

# Anatomy of a PHP Request

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Herman J. Radtke, III  
Joel Salas

# Who are we?



Herman J. Radtke III

VP Engineering at HauteLook

Twitter: @hermanradtke

GitHub: hjr3

Joel Salas

Lead Platform Engineer at HauteLook

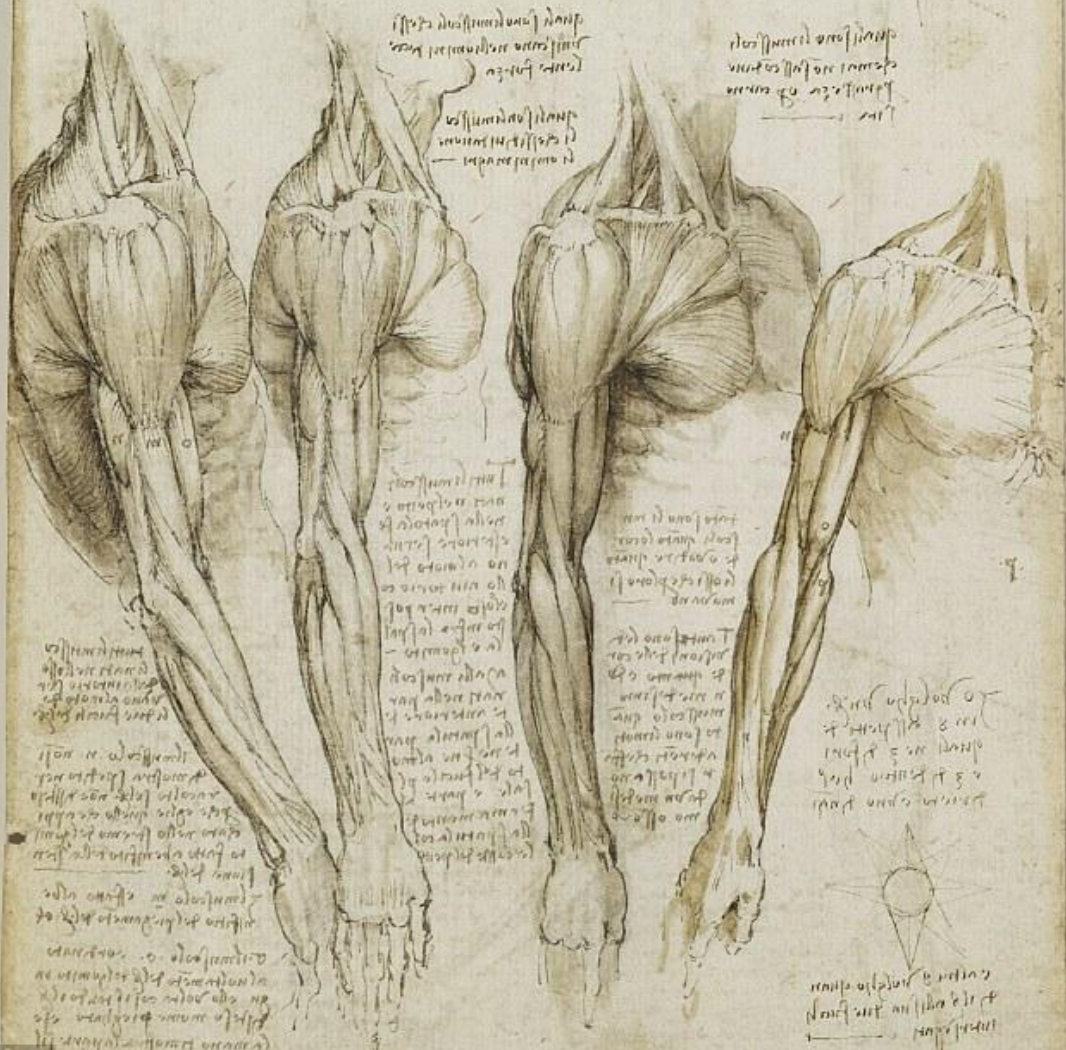
Twitter: @joelesalas

GitHub: joelesalas

joelesalas@gmail.com

# Anatomy:

The science of the **shape** and **structure** of organisms and their parts.



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Handwritten text in a cursive script, likely Hebrew or Arabic, located on the left side of the page, below the fourth anatomical drawing.

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Handwritten text in a cursive script, likely Hebrew or Arabic, located on the right side of the page, below the compass rose.

# Process Lifecycle

**Initialize Module  
(MINIT)**

**Initialize Request  
(RINIT)**

**Execute PHP script**

**Shutdown Request  
(RSHUTDOWN)**

**Shutdown Module  
(MSHUTDOWN)**



# PHP Internals

## SAPI

(mod\_php,  
nginx)

## Extensions

(json, mysql,  
curl)

## Core

(I/O, Request  
Management)

## Zend 2 Engine

(compiler, vm, mm)

# HTTP

GET

POST

PUT

DELETE

HEAD

## SAPI

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Apache (mod\_php)

vs

nginx + php-fpm

**Initialize Module  
(MINIT)**

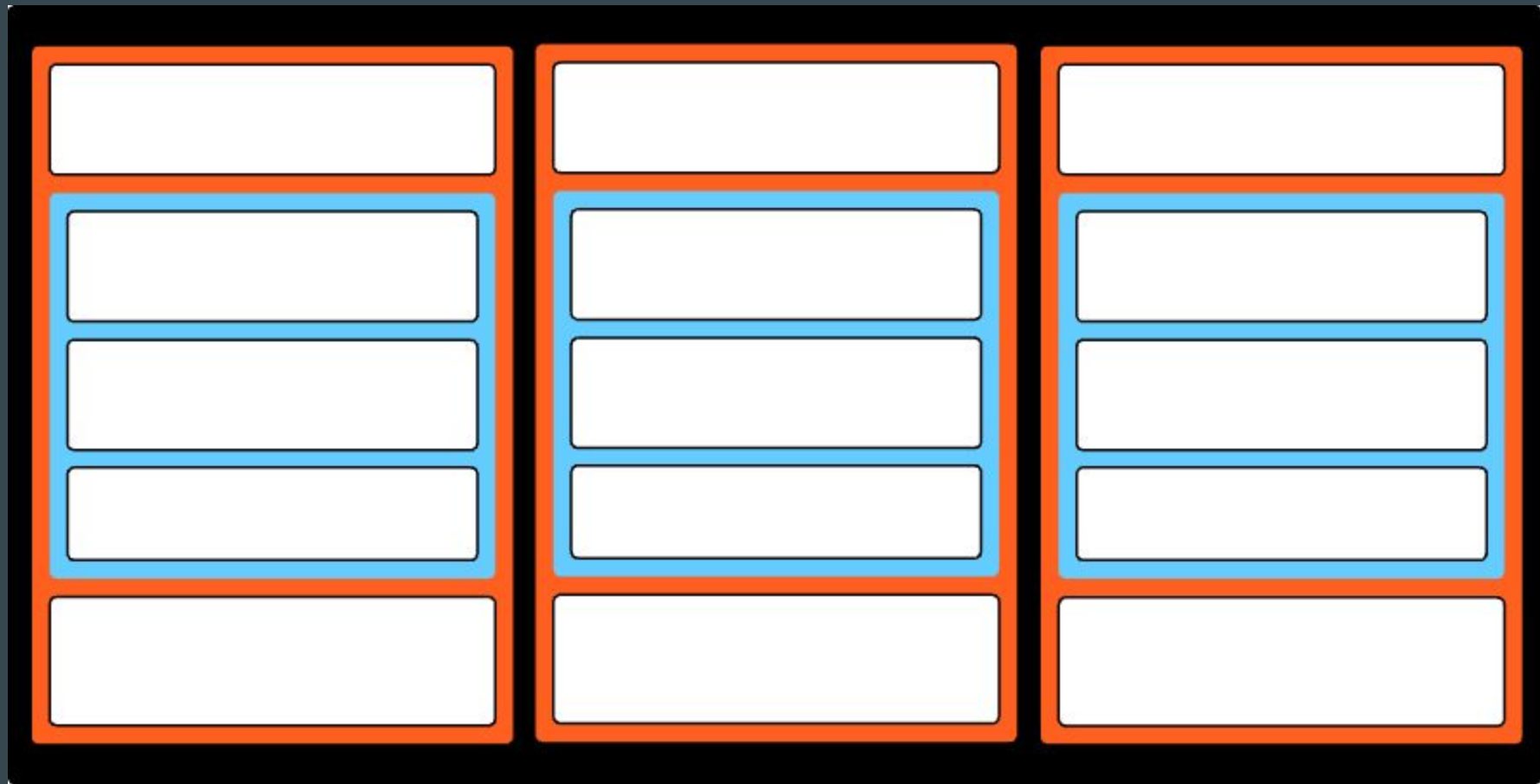
**Initialize Request  
(RINIT)**

**Execute PHP script**

**Shutdown Request  
(RSHUTDOWN)**

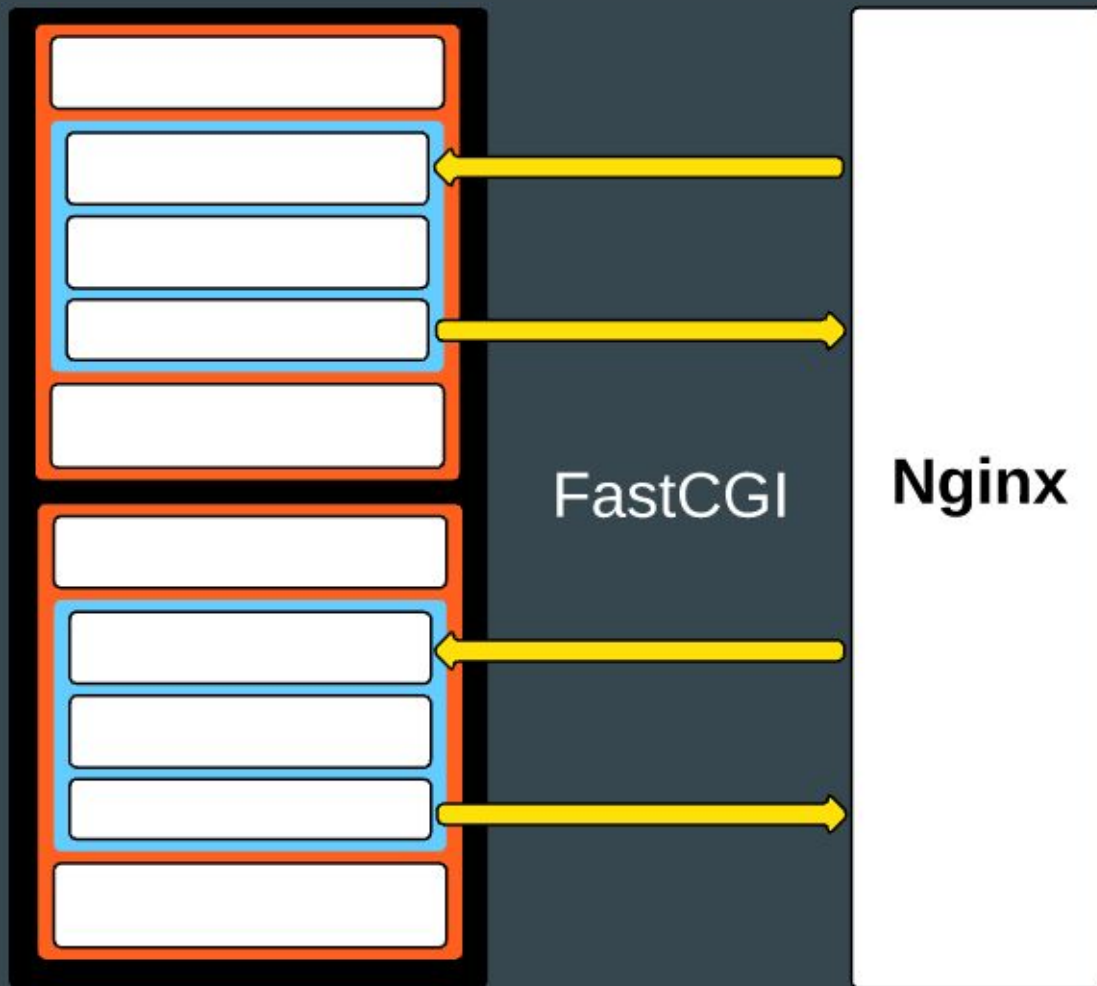
**Shutdown Module  
(MSHUTDOWN)**

**mod\_php**  
**(Apache)**





**FastCGI / FPM  
(NGINX)**



## SAPI

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GET /index.php HTTP/1.

1

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(RSHUTDOWN)**

**Shutdown Module  
(MSHUTDOWN)**

**MINIT**



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# MINIT Example

# Redis Sentinel



# What is Sentinel?

**1. Create a global variable to track Redis server**

**2. If fails, query Sentinel  
again for a server**

**3. Value persists across requests (global in MINIT)**

**RINIT**

**Initialize Module  
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(RSHUTDOWN)**

**Shutdown Module  
(MSHUTDOWN)**



# Microtimers

**Execute**

**Initialize Module  
(MINIT)**

**Initialize Request  
(RINIT)**

**Execute PHP script**

**Shutdown Request  
(RSHUTDOWN)**

**Shutdown Module  
(MSHUTDOWN)**

```
<?php
```

```
// index.php
```

```
require __DIR__ . '/path/to/App.php';
```

```
require __DIR__ . '/path/to/Config.php';
```

```
$config = new Config();
```

```
$app = new App($config);
```

```
<?php
```

```
require
```

```
    dirname(__DIR__).
```

```
    '/vendor/autoload.php';
```

```
<?php
```

```
$vendorDir = dirname(__DIR__);
```

```
$classMap = array(
```

```
    'Legacy_Model' =>
```

```
    $vendorDir . '/path/to/App/Model.php';
```

```
);
```

**What about  
Opcache?**

```
<?php
```

```
echo "Hello SCALE";
```



**ASSIGN !0, 'Hello+SCALE'**

**ECHO !0**

**RETURN null**

**Opcache is global**

# Flatten config files

Cache the  
classmap

# Cache file paths

**stat=0**

**Each request is  
independent**

```
<?php
```

```
$db = new
```

```
PDO('mysql:host=localhost;dbname=test',
```

```
    'username',
```

```
    'password'
```

```
);
```



```
<?php
```

```
$fp = fopen('php://output', 'w');
```

```
fwrite($fp, 'Hello World!');
```

```
fclose($fp);
```

**Warning: session\_start()**  
[function.session-start]:  
Cannot send session cookie -  
**headers already sent** by  
(**output started** at on line 8)

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

```
<p>Hello world!</p>
```

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

**RSHUTDOWN**

**Initialize Module  
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(RSHUTDOWN)**

**Shutdown Module  
(MSHUTDOWN)**

**MSHUTDOWN**

**Initialize Module  
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**Initialize Request  
(RINIT)**

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# Review



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**Questions?**

# HauteLook is hiring!

<http://hautelook.github.io/careers/sr-software-eng-php.html>

# Links

- <http://blog.golemon.com/2008/01/understanding-opcodes.html>
- <http://web.archive.org/web/20101216035343/http://dev-tips.com/featured/output-buffering-for-web-developers-a-beginners-guide>
- <http://www.sitepoint.com/sitepoint-smackdown-php-vs-node-js/>
- [https://www.phusionpassenger.com/library/walkthroughs/basics/ruby/reloading\\_code.html](https://www.phusionpassenger.com/library/walkthroughs/basics/ruby/reloading_code.html)
- <http://www.amazon.com/Extending-Embedding-PHP-Sara-Golemon/dp/067232704X>