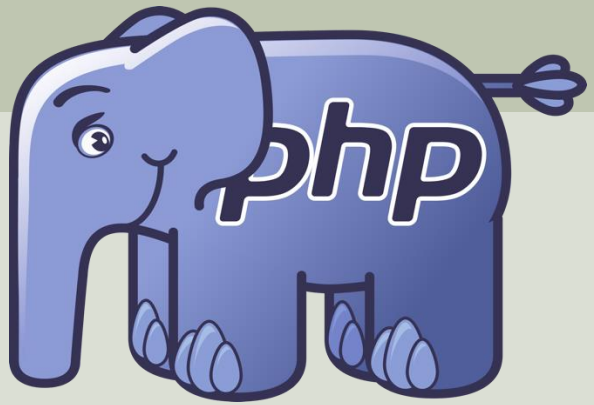
https://www.halvorsen.blog



PHP Overview

Hans-Petter Halvorsen

Contents

- Introduction
- PHP
- PHP and MySQL
  - phpMyAdmin

Introduction

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Hans-Petter Halvorsen

Web Development Frameworks

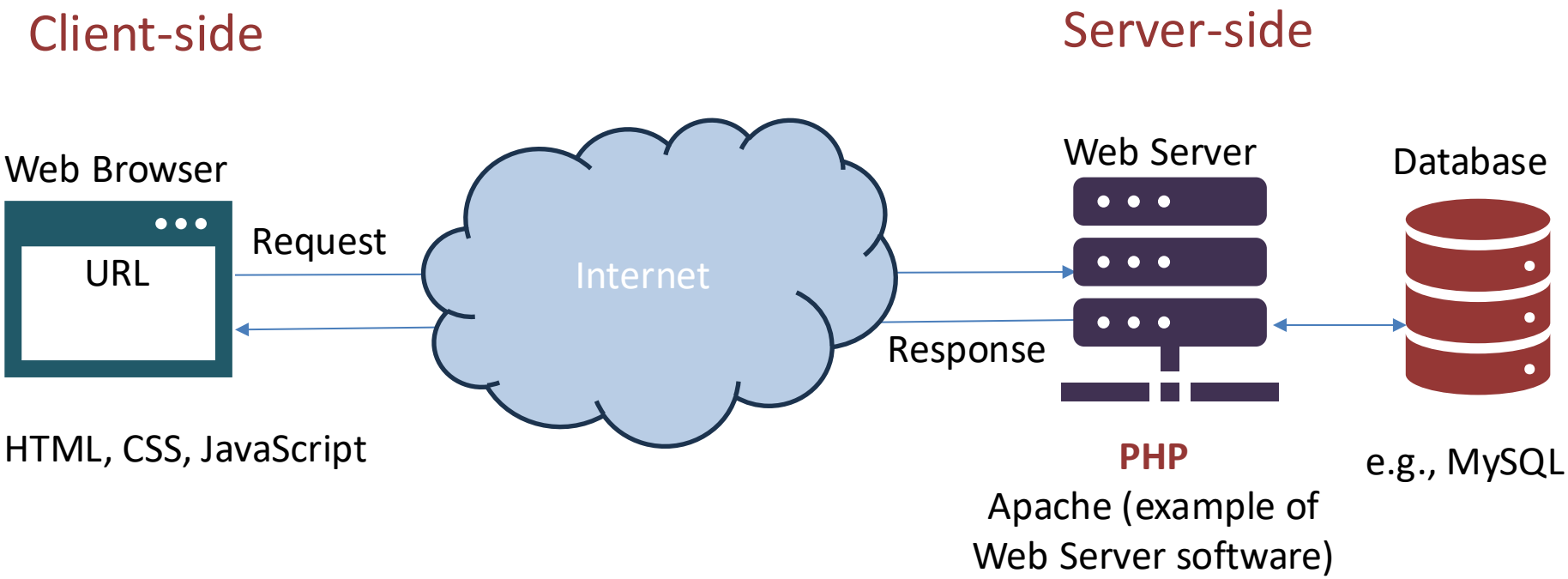
For static web pages you can use HTML only, but for more dynamic and interactive web pages you typically need to use a server-side framework/language.

Some of the most used server-side (backend) Web Development Frameworks/languages are:

- PHP (Scripting language for Web development)
- ASP.NET (Microsoft, Visual Studio, C#)
- Ruby on Rails (Ruby)
- Django (Python)

You also need to use such frameworks to communicate and present data from a database on your web pages.

How PHP Works



PHP Files are executed on the server and the result (HTML) is sent to the client.

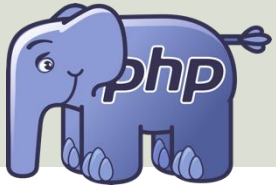
PHP

- PHP is a server scripting language for making dynamic and interactive web pages.
- PHP is the most widely used server-side programming language for web development. More than 70%? of the world's web pages use PHP in one form or another. PHP scripts are executed on the server/webserver.
- PHP files have extension ".php" and are typically a mix of PHP, HTML, CSS and JavaScript
- PHP is free and open-source.
- With PHP you can easily typically. communicate with a Database, and especially MySQL.
- LAMP: Linux, Apache, MySQL and PHP.
- PHP is widely used and still by far the most used/popular language for web development.
- PHP is easy to learn (but still very powerful) – which cannot be said on many other web technologies and programming languages.
- Homepage: https://www.php.net

PHP vs ASP.NET

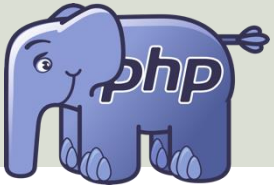
- PHP is open-source and free to use.
- With ASP.NET you are locked and forced into Microsoft technology and tools.
- PHP works on various platforms and supports most web servers.
- ASP.NET can have a steeper learning curve for beginners.
- PHP is embedded within the HTML code, making web development easier.
- Hosting is very easy with PHP with lots of providers.
- ASP.NET is based on C#, .NET and Visual Studio, so if you already know these tools, then you are well on your way.

https://eluminoustechnologies.com/blog/asp-net-vs-php/



MySQL and PHP

- MySQL is a popular relational database system.
- It is free and open source.
- MySQL uses SQL (Structured Query Language)
- The combination of PHP and MySQL is very popular.
- You can create powerful web applications where you can show, save, update and delete data in a MySQL database from the PHP code.



PHP + MySQL

- You need to have a PHP + MySQL Environment on your local computer or get access to it from a server/Internet or use a provider.
- For local installation you need to download and install Apache, PHP and MySQL.
- You can get server access from many providers (free or paid).
- I use an internal LAMP server available for employees and students at my University.

LAMP

- LAMP = **L**inux, **A**pache, **M**ySQL, **P**HP
  - PHP is the Programming Language
  - MySQL is the Database System
  - Apache is the Web Server software
  - Linux is the operating system where the Web Server is running

Each part in LAMP is free and open-source, so it is a popular web hosting environment. You find also lots of online documentation and a large community.

LAMP/PHP Web Hosting

- There exists hundreds/thousands of different LAMP/PHP/MySQL Hosting Providers, some free but mostly paid options.
- Hostinger - https://www.hostinger.no
- InfinityFree - https://www.infinityfree.com
- PRO ISP - https://www.proisp.no
- +++ (Just Google)

XAMPP

- XAMPP is a popular PHP development environment
- It works on Windows, macOS and Linux
- It installs Apache, MariaDB and PHP
  - Apache is a Web Server
  - MariaDB is almost identical to MySQL
  - PHP is the Web Programming language
- https://www.apachefriends.org

PHP

Hans-Petter Halvorsen

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Getting Started

- We need **web server with PHP installed**
  - You can setup your own server with PHP, but I will just use an existing webserver with PHP in this tutorial.
- We need a Code Editor like **Visual Studio Code**.
- We need an **FTP** program like **WinSCP** to transfer files from local PC to the webserver

PHP Code Editors

You can use any kind of tool/IDE for Python(Django development. Here are some recommendations:

- **Visual Studio Code**.
  - Multiplatform and Free.
  - Homepage: https://code.visualstudio.com
- **PhpStorm**.
  - Free 30-day full trial.
  - Free access to all JetBrains IDEs for students and educators!
  - Homepage: https://www.jetbrains.com
- +++

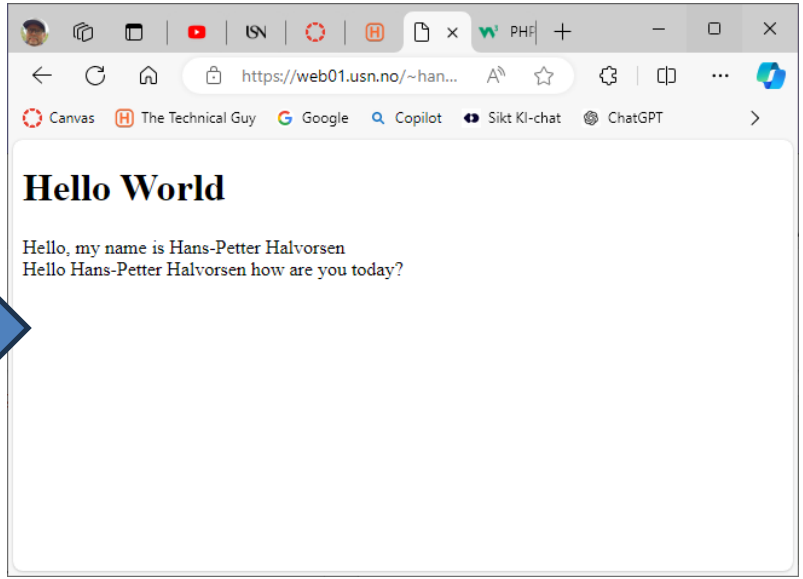
Basic PHP Example

PHP code embedded within the HTML code

```php
<!DOCTYPE html>
<html>
    <body>
        <h1>Hello World</h1>
        <?php
            $name ="Hans-Petter Halvorsen";

            echo "Hello, my name is $name";

            echo "<br>";

            echo 'Hello ' . $name . ' how are you today?';
        ?>
    </body>
</html
```

Server-side

Web Browser



client-side

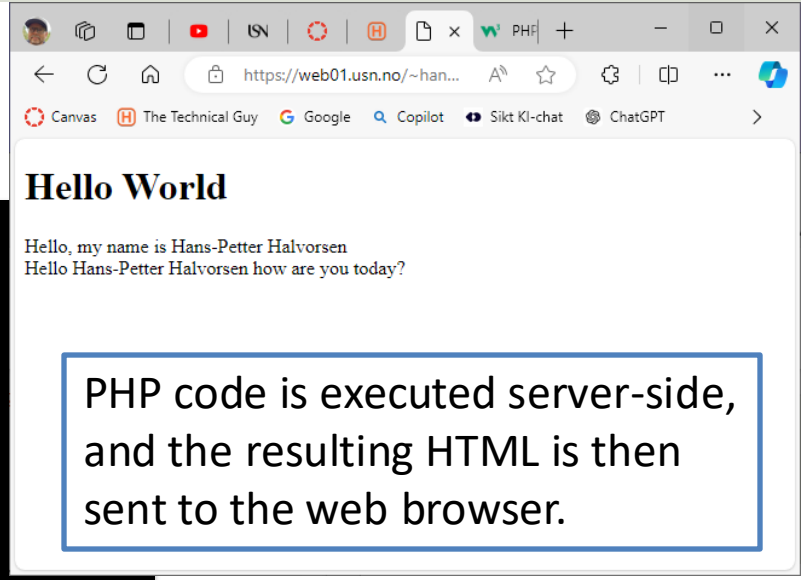
Basic PHP Example

You need to use the .php file extension

PHP is embedded within the HTML code:

```
<!DOCTYPE html>
<html>
    <body>
        <h1>Hello World</h1>
        <?php
            $name ="Hans-Petter Halvorsen";

            echo "Hello, my name is $name";

            echo "<br>";

            echo 'Hello ' . $name . ' how are you today?';
        ?>
    </body>
</html
```

Variables in PHP starts with $



PHP code is executed server-side, and the resulting HTML is then sent to the web browser.

This is result seen in the web browser

"**echo**" is a built-in function in PHP that is much used to output contents of a variable to the web browser

File Edit Selection View Go Run Terminal Help

index.php

C: > Users > hansha > OneDrive > Courses > Webutvikling > Tutorials > PHP > Development > HelloWorld > index.php

```php
<!DOCTYPE html>
<html>
    <body>
        <h1>Hello World</h1>
        <?php
            $name ="Hans-Petter Halvorsen";

            echo "Hello, my name is $name";

            echo "<br>";

            echo 'Hello ' . $name . ' how are you today?';
        ?>
    </body>
</html>
```

1

PHP code server-side

Line wrap

2

```html
<!DOCTYPE html>
<html>
    <body>
        <h1>Hello World</h1>
        Hello, my name is Hans-Petter Halvorsen<br>Hello Hans-Petter Halvorsen how are you today?
    </body>
</html>
```

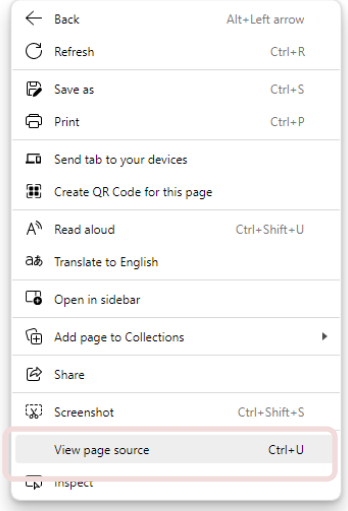
Generated HTML File that is sent to the Client (Web Browser)

Result shown in the Web Browser

3

Hello World

Hello, my name is Hans-Petter Halvorsen
Hello Hans-Petter Halvorsen how are you today?



PHP + MySQL

Hans-Petter Halvorsen

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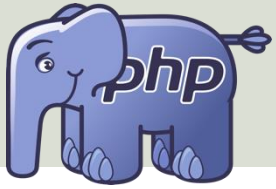

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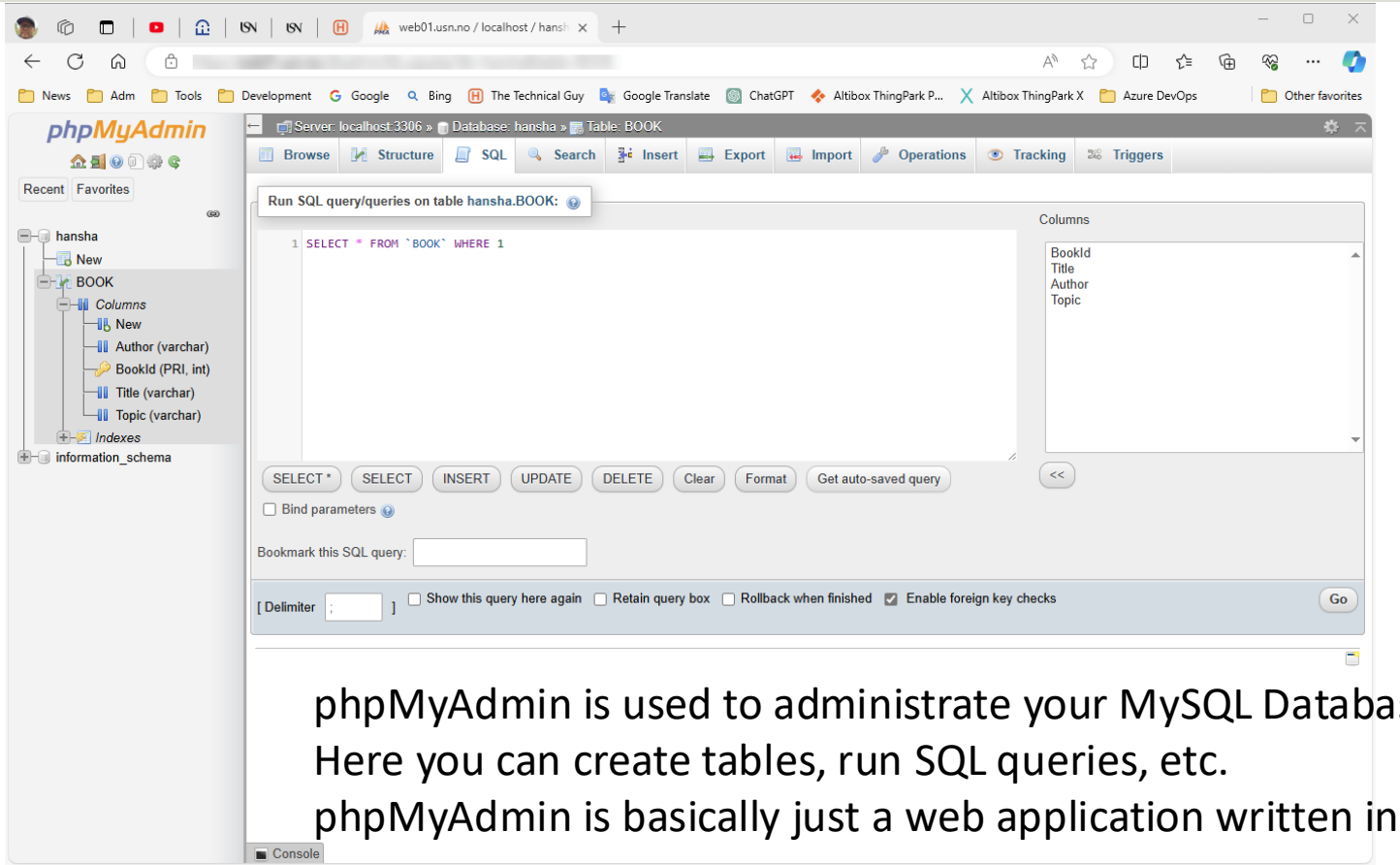
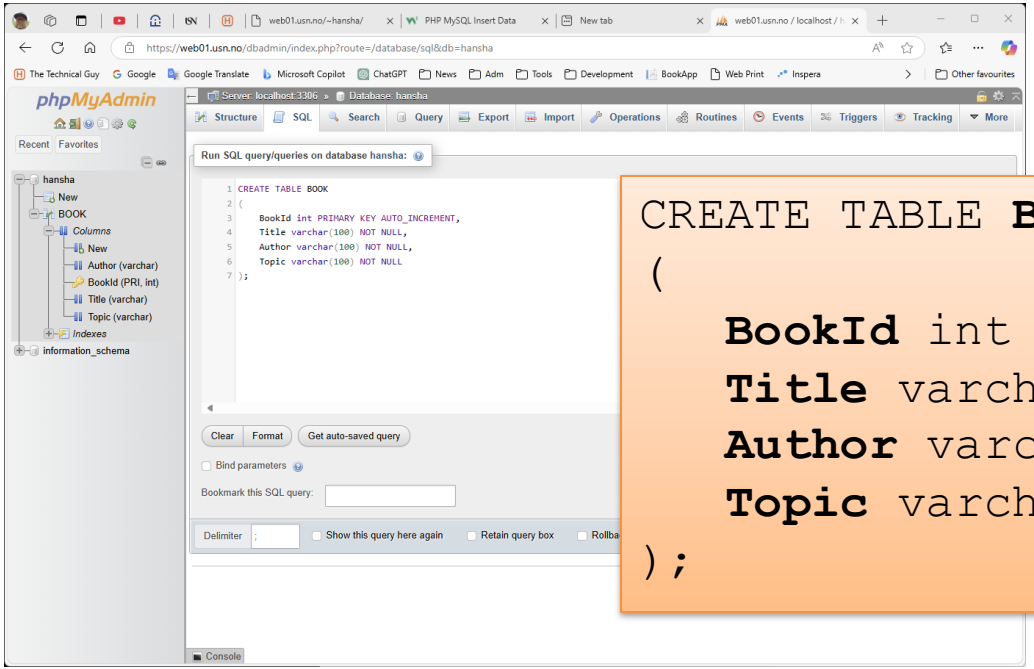
phpMyAdmin



phpMyAdmin is used to administrate your MySQL Database.
Here you can create tables, run SQL queries, etc.
phpMyAdmin is basically just a web application written in PHP.

Create Database

We can create Databases and Database Tables using PHP. But typically, we create a Database and the necessary Tables in advance before we start coding the Web Application. We use the phpMyAdmin tool.




```
CREATE TABLE BOOK
(
    BookId int PRIMARY KEY AUTO_INCREMENT,
    Title varchar(100) NOT NULL,
    Author varchar(100) NOT NULL,
    Topic varchar(100) NOT NULL
);
```

Open Connection to DB

In this tutorial we will use MySQLi. Here you see an example how we can connect to the database:

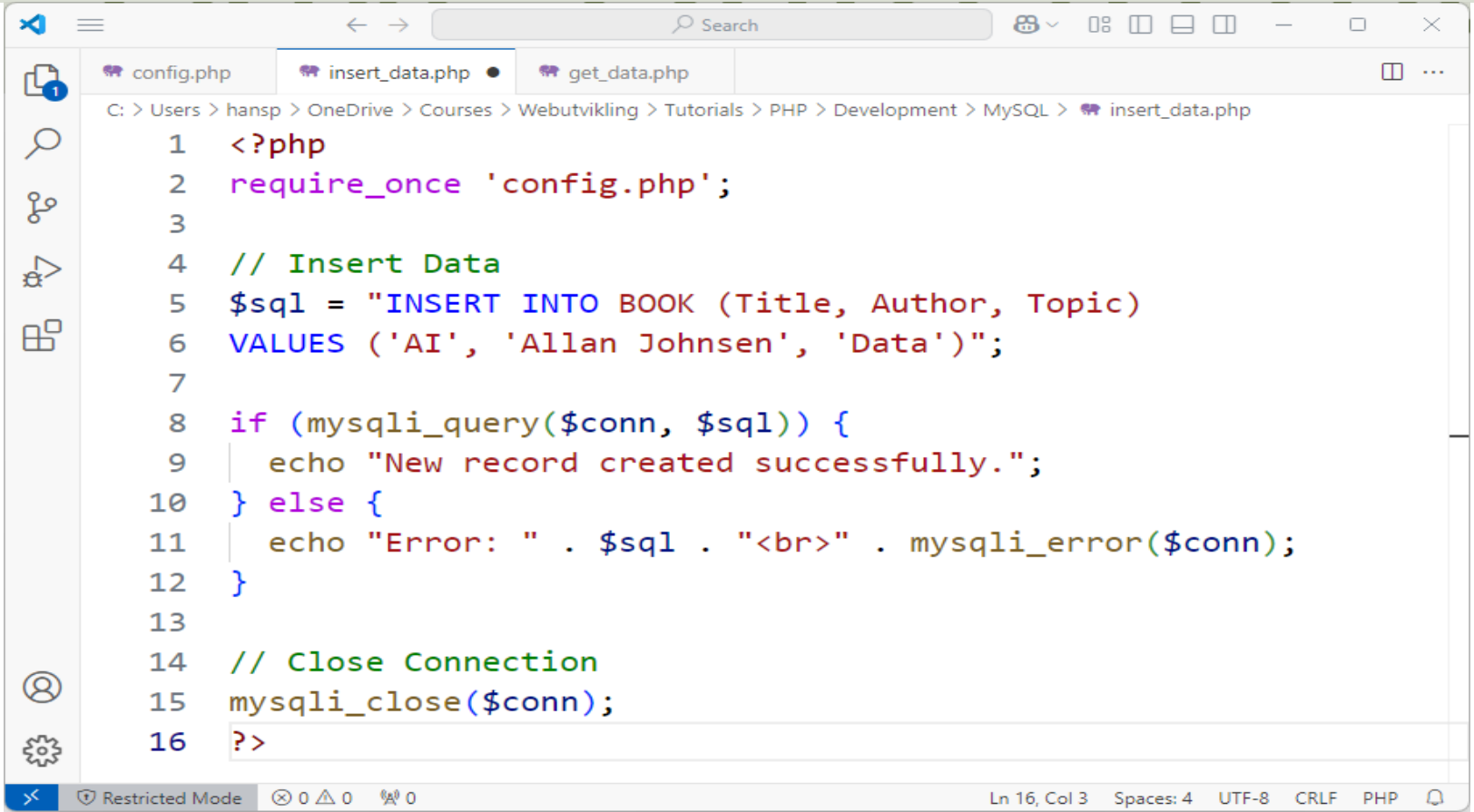
```php
<?php
$servername = "localhost";
$dbname = "dbname";
$username = "username";
$password = "password";

// Create connection
$conn = mysqli_connect($servername, $username, $password, $dbname);

// Check connection
if (!$conn) {
  die("Connection failed: " . mysqli_connect_error());
}
echo "Connected successfully.";
?>
```

If you have many PHP that communicates with a Database, you can put this code into a separate PHP file, e.g., “config.php“ or “database.php” that you use in your files, see next page for an example.

Close Connection after we have communicated with the database:

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

Save Data to the Database



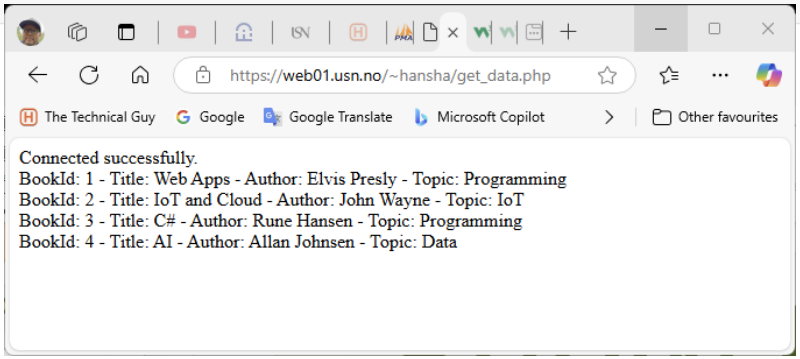
Show Data from the Database

File Edit Selection View Go Run Terminal Help

config.php | insert_data.php | get_data.php

C: > Users > hansp > OneDrive > Courses > Webutvikling > Tutorials > PHP > Development > MySQL > get_data.php

```php
<?php
require_once 'config.php';

// Get Data from Database
$sql = "SELECT BookId, Title, Author, Topic FROM BOOK";
$result = mysqli_query($conn, $sql);

if (mysqli_num_rows($result) > 0) {
  // output data of each row
  while($row = mysqli_fetch_assoc($result)) {
    echo "BookId: " . $row["BookId"]. " - Title: " . $row["Title"]. " - Author: " . $row["Author"]. " - Topic: " . $
  }
} else {
  echo "0 results";
}

// Close Connection
mysqli_close($conn);
?>
```



Restricted Mode ⊗ 0 ⚠ 0 0

Ln 19, Col 3 Spaces: 2 UTF-8 CRLF PHP

Resources and References

- PHP Homepage: https://www.php.net
- PHP Tutorial: https://www.w3schools.com/php
- MySQL Tutorial: https://www.w3schools.com/mysql

Books Web Application

Books

Here you find a list of available books:

BookId	Title	Author	Topic	Action
1	Web Apps	Elvis Presly	Programming	Update Book Delete Book
2	IoT and Cloud	John Wayne	IoT	Update Book Delete Book
3	C#	Rune Hansen	Programming	Update Book Delete Book
4	AI	Allan Johnsen	Data	Update Book Delete Book

New Book

New Book

Please enter book information:

Title:

Author:

Topic:

Save

Update Book

Please enter book information:

Title:

Web Apps

Author:

Elvis Presly

Topic:

Programming

Save

Here you see an example of a PHP Web Application with CRUD functionality. CRUD means Create, Read, Update and Delete. This means our Web Application retrieve data, insert data, update data and delete data from a MySQL database.

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