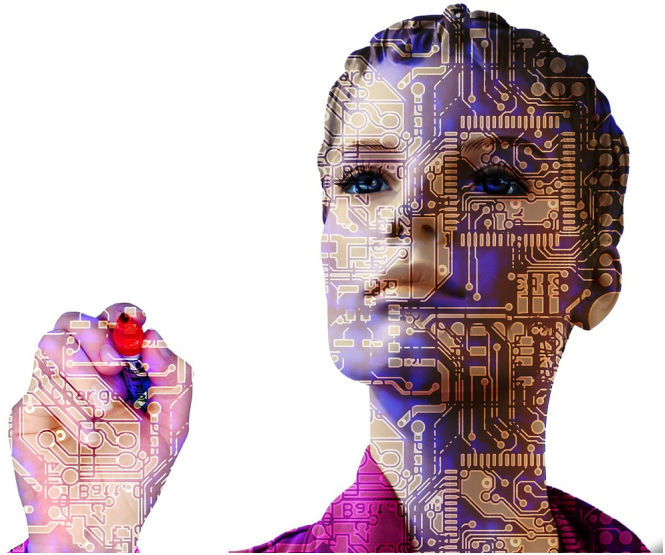# Introduction Backend Development

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What is backend development

- Typically interacts with other machines
- Holds business logic

- Runs on server

Why backend development

- Protect your IP
- Runs powerful machines
- Easily scalable (if written right)
- Serve many clients

How

- Code written on remote machine
- Typical languages include PHP, Python, Ruby, Java, JS

Major Areas

- Database
- Routing
- Queuing
- Validation
- APIs (Interaction with frontend and other applications)

Figure 1: sqllite

Tools

- Languages : PHP, Python, Ruby, Java, JS
- Editors: Netbeans, PHPStorm, SublimeText, VIM
- Frameworks: Laravel, RoR, Django

##Install PHP, MySQL, Apache

- Please see https://www.digitalocean.com/community/tutorials/how-to-install-linux-apache-mysql-php-lamp-stack-on-ubuntu

- Install POSTMan https://www.getpostman.com/

Task 1 Basic Computation

Create a html/cli program that takes in two numbers and outputs their sum.

Task 1 Sample solution

1. Write out php file with the code

   ```php
   <?php
   $sum=$_REQUEST['val1']+$_REQUEST['val2'];
   echo $sum;
   ```

2. Name the file add_two.php

3. Serve the file

   ```
   php -S 0.0.0.0:8888 -t . add_two.php
   ```

Task 2 Sum numbers

Write script that takes in an integer and gives the sum of all numbers preceding it. The number itself inclusive.

eg

Given 5 The system would return 15, (5+4+3+2+1)

Task 2 Suggested solution

```php
<?php
$number=$_REQUEST['number'];
$total=0;

for ($i = 0; $i < $number; $i++) {
        $total+=$i;
}
echo $total;

//Alternative solution
echo "<hr>";
$total=$number * ($number-1) * 0.5;

echo $total;
```

The steps for serving this file are the same as previous

Assignment

Write a php application that accepts comma delimited string and gives us their average

eg

Accepts string such as "12,15,25" and prints out 17.33333

Thank You