (GC):** Automatically manages memory by freeing unused objects.
 - **Just-In-Time Compiler (JIT):** Converts intermediate code (MSIL) into native machine code just before execution.
- **Framework Class Library (FCL):** A large collection of reusable classes, interfaces, and APIs that developers use to build applications.

This architecture ensures language interoperability, efficient memory management, and easy development using a rich library of components.

➤ MAY / JUN 2023

Q5)

a) What is WAP? Explain components of WAP architecture in detail. [8]

→ Already done !

b) What is Multidimensional Array in PHP?

A **multidimensional array** in PHP is an array containing one or more arrays inside it.

It is used to store data in a **matrix or tabular form** (rows and columns).

- Each element in a multidimensional array can be another array.
- Common types: 2D arrays (array of arrays), 3D arrays (array of arrays of arrays), etc.

Simple PHP Code Example:

```
php
Copy Edit

<?php
$students = array(
    array("Name" => "Amit", "Marks" => 85),
    array("Name" => "Riya", "Marks" => 90),
    array("Name" => "John", "Marks" => 78)
);

// Accessing data
echo "Student: " . $students[0]["Name"] . " - Marks: " . $students[0]["Marks"];
?>
```

Output:

```
less
Copy Edit

Student: Amit - Marks: 85
```

This shows how data is organized in a tabular form using multidimensional arrays.

c) Explain overview of node JS. [5]

- Node.js is an open-source, cross-platform JavaScript runtime environment that allows JavaScript to be run on the server side.
- It is built on Google's V8 JavaScript engine, which compiles JavaScript code into fast machine code.
- It uses an event-driven, non-blocking I/O model, which makes it lightweight and efficient for handling multiple simultaneous requests.
- Node.js is commonly used for creating web servers, APIs, real-time applications, and microservices.
- It also includes npm (Node Package Manager), which provides access to thousands of open-source packages to extend functionality.

Q6)

a) Explain how cookies and session are used for session management in PHP. [8]

Cookies and Sessions are used to store user-specific information across multiple pages in PHP.

Cookies:

- Cookies are small pieces of data stored on the **client-side (browser)**.
- They are used to remember information like username, preferences, etc.
- Created using `setcookie()` function.
- Data persists even after closing the browser (till expiry time).

Example:

```
php                                                                    Copy Edit

setcookie("user", "Himanshu", time() + 3600); // Cookie valid for 1 hour
echo $_COOKIE["user"];
```

Sessions:

- Sessions store data on the **server-side**, making them more secure.
- A unique session ID is stored in a cookie on the client.
- Start session using `session_start()` and use `$_SESSION` to store values.

Example:

```
php                                                                    Copy Edit

session_start();
$_SESSION["user"] = "Himanshu";
echo $_SESSION["user"];
```

b) What is WML? Explain WML elements [5]**WML (Wireless Markup Language):**

WML is an XML-based markup language used to design web pages for **mobile devices** using the **WAP (Wireless Application Protocol)**. It is lightweight and suitable for devices with limited resources.

Important WML Elements:

1. **<wml>**
Root element of every WML document.
2. **<card>**
Similar to an HTML page; WML documents can contain multiple cards, displayed one at a time.
3. **<p>**
Used to define paragraphs of text inside a card.
4. **<anchor>**
Creates a hyperlink or navigation to another card or URL.
5. **<input>**
Takes user input like text or numbers (like HTML forms).
6. **<do>**
Defines user actions like accept, prev, or options (e.g., submit form or navigate).

Example:

```

xml
Copy Edit

<wml>
  <card id="welcome" title="Home">
    <p>Welcome to Patil Farms!</p>
    <do type="accept" label="Next">
      <go href="#nextcard"/>
    </do>
  </card>
</wml>

```

c) Explain in brief overview of ASP. NET. [5]

ASP.NET is a **server-side web development framework** developed by Microsoft. It is used to build **dynamic web pages, web applications, and web services** using languages like **C# or VB.NET**.

Key Points:

1. **Part of .NET Framework** – It runs on the Common Language Runtime (CLR), ensuring performance, security, and cross-language compatibility.
 2. **Server-side Execution** – All code is executed on the server before sending the output (HTML) to the client's browser.
 3. **Rich Controls & Events** – Provides built-in controls like textboxes, buttons, grids, and supports event-driven programming.
 4. **State Management** – Supports ViewState, Session, Cookies, etc., to manage data across pages.
 5. **Security** – Includes features like authentication, authorization, and request validation to secure web apps.
-

➤ NOV / DEC 2023

Q5)

a) Explain different types of arrays in PHP with example [9]

In PHP, an **array** is a special variable that stores multiple values in a single variable. Arrays can hold values of any type and are very flexible. There are three main types of arrays in PHP:

1. Indexed Arrays

- Indexed arrays store values with **numeric indexes**, starting from 0 by default.
- They behave like lists or sequences where each element has a position.
- You can access elements using their numeric index.

Example:

```
php                                                                    Copy Edit
$fruits = array("Apple", "Banana", "Orange"); // Create indexed array
echo $fruits[0]; // Output: Apple (first element)
echo $fruits[2]; // Output: Orange (third element)
```

Explanation:

Here, `$fruits` is an indexed array with 3 elements. The keys are automatically assigned as 0, 1, and 2. You access the elements by these numbers.

2. Associative Arrays

- Associative arrays use **custom string keys** instead of numeric indexes.
- This allows for meaningful keys like names or identifiers.
- Useful when you want to access data by a key rather than position.

Example:

```
php Copy Edit  
  
$student = array("name" => "Himanshu", "age" => 22, "city" => "Pune");  
echo $student["name"]; // Output: Himanshu  
echo $student["age"]; // Output: 22
```

Explanation:

Here, `$student` stores data about a person, with keys like `"name"`, `"age"`, and `"city"`. You can directly get values by referring to these keys, which makes code readable and organized.

3. Multidimensional Arrays

- Multidimensional arrays are arrays containing one or more arrays inside them.
- They allow representing complex data structures such as tables or records.
- You can have two-dimensional, three-dimensional, or higher arrays.

Example:

```
php Copy Edit  
  
$students = array(  
    array("name" => "Himanshu", "age" => 22),  
    array("name" => "Anita", "age" => 25)  
);  
echo $students[1]["name"]; // Output: Anita
```

Explanation:

This `$students` array contains two associative arrays. The first element holds data for Himanshu, the second for Anita. You access the nested array first by the numeric index, then by the key.

Q5 b) ALREADY DONE !

Q6 a) do by yourself

b) Explain the concepts of WAP, WML and .NET framework. [9]

WAP (Wireless Application Protocol):

WAP is a protocol designed to access internet content on mobile devices (like early phones or PDAs). It ensures lightweight communication over limited bandwidth networks.

Components of WAP Architecture:

- **Mobile Device (Client):** Contains a microbrowser that can display WML content.
- **WAP Gateway/Proxy:** Acts as a bridge between mobile device and internet. Converts WAP requests to HTTP and WML to HTML.
- **Web Server:** Hosts WML files and processes requests from the WAP Gateway.
- **WAP Protocol Stack:** Includes layers like WDP, WTLS, WTP, WSP – optimized for mobile communication.
- **Internet:** Standard web where content is retrieved and passed back through the gateway.

WML (Wireless Markup Language):

WML is a markup language based on XML designed specifically for wireless devices to create pages for WAP browsers. It allows content to be easily displayed on small screens and supports features like cards, decks, and user input.

Main WML elements include:

- **<wml>:** Root element of a WML document.
- **<card>:** Represents a single interaction or screen.
- **<p>:** Paragraph of text.
- **<do>:** Defines actions or commands.
- **<go>:** Used for navigation or form submission.

.NET Framework:

The .NET Framework is a software development platform that provides a managed environment for building and running applications. It mainly consists of two parts:

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This architecture ensures language interoperability, efficient memory management, and easy development using a rich library of components.

➤ MAY / JUN 2024

Q5

a) Already done

b) Explain the following : i) WAP & WML → already done
ii) C# Vs Java [5]

Aspect	C#	Java
Platform	Primarily Windows, uses .NET Framework	Cross-platform (Write Once Run Anywhere) using JVM
Memory Management	Automatic garbage collection via CLR	Automatic garbage collection via JVM
Language Type	Multi-paradigm (supports procedural, OOP, functional)	Primarily Object-Oriented
Syntax	Similar to Java but has more features like properties, delegates, events	Simpler syntax, widely used in enterprise and Android apps
Integration	Deep integration with Windows OS and Microsoft tools	Portable and platform-independent, strong in enterprise and Android development
Runtime	Runs on CLR (Common Language Runtime)	Runs on JVM (Java Virtual Machine)

Q6

a) Already done

b) Write note on : i) Session tracking in PHP

ii) . NET framework → already done

iii) NodeJS → already done

i) Session tracking in PHP

Session tracking in PHP is a method used to preserve user data across multiple pages during a browsing session.

Since HTTP is stateless, sessions help maintain user state by storing information on the server side.

PHP provides built-in session management functions.

When a session starts, PHP generates a unique session ID, usually stored in a cookie on the client browser.

The server uses this ID to retrieve stored session variables like user login information, shopping cart contents, etc.

Sessions are more secure than cookies because sensitive data is stored on the server, not the client. Session variables can be set, accessed, and destroyed using PHP functions like `session_start()`, `$_SESSION[]`, and `session_destroy()`.