# CST8257 Web Application Development

# Lab 1

## Objective

Install and configure a PHP Integrated Development Environment.

## Credit and Due Date

This lab is the most important lab in this course. Without completing this lab, you will not be able to run class examples and proceed to the subsequent labs. You should complete this lab before the second lecture of the course.

To earn 5 points, you are required:

1. Complete and submit the lab as required before the due date (see Brightspace post for the due date).

2. No demo is required for this lab.

## Background

Any Web application development environment must contain the following components:

1. A Web Server, also known as HTTP Server, to serve the HTTP requests from clients
2. A script engine to dynamically generate HTML per given scripts (C#, PHP, etc.)
3. A database, almost all dynamic web applications will have a database
4. A text editor/organizer for editing, generating/suggesting and syntax checking source code
5. File organizer to organize multi-source-file applications into projects.
6. (optional) A Debugger for testing and debugging the source code for more complicated applications.
7. (optional) A PHP web application framework providing code templates, application scaffolding and class/function libraries.

In ASP.NET development environment where all components are from Microsoft and integrated into one single product; Visual Studio, you only need to install Microsoft Visual Studio. In contrast, in PHP development "eco-system", the components come from different vendors, and for each component, there are a variate of competing choices. You will have to install them individually and configure to integrate them to work as an Integrated Development Environment.

**Note:** By installing **PHP Tools for Visual Studio** extension, you can use Visual Studio as an effective IDE (less MySQL database integration) for PHP Web application development. We choose not to use Visual Studio in this course for the following reasons:

1. PHP Tools for Visual Studio is not free, you may have to pay after the 30-day trial period.

2. If an organization choose to use PHP as its server-side scripting technology, more likely, the organization does not possess the licence for Microsoft Visual Studio. If you join such organizations, you will not have Visual Studio at your disposal.

3. To broad your knowledge and skills of website development environments as well as your ability to install/uninstall necessary applications and/or services, setup, configuration, and trouble-shooting development environments. These are the essential abilities all software engineers must possess.

## Install AMPPS Package

AMPPS package is a software bundle including the following individual components

- Apache HTTP Server
- PHP Script Engine
- MySQL Database

**Note**:

- There are many such packages which bundle all three components, such as XAMP, WAMP, etc. If you prefer, you can use any of these packages.

- If you use MacBook, you can also choose to use MAMP

1. Download the most recent version of AMPPS from: http://www.ampps.com

2. After installation, you can start AMPPS by run Ampps.exe in the AMPPS' installation folder. Once started, you will see an AMPPS control panel:

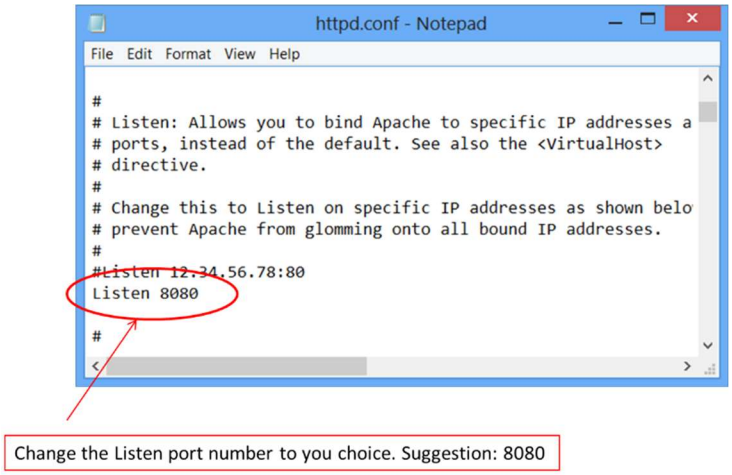

3. Change port number

You may encounter the following error message when starting the Apache Web Server:


It is because a port number can only be bound to one service/application at a time. If the port number 80 has been used by another program, most likely by Microsoft IIS (Microsoft's Web Server), Apache will not be able to start. You have the following two choices:

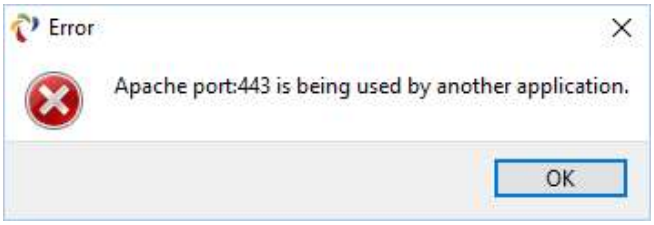
- Stop IIS
- Bind Apache to another port number, e.g. 8080

To bind Apache to a different port, edit the Apache's configuration file **httpd.conf** follow the screen captures below:




Save the change to the Apache configuration file and try to start Apache again. You may be prompted to open your firewall to allow Apache to penetrate the firewall.

If you encounter the following error message:

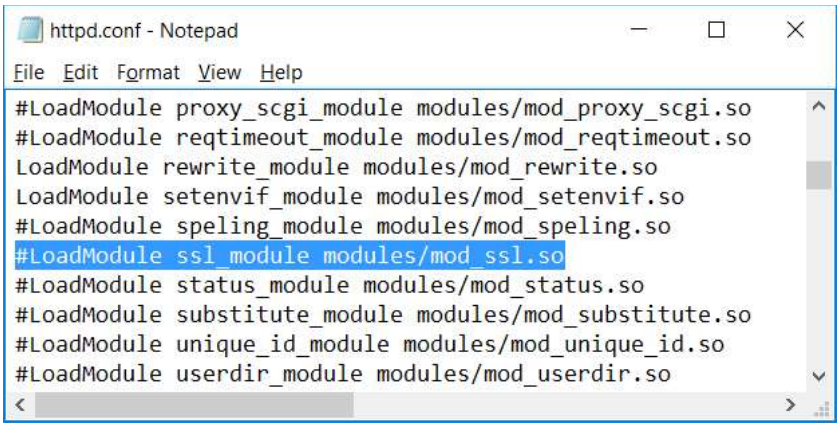



You have to edit Apache's configuration file again to comment out the following line:

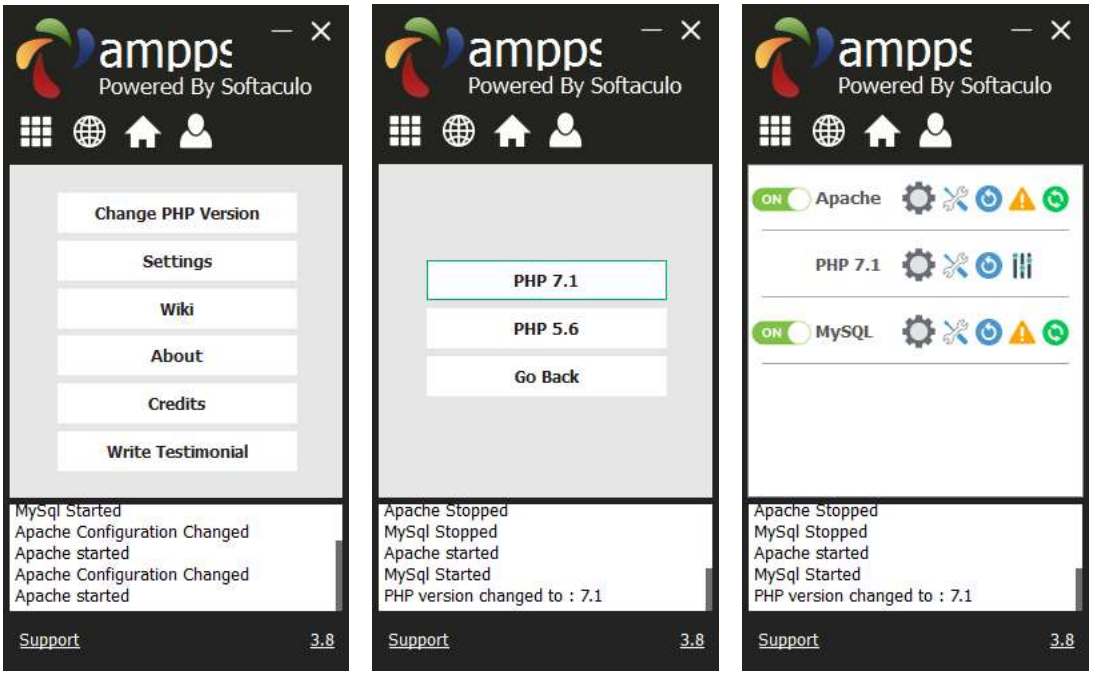
LoadModule ssl_module modules/mod_ssl.so

That is to change the line to:

#LoadModule ssl_module modules/mod_ssl.so



4. Change PHP Version to the lastest.

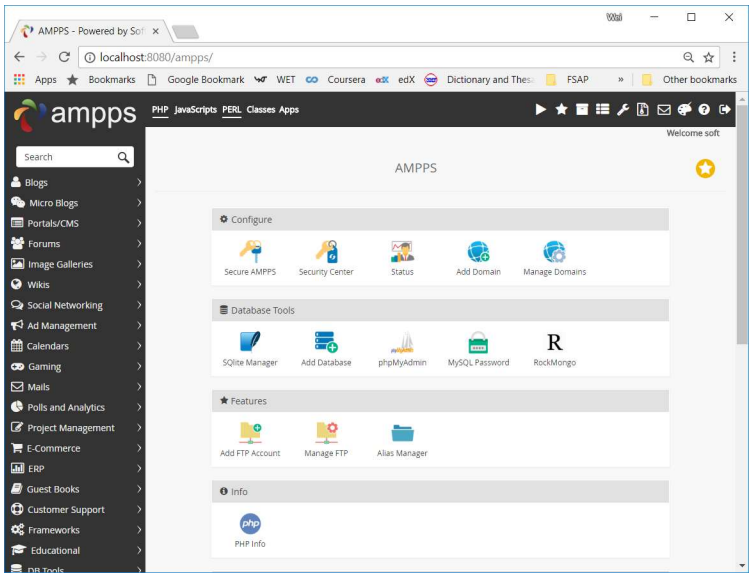



**Note:**

If you previously already have MySQL database installed on your laptop, which may prevent AMPPS's MySQL from starting. You should uninstall the existing MySQL from your laptop. Google how to remove/uninstall MySQL.

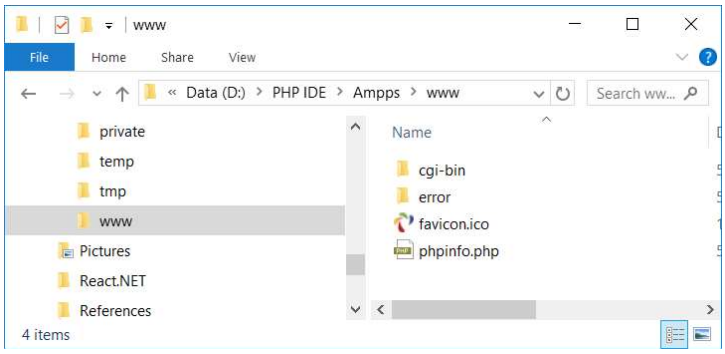
5. Verify your installation

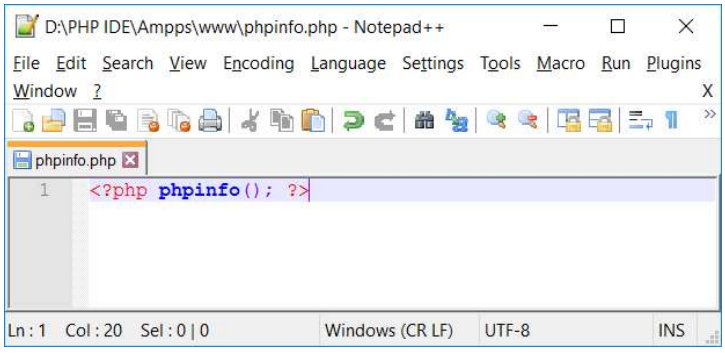
   - Once started Apache successfully, start a browser of your preference and go to the installed AMPPS' home page at:
     http://localhost:8080/ampps/index.php




- By default Apache's document root is **www** folder in its installation folder (in my installation, it is D:\PHP IDE\Ampps\www). Use your preferred text editor to create a php file **phpinfo.php** containing a single line:

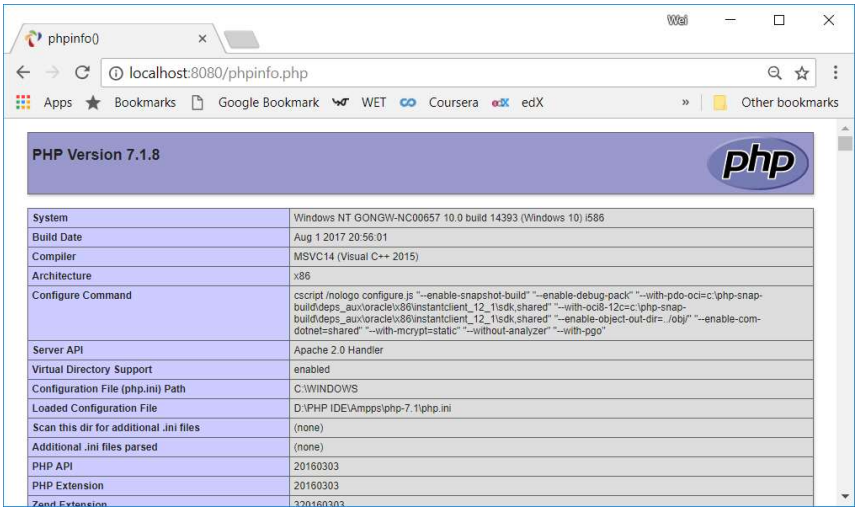
```
<?php phpinfo(); ?>
```




**Note**: phpinfo( ) is a build-in function defined in PHP script engine, it returns detailed information about the php installation on the host.

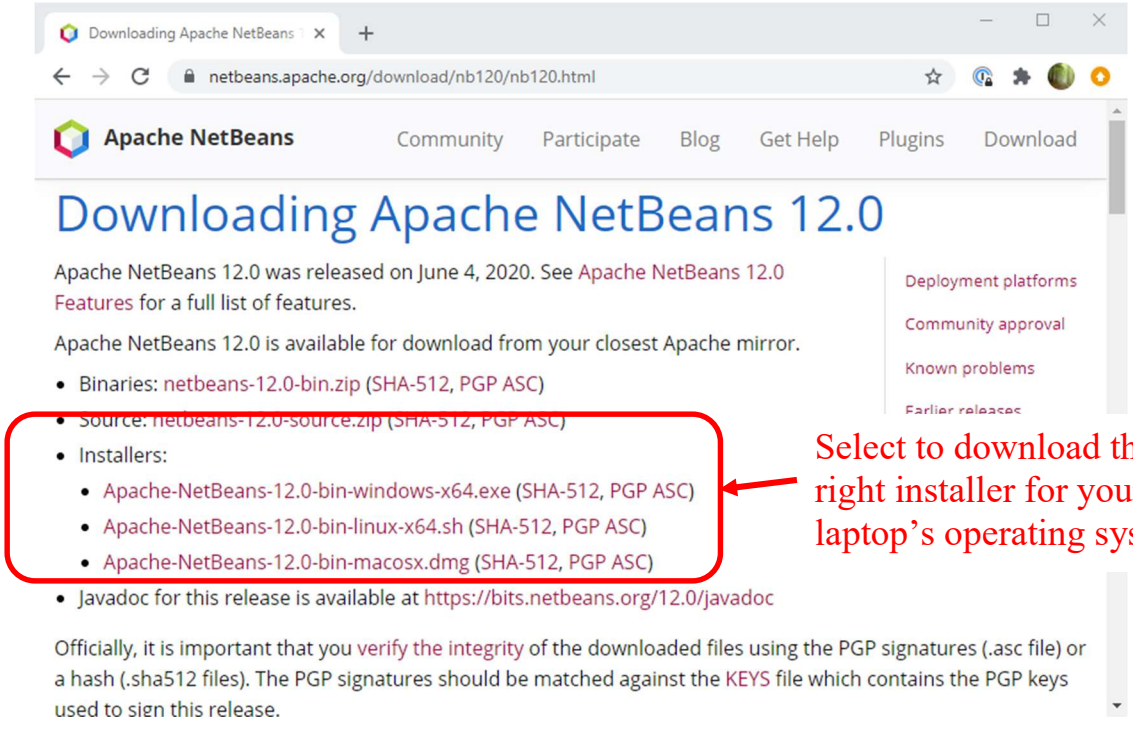
- Start your preferred browser and go to page: http://localhost:8080/phpinfo.php



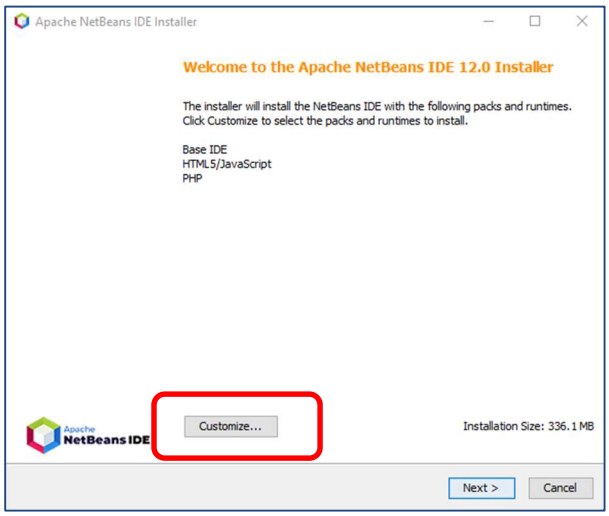

## Install NetBeans

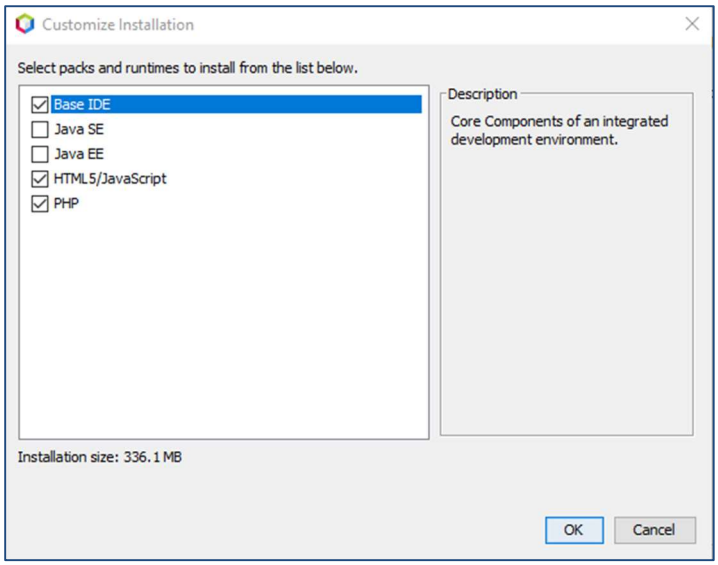
NetBeans is one of the best open-source development environments for a variate of programming languages. NetBeans PHP also includes two most popular PHP frameworks. You can download NetBeans PHP installation file from the follow website:

https://netbeans.apache.org/download/nb120/nb120.html



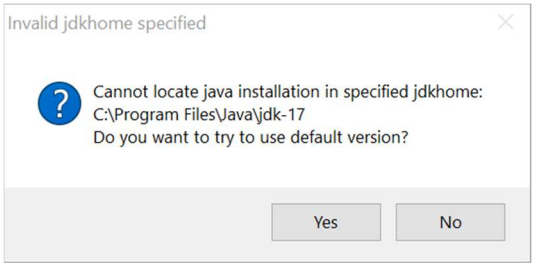
Once the download completes, run the installation file and follow the wizard to complete the installation.




**Note:**

You may be prompted for the location of Java installation when you first start NetBeans as:



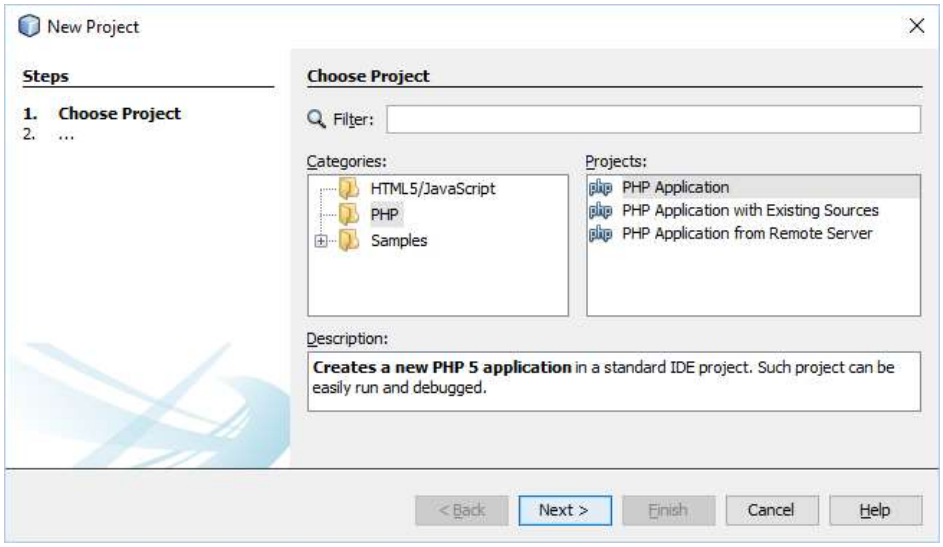
Click Yes button, NetBeans will search the Java SDK installed on your laptop.

In the unlikely case, you do not have Java JDK installed on your laptop yet, you can download and install Java SE JDK from:

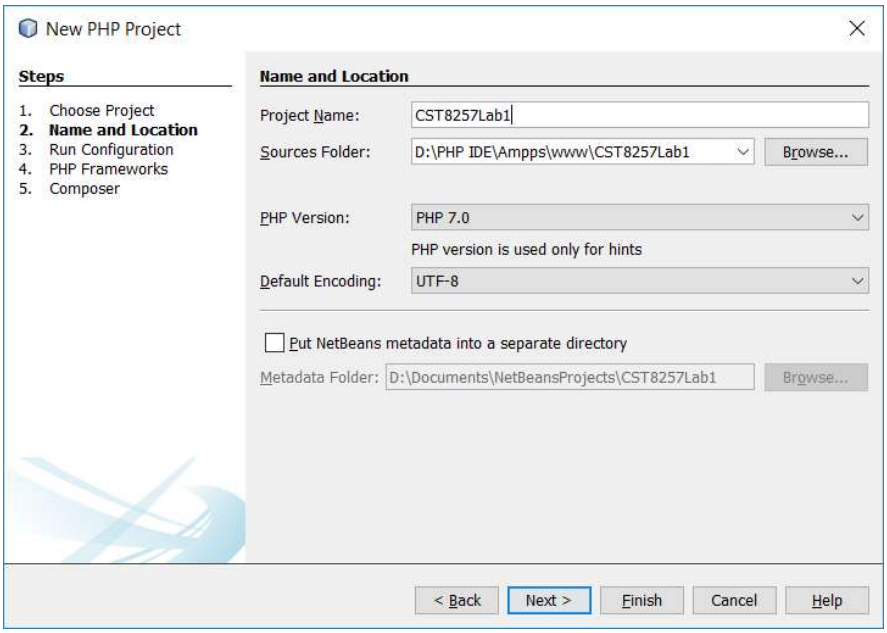
https://www.oracle.com/java/technologies/downloads/

## Create Your First PHP Web Application

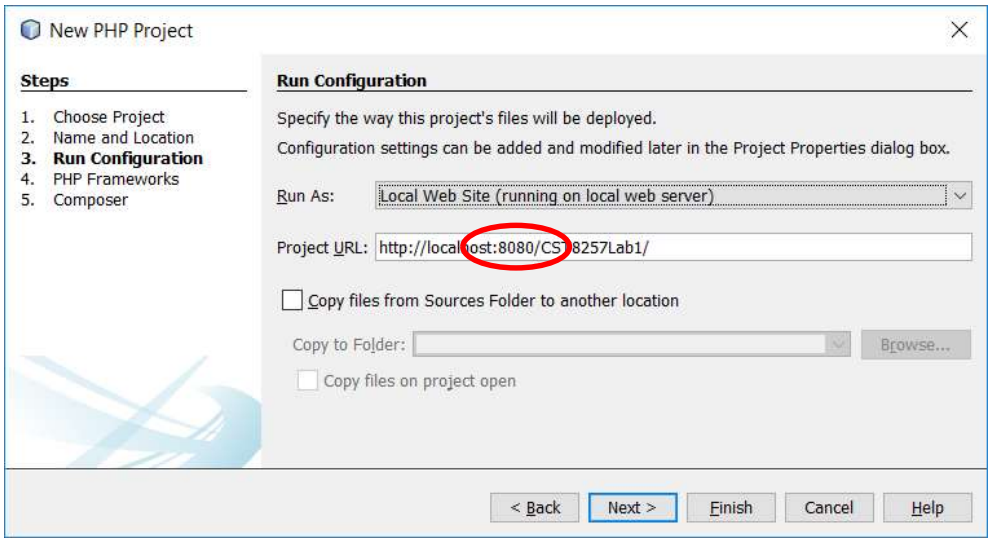
1. Start NetBeans (f not yet) and select menu item "File > New Project …". On the New Project dialog, select **PHP** and **PHP Application**.




2. Enter **CST8257Lab1** as project name. Go to AMPPS' document root (in my AMPPS installation, it is D:\PHP IDE\Ampps\www) and create a folder **CST8257Lab1**, set it as Source Folder (use Browse … button) of the project.

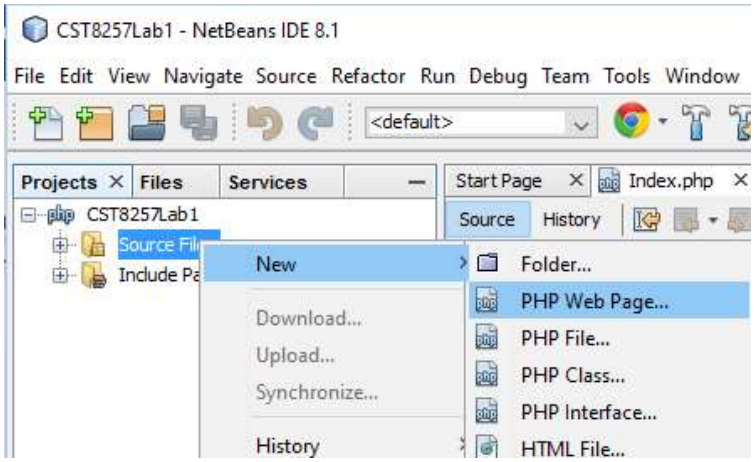



3. Make sure you enter the correct port number to the project URL (8080 in my case)

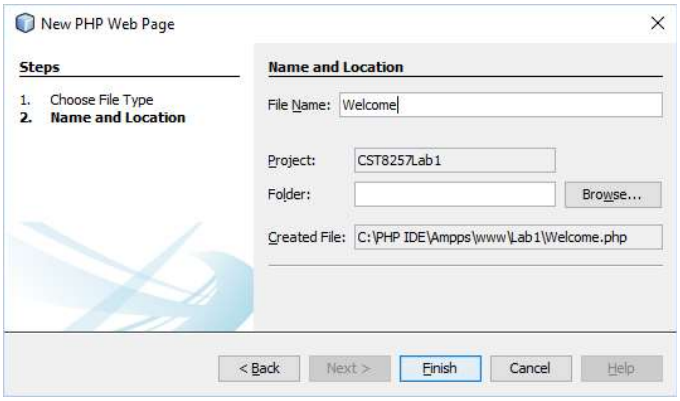



4. Skip the next two steps and click Finish.

5. Right click on the Source Files folder and select **New > PHP Web Page …**




6. Enter Welcome as the file name and click Finish



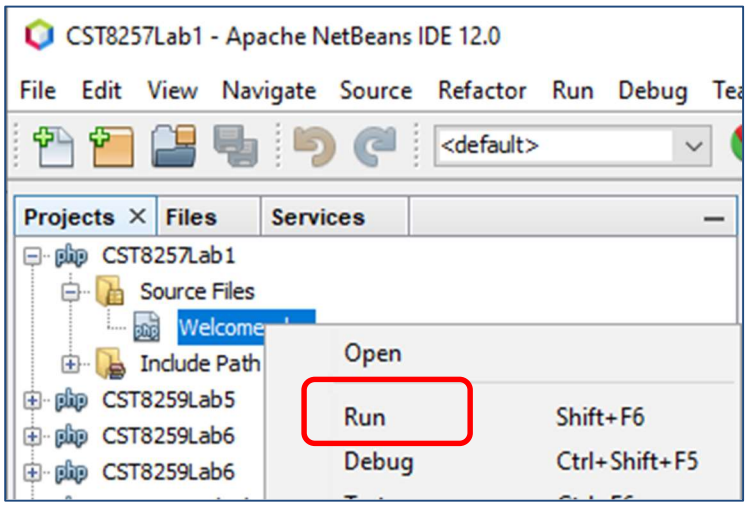

7. Edit the created Welcome.php page so that it looks as below:

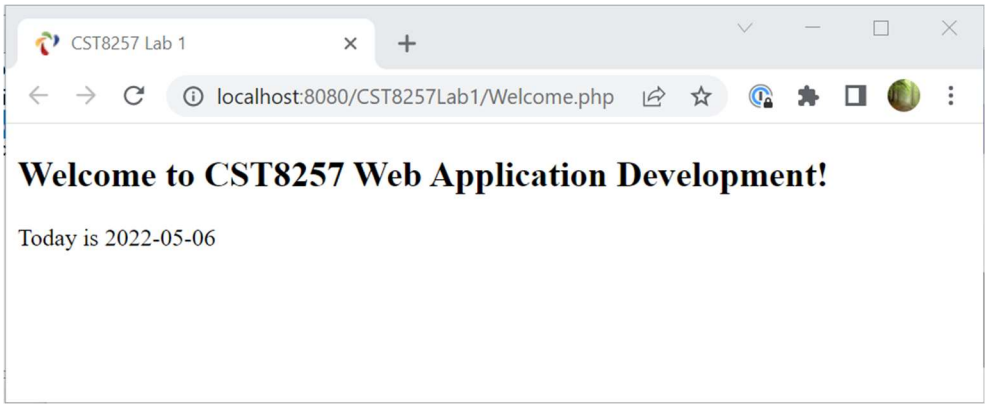
```
<html>
    <head>
        <meta charset="UTF-8">
        <title></title>
    </head>
    <body>
        <?php
            //set time zone
            date_default_timezone_set("America/Toronto");

            //get current date in the format of YYYY-MM-DD
            $today = date("Y-m-d");
        ?>
        <h2>Welcome to PHP!</h2>

        <!-- display current date -->
        Today is <?php print( $today ); ?>
    </body>
</html>
```

8. Right click Welcome.php and select **Run**. You should see your preferred web browser opens and displays the page Welcome.php.




**End of Lab 1**