



UMS  
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FAKULTI KOMPUTERAN DAN INFORMATIK

# Introduction to PHP x PYTHON INTEGRATION

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# PHP x Python Integration

- Objectives of this workshop:
  - To introduce the web-based application technology
  - To explain the requirements of PHP x Python application integration
  - To provide samples and hands-on sample applications of PHP x Python
- This sharing session is to explain the hands-on integration of these two languages
  - PHP = Server-side processing (frontend)
  - Python = Backend application support

# Technology

## PHP + Python

- Implementation in WAMP, XAMPP based on Common Gateway Interface (CGI)
- Implementation
  - **Without Framework (we do this)**
  - With Framework: Laravel, Yii2, CodeIgniter (MVC framework)

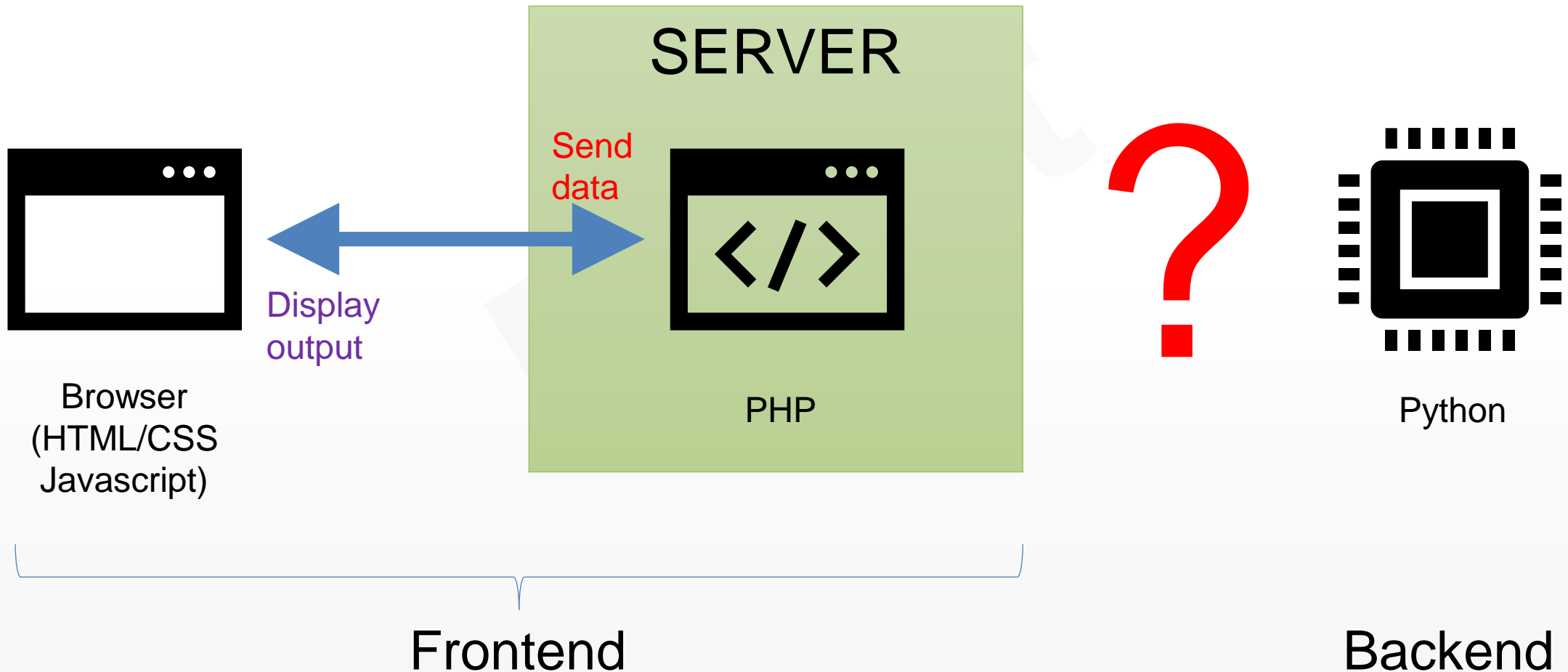
## DJANGO Framework

- Django is a high-level Python framework which provides support for web apps.
- MVT framework
- Need to be installed

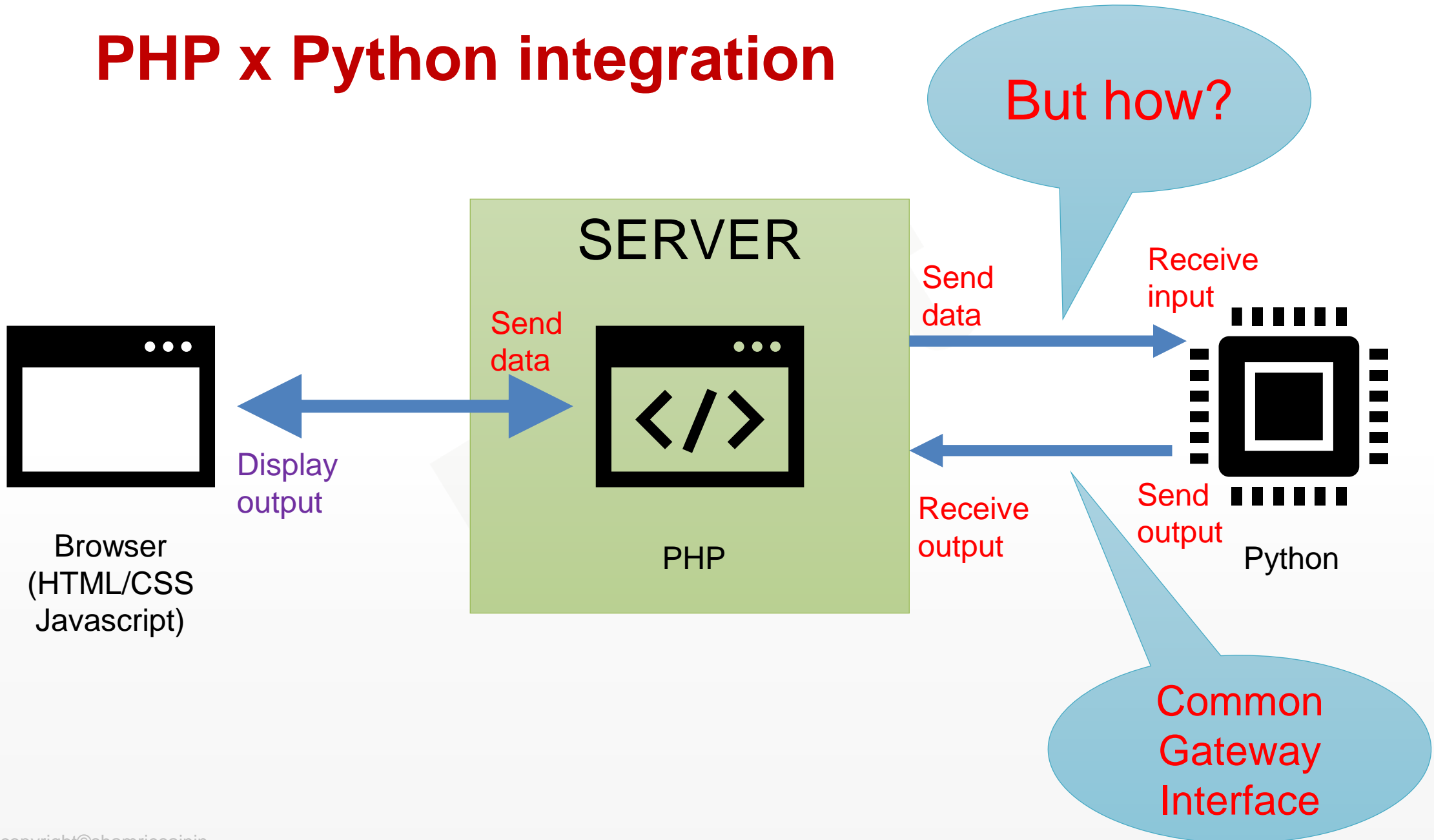
## Flask

- Lightweight Web Server Gateway (WSGI) Interface web application framework with Python
- Flask is said to be more Pythonic than the Django

# LOST? I don't know how to integrate...



# PHP x Python integration



# REQUIREMENTS

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# Before we begin

- This workshop is NOT to learn in detail about HTML, CSS, JavaScript, PHP
- This workshop NOT to learn in detail about Python programming
- This workshop is to provide how to integrate PHP and Python using basic examples
- The examples in this workshop are running on WAMP 3.0.4, PHP Version 5.6.19 and Python 3.8
- Not implemented in PHP framework (such as Laravel, CodeIgniter, Yii, etc.)

# Pre-requisite

- Web programming (HTML, PHP)
  - You are already familiar with web development
- Python
  - You have already had a basic Python programming



# Requirements

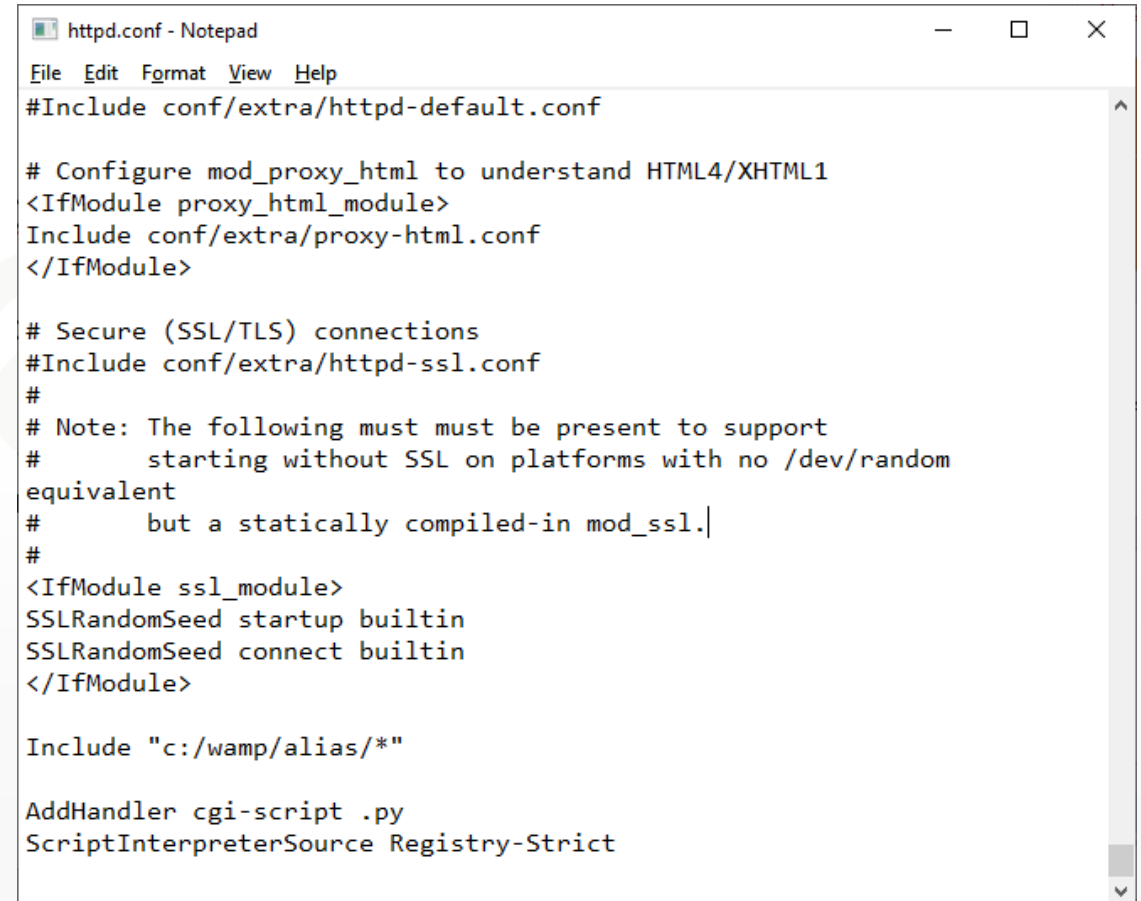
- WAMP/XAMPP local server
- Python 3.8
- Python IDE (preferably lightweight such as Thonny)
- Do not use other environments such as Anaconda. (but if you do, make sure you know the environment very well)
- Python Packages
  - sys, pandas, sklearn, numpy, pickle, json, vaderSentiment, etc.

# Requirements: Server Handler

- Handler in httpd.conf (WAMP/XAMPP), paste in the end of the file
- Save and restart WAMP/XAMPP server

AddHandler cgi-script .py

ScriptInterpreterSource  
Registry-Strict



```
httpd.conf - Notepad
File Edit Format View Help
#Include conf/extra/httpd-default.conf

# Configure mod_proxy_html to understand HTML4/XHTML1
<IfModule proxy_html_module>
Include conf/extra/proxy-html.conf
</IfModule>

# Secure (SSL/TLS) connections
#Include conf/extra/httpd-ssl.conf
#
# Note: The following must must be present to support
#       starting without SSL on platforms with no /dev/random
#       equivalent
#       but a statically compiled-in mod_ssl.
#
<IfModule ssl_module>
SSLRandomSeed startup builtin
SSLRandomSeed connect builtin
</IfModule>

Include "c:/wamp/alias/*"

AddHandler cgi-script .py
ScriptInterpreterSource Registry-Strict
```

# Requirements: Python Installation

- Recommended to Install PHP in **C:\users\...** folder.
- Install Python 3.8 if you plan to use tensorflow. Python 3.9 is not yet supported.

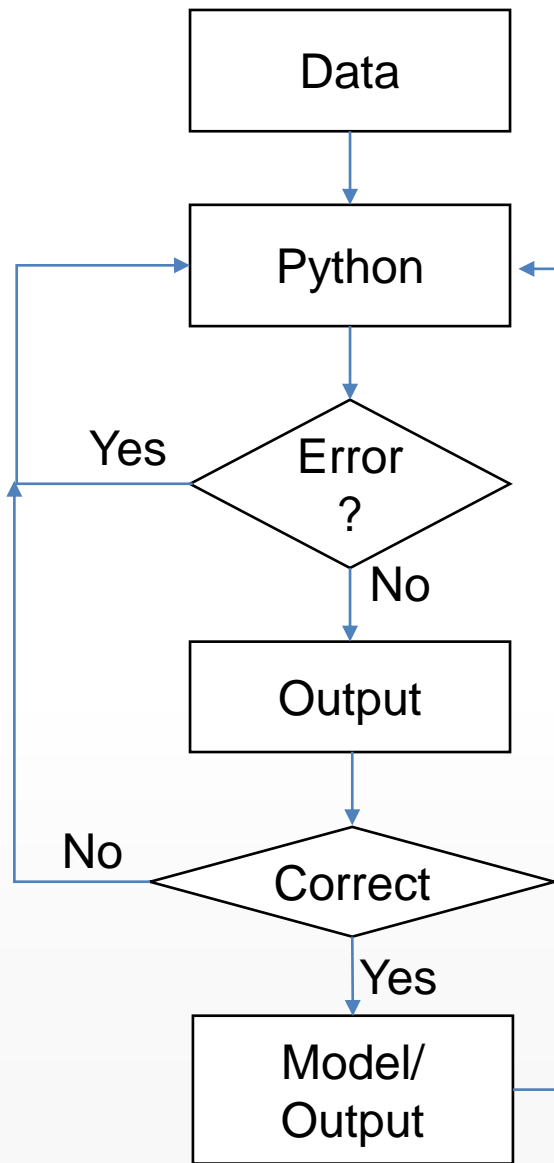


# Python and packages path

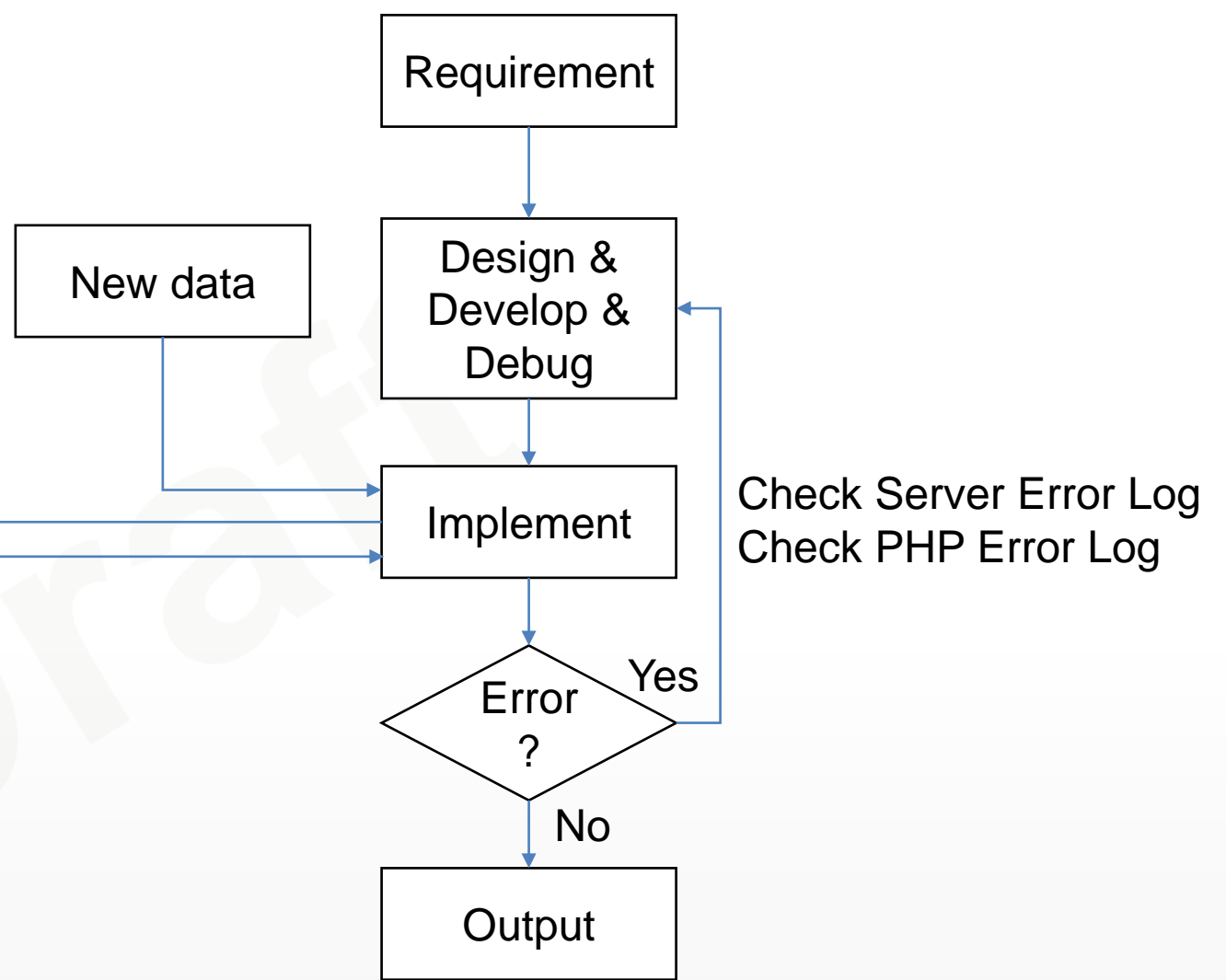
- Check your Python executable complete path. May be different according to your Python installation and version
- Example
  - C:\Users\name\AppData\Local\Programs\Python\Python38\python.exe
- Packages
  - Make sure you know where the packages installed
  - Check either in Local or Roaming
  - **pip install <packagename> --user** command will install in Roaming

# Flow of work in PHP x Python

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Python Project



Web/PHP Project

# EXAMPLE 1

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Testing PHP and Python Connection

# Example 1: Test your connection

- Change to your (**name**) python.exe path!
- In Python file, make sure PATH to python.exe is in the first line.

## test.php

```
<?php
$x = 1;
$output =
exec("C:\Users\name\AppData\Local\
Programs\Python\Python38\python.exe
test.py $x");
var_dump($output);
echo $output;
?>
```

## test.py

```
#C:\Users\name\AppData\Local\Progr
ams\Python\Python38\python.exe

import sys
var = sys.argv

print("Hello from Python, values(s)
received is: " + str(var))
```



# Important part in PHP file

- \$output =  
exec("C:\Users\name\AppData\Local\Programs\Python\Python38\python.exe test.py \$x");
  - C:\Users\name\AppData\Local\Programs\Python\Python38\python.exe is your python.exe path
  - test.py is the python file to be executed
  - \$x is the data/argument passed to Python

# Important part in Python file

- `#C:\Users\name\AppData\Local\Programs\Python\Python38\python.exe`
  - Must be the first line in every Python file for (PHPxPython)
  - Change to your path
- `import sys`
  - Required to enable argument reception from PHP
- `var = sys.argv`
  - Assign argument(s) received from PHP in array type
  - `sys.argv[0]` is the python file to be executed
  - `sys.argv[1]` is the 1st value (argument) passed from PHP
  - `sys.argv[2]` is the 2nd value (argument) passed from PHP if available.
  - If more arguments passed, then get based on the index number
- `print("Hello from Python, values(s) received is: " + str(var))`
  - Concatenating variable from `sys.argv` need to cast to str

The screenshot shows a web browser window with the address bar displaying `localhost:8080/python/test.php`. The page content shows the output of a PHP script, which includes a red string representation of the output and a human-readable version. Two callout boxes provide context: a green one on the left explains the `echo $output;` statement and the data format, and an orange one on the right explains the `var_dump($output);` statement.

localhost:8080/python/test.php

C:\wamp\www\python\test.php:5:string 'Hello from Python, values(s) received is: ['test.py', '1']' (length=58)

Hello from Python, values(s) received is: ['test.py', '1']

Output from the PHP statement  
echo \$output;

Note: Python will receive input  
from PHP as array, however;  
PHP will not receive output from  
Python as array but a single  
String.

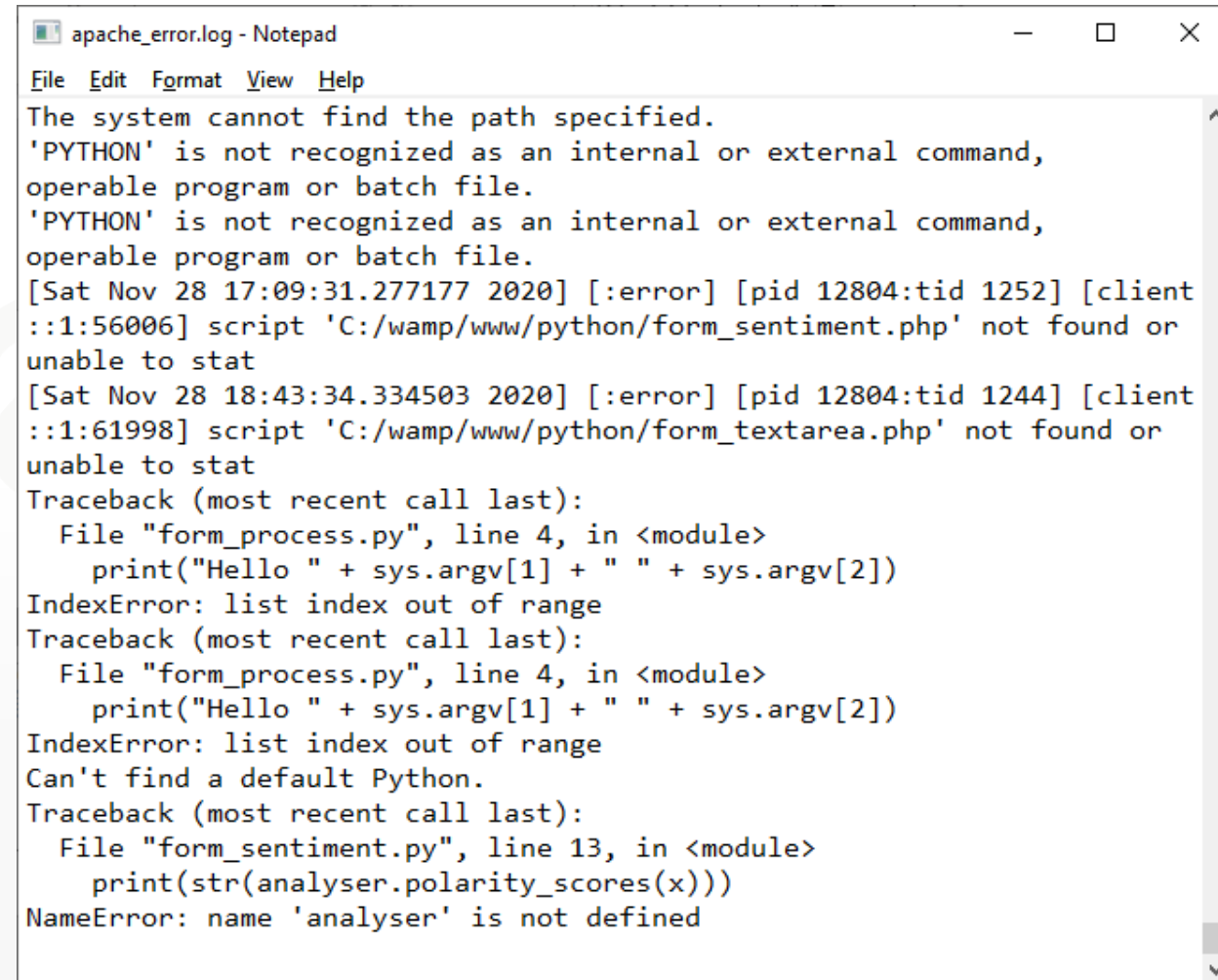
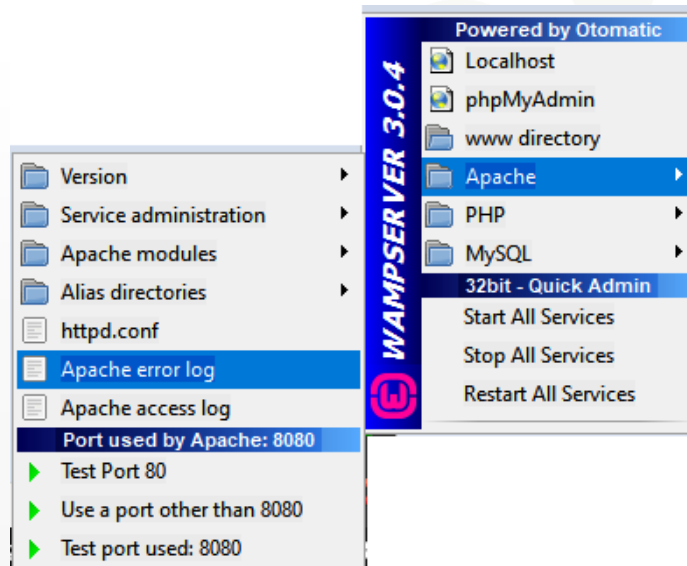
Unless if you send JSON array  
back to PHP

The 1st line is output of PHP  
statement, var\_dump(\$output);



# None is displayed in the browser? Don't panic

- Check your code (PHP/Python)
- Check Server Error Log



# Caution

- Calling and submitting values from PHP to Python is very sensitive
- Example:
  - `$output = exec(...)` - Python path and (.py) file to be executed and variables must be in **one line**
  - Long text (with white space) input must be escaped with `escapeshellarg($input)`
- Output from Python must be single print command only to be able to be submitted back to PHP
  - If you have many output to be submitted to PHP, use a JSON array variable to save all output and print the JSON variable.

# Example: Submitting array (JSON) input to Python

## test\_array.php

```
<?php
$x = 1;
$y = 2;

$input = array($x,$y);
$input = json_encode($input);

$output =
exec("C:\\Users\\name\\AppData\\Local\\Programs\\Python\\Python38\\python.exe test_array.py ". escapeshellarg($input));
var_dump($output);
echo "<p>Output from Python: <br>" . $output . "<p>";
echo "Dump the output from Python as JSON<br>";

var_dump(json_decode($output));
$data = json_decode($output);
echo "Accessing from JSON array:<br>";
foreach($data as $key=>$value) {
    echo "[".$key . "] => " . $value . "<br>";
}
?>
```

## test\_array.py

```
#C:\\Users\\name\\AppData\\Local\\Programs\\Python\\Python38\\python.exe
```

```
import sys
import json
```

```
#input = [1,2]
#input = json.dumps(input)
output = []
```

```
output.append("Values submitted: " + str(sys.argv))
#output.append("Values submitted: " + str(input))
```

```
j = json.loads(sys.argv[1])
#j = json.loads(input)
```

```
for k in j:
    output.append("Return from json: " + str(k))
```

```
print(json.dumps(output))
```

Test this first in Python if this file is providing output, e.g., uncomment  
#input = [1,2]  
#input = json.dumps(input)

Then, comment  
j = json.loads(sys.argv[1]),  
and uncomment  
#j = json.loads(input)

# Output: Submitting array (JSON) input to Python

```
localhost:8080/python/test_array.php
```

```
C:\wamp\www\python\test_array.php:9:string ["Values submitted: ['test_array.py', '[1,2]'], 'Return from json: 1', 'Return from json: 2']" (length=94)
```

Output from Python:  
["Values submitted: ['test\_array.py', '[1,2]'], 'Return from json: 1', 'Return from json: 2']

Dump the output from Python as JSON

```
C:\wamp\www\python\test_array.php:13:
array (size=3)
  0 => string 'Values submitted: ['test_array.py', '[1,2]'] (length=44)
  1 => string 'Return from json: 1' (length=19)
  2 => string 'Return from json: 2' (length=19)
```

Accessing from JSON array:

```
[0] => Values submitted: ['test_array.py', '[1,2]']
[1] => Return from json: 1
[2] => Return from json: 2
```

Output from PHP statement;  
var\_dump(\$output);

```
$data = json_decode($output);
echo "Accessing from JSON array:<br>";
foreach($data as $key=>$value) {
    echo "[".$key . "] => " . $value . "<br>";
}
```

# EXAMPLE 2

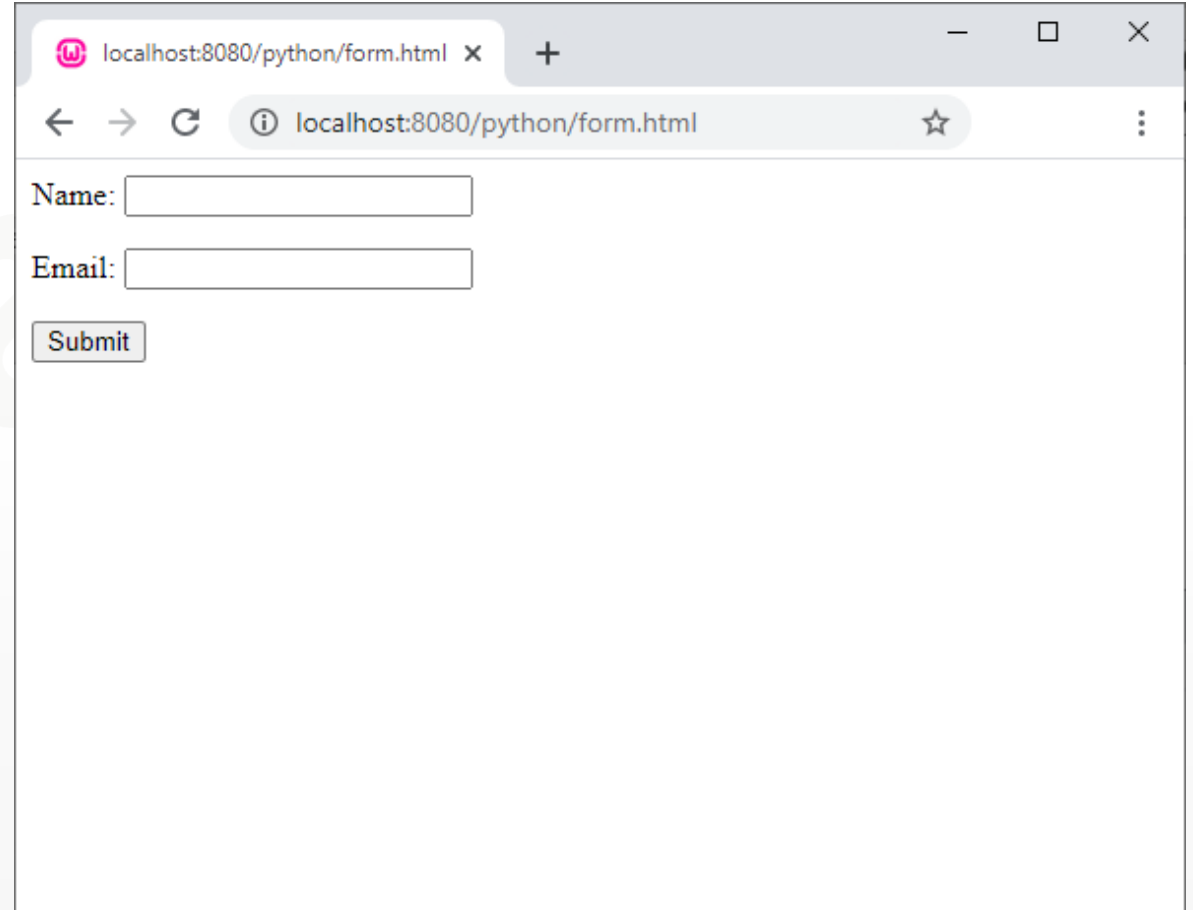
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Working with form input



## Example 2: form.html

```
<html>
<body>
<form method="post" action="form_action.php">
<p>Name: <input type="text"
name="name"></p>
<p>Email: <input type="email"
name="email"></p>
<input type="submit" value="Submit">
</form>
</body>
</html>
```



The screenshot shows a web browser window with the address bar displaying 'localhost:8080/python/form.html'. The page content includes a form with two input fields: 'Name:' followed by a text input box, and 'Email:' followed by an email input box. Below these fields is a 'Submit' button.

## Example 2: form\_action.php

```
<?php
$name = escapeshellarg($_POST["name"]);
$email = escapeshellarg($_POST["email"]);

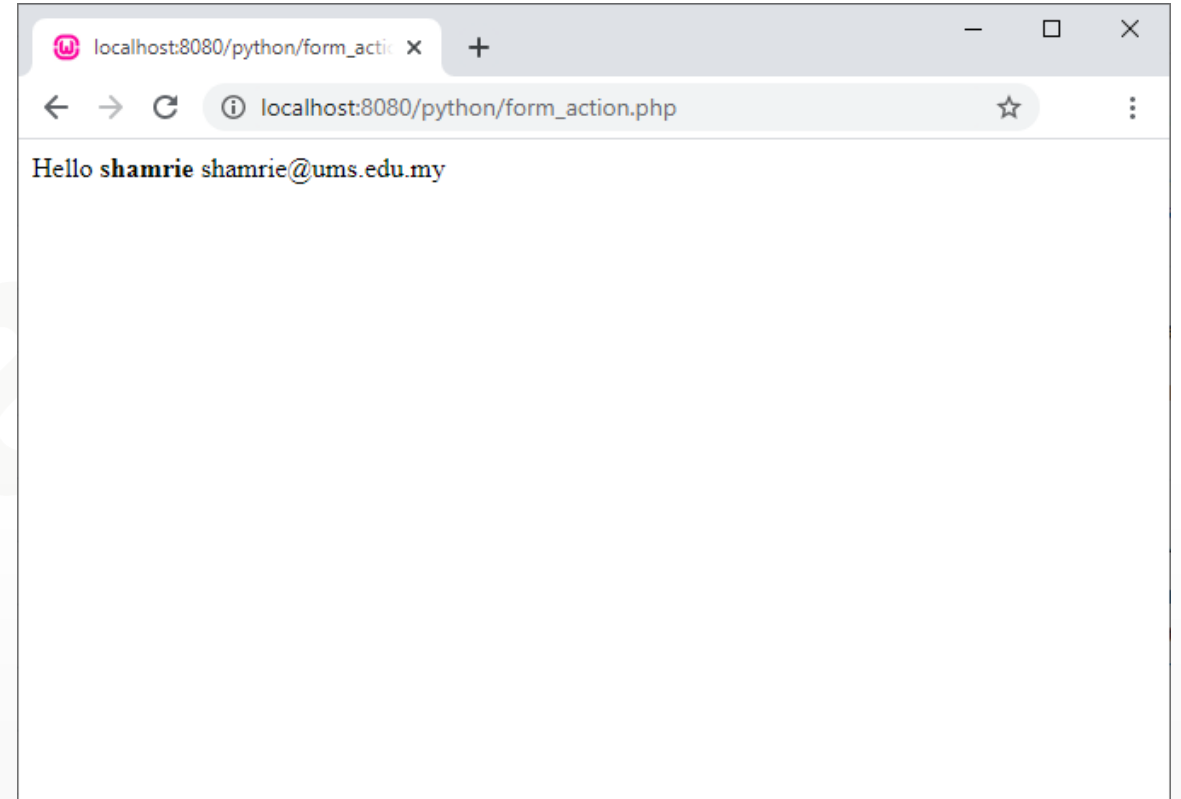
$output =
exec("C:\Users\name\AppData\Local\Programs\Python\
Python38\python.exe form.py $name $email");
echo $output;
?>
```

## Example 2: form.py

```
#C:\Users\name\AppData\Local\Programs\Python\Python38\python.exe
```

```
import sys
```

```
print("Hello " + sys.argv[1] + " " +  
sys.argv[2])
```



**THANK  
YOU**