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The Skeleton Application - tutorials

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In order to build our application, we will start with the ZendSkeletonApplication available on github. Use Composer to create a new project from scratch:

```
 $ composer create-project -s dev zendframework/skeleton-application
path/to/install
```

This will install an initial set of dependencies, including:

- zend-component-installer, which helps automate injection of component configuration into your application.
- zend-mvc, the kernel for MVC applications.

The default is to provide the minimum amount of dependencies necessary to run a zend-mvc application. However, you may have additional needs that you know at the outset, and, as such, the skeleton also ships with an installer plugin that will prompt you for a number of items.

First, it will prompt:

```
    Do you want a minimal install (no optional packages)? Y/n
```

> **Prompts and default values**
>
> All prompts emitted by the installer provide the list of options available, and will specify the default option via a capital letter. Default values are used if the user presses "Enter" with no value. In the previous example,

> "Y" is the default.

If you answer "Y", or press enter with no selection, the installer will not raise any additional prompts, and finish installing your application. If you anser "n", it will continue prompting you:

```
 Would you like to install the developer toolbar? y/N
```

The developer toolbar provides an in-browser toolbar with timing and profiling information, and can be useful when debugging an application. For the purposes of the tutorial, however, we will not be using it; hit either "Enter", or "n" followed by "Enter".

```
 Would you like to install caching support? y/N
```

We will not be demonstrating caching in this tutorial, so either hit "Enter", or "n" followed by "Enter".

```
 Would you like to install database support (installs zend-db)? y/N
```

We *will* be using zend-db extensively in this tutorial, so hit "y" followed by "Enter". You should see the following text appear:

```
 Will install zendframework/zend-db (^2.8.1)
    When prompted to install as a module, select application.config.php
or modules.config.php
```

The next prompt is:

```
 Would you like to install forms support (installs zend-form)? y/N
```

This tutorial also uses zend-form, so we will again select "y" to install this; doing so emits a similar message to that used for zend-db.

At this point, we can answer "n" to the remaining features:

```
 Would you like to install JSON de/serialization support? y/N
    Would you like to install logging support? y/N
    Would you like to install MVC-based console support? (We recommend
migrating to zf-console, symfony/console, or Aura.CLI) y/N
    Would you like to install i18n support? y/N
    Would you like to install the official MVC plugins, including PRG
support, identity, and flash messages? y/N
    Would you like to use the PSR-7 middleware dispatcher? y/N
    Would you like to install sessions support? y/N
    Would you like to install MVC testing support? y/N
    Would you like to install the zend-di integration for
zend-servicemanager? y/N
```

At a certain point, you'll see the following text:

```
 Updating root package
    Running an update to install optional packages

...

Updating application configuration...

  Please select which config file you wish to inject 'Zend\Db' into:
  [0] Do not inject
  [1] config/modules.config.php
  Make your selection (default is 0):
```

We want to enable the various selections we made in the application. As such, we'll choose `1`, which will then give us the following prompt:

```
   Remember this option for other packages of the same type? (y/N)
```

In our case, we can safely say "y", which will mean we will no longer be prompted for additional packages. (The only package in the default set of prompts that you may not want to enable by default is `Zend\Test`.)

Once the installation is done, the skeleton installer removes itself, and the new application is ready to start!

> **Downloading the skeleton**
>
> Another way to install the ZendSkeletonApplication is to use github to download a compressed archive. Go to https://github.com/zendframework/ZendSkeletonApplication, click the "Clone or download" button, and select "Download ZIP". This will download a file with a name like `ZendSkeletonApplication-master.zip` or similar.
>
> Unzip this file into the directory where you keep all your vhosts and rename the resultant directory to

```
 zf-tutorial .
```

ZendSkeletonApplication is set up to use Composer to resolve its dependencies. Run the following from within your new zf-tutorial folder to install them:

```
 $ composer self-update
$ composer install
```

This takes a while. You should see output like the following:

```
 Installing dependencies from lock file
- Installing zendframework/zend-component-installer (0.2.0)

...

Generating autoload files
```

At this point, you will be prompted to answer questions as noted above.

Alternately, if you do not have Composer installed, but *do* have either Vagrant or docker-compose available, you can run Composer via those:

```
$ vagrant up
$ vagrant ssh -c 'composer install'

$ docker-compose build
$ docker-compose run zf composer install
```

Timeouts

If you see this message:

```
 [RuntimeException]
  The process timed out.
```

then your connection was too slow to download the entire package in time, and composer timed out. To avoid this, instead of running:

> ```
> $ composer install
> ```
>
> run instead:
>
> ```
> $ COMPOSER_PROCESS_TIMEOUT=5000 composer install
> ```
>
> ### Windows users using WAMP
>
> For windows users with wamp:
>
> 1. Install composer for windows. Check composer is properly installed by running:
>
> ```
> $ composer
> ```
>
> 1. Install GitHub Desktop for windows. Check git is properly installed by running:
>
> ```
> $ git
> ```
>
> 1. Now install the skeleton using:
>
> ```
> $ composer create-project -s dev zendframework/skeleton-application path/to/install
> ```

We can now move on to the web server setup.

Web Servers

In this tutorial, we will step you through four different ways to setup your web server:

- Via the PHP built-in web server.
- Via Vagrant.
- Via docker-compose.
- Using Apache.

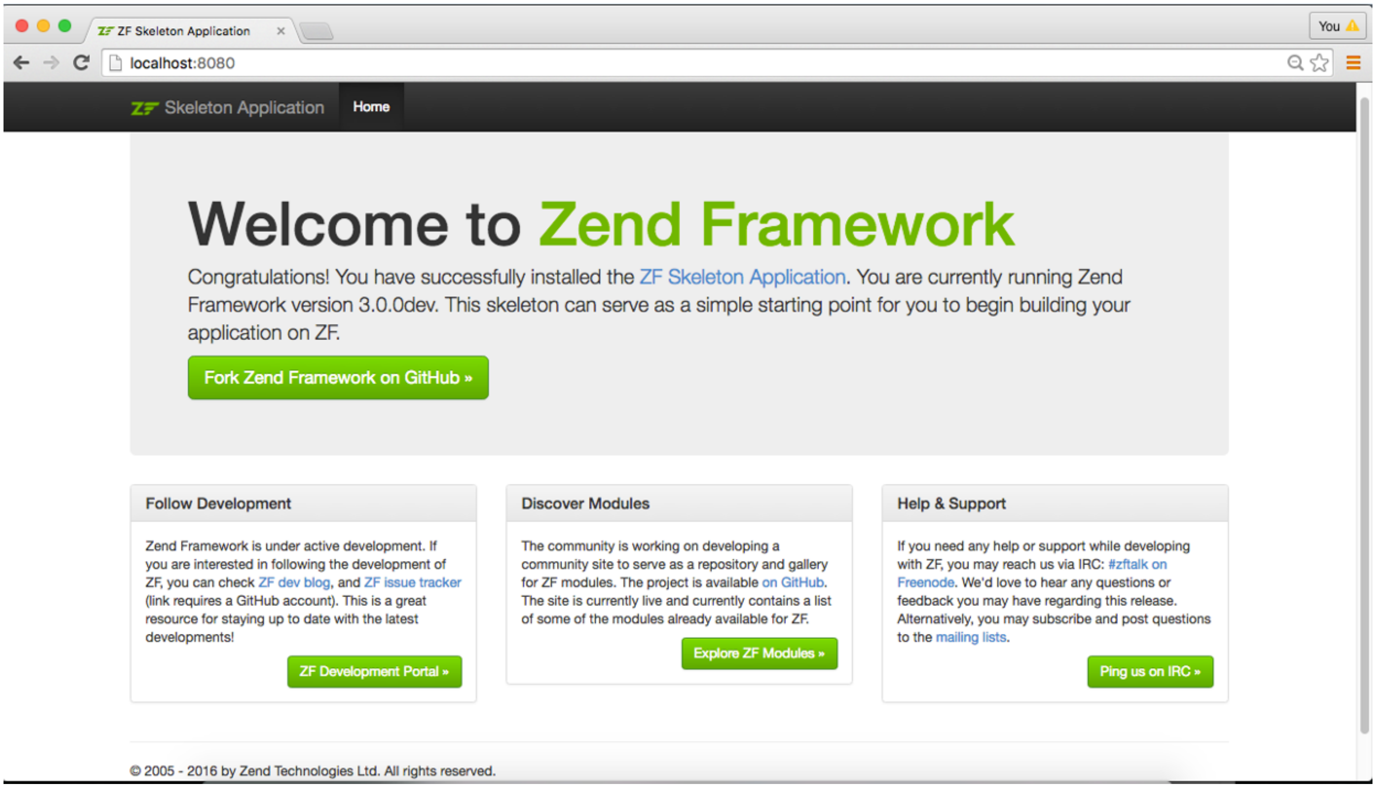
Using the Built-in PHP web Server

You can use PHP's built-in web server when developing your application. To do this, start the server from the project's root directory:

```
$ php -S 0.0.0.0:8080 -t public/ public/index.php
```

This will make the website available on port 8080 on all network interfaces, using `public/index.php` to handle routing. This means the site is accessible via `http://localhost:8080` or `http://<your-local-IP>:8080` .

If you've done it right, you should see the following.



Welcome to Zend Framework

Congratulations! You have successfully installed the ZF Skeleton Application. You are currently running Zend Framework version 3.0.0dev. This skeleton can serve as a simple starting point for you to begin building your application on ZF.

Follow Development

Zend Framework is under active development. If you are interested in following the development of ZF, you can check ZF dev blog, and ZF issue tracker (link requires a GitHub account). This is a great resource for staying up to date with the latest developments!

Discover Modules

The community is working on developing a community site to serve as a repository and gallery for ZF modules. The project is available on GitHub. The site is currently live and currently contains a list of some of the modules already available for ZF.

Help & Support

If you need any help or support while developing with ZF, you may reach us via IRC: #zftalk on Freenode. We'd love to hear any questions or feedback you may have regarding this release. Alternatively, you may subscribe and post questions to the mailing lists.

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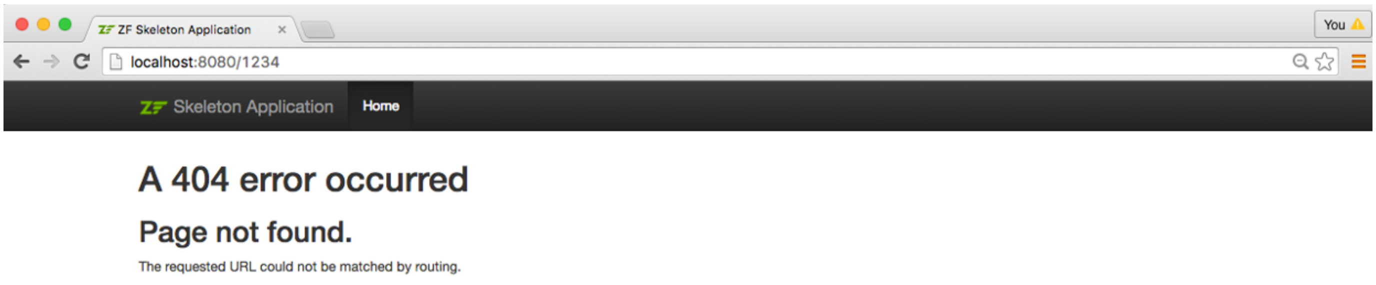
To test that your routing is working, navigate to `http://localhost:8080/1234` , and you should see the following 404 page:



A 404 error occurred

Page not found.

The requested URL could not be matched by routing.

No Exception available

> **Development only**
>
> PHP's built-in web server should be used **for development only**.

Using Vagrant

Vagrant provides a way to describe and provision virtual machines, and is a common way to provide a coherent and consistent development environment for development teams. The skeleton application provides a `Vagrantfile` based on Ubuntu 14.04, and using the `ondrej/php` PPA to provide PHP 7.0. Start it up using:

```
$ vagrant up
```

Once it has been built and is running, you can also run composer from the virtual machine. As an example, the following will install dependencies:

```
$ vagrant ssh -c 'composer install'
```

while this will update them:

```
$ vagrant ssh -c 'composer update'
```

The image uses Apache 2.4, and maps the host port 8080 to port 80 on the virtual machine.

Using docker-compose

Docker containers wrap a piece of software and everything needed to run it, guaranteeing consistent operation regardless of the host environment; it is an alternative to virtual machines, as it runs as a layer on top of the host environment.

docker-compose is a tool for automating configuration of containers and composing dependencies between them, such as volume storage, networking, etc.

The skeleton application ships with a `Dockerfile` and configuration for docker-compose; we recommend using docker-compose, as it provides a foundation for mapping additional containers you might need as part of your application, including a database server, cache servers, and more. To build and start the image, use:

```
$ docker-compose up -d --build
```

After the first build, you can truncate this to:

```
$ docker-compose up -d
```

Once built, you can also run commands on the container. The docker-compose configuration initially only defines one container, with the environment name "zf"; use that to execute commands, such as updating dependencies via composer:

```
$ docker-compose run zf composer update
```

The configuration includes both PHP 7.0 and Apache 2.4, and maps the host port 8080 to port 80 of the container.

Using the Apache Web Server

We will not cover installing Apache, and will assume you already have it installed. We recommend installing Apache 2.4, and will only cover configuration for that version.

You now need to create an Apache virtual host for the application and edit your hosts file so that `http://zf-tutorial.localhost` will serve `index.php` from the `zf-tutorial/public/` directory.

Setting up the virtual host is usually done within `httpd.conf` or `extra/httpd-vhosts.conf` . If you are using `httpd-vhosts.conf` , ensure that this file is included by your main `httpd.conf` file. Some Linux distributions (ex: Ubuntu) package Apache so that configuration files are stored in `/etc/apache2` and create one file per virtual host inside folder `/etc/apache2/sites-enabled` . In this case, you would place the virtual host block below into the file `/etc/apache2/sites-enabled/zf-tutorial` .

Ensure that `NameVirtualHost` is defined and set to `*:80` or similar, and then define a virtual host along these lines:

```
<VirtualHost *:80>
```

```
    ServerName zf-tutorial.localhost
    DocumentRoot /path/to/zf-tutorial/public
    SetEnv APPLICATION_ENV "development"
    <Directory /path/to/zf-tutorial/public>
        DirectoryIndex index.php
        AllowOverride All
        Require all granted
    </Directory>
</VirtualHost>
```

Make sure that you update your `/etc/hosts` or `c:\windows\system32\drivers\etc\hosts` file so that `zf-tutorial.localhost` is mapped to `127.0.0.1` . The website can then be accessed using `http://zf-tutorial.localhost` .

```
 127.0.0.1 zf-tutorial.localhost localhost
```

Restart Apache.

If you've done so correctly, you will get the same results as covered under the PHP built-in web server.

To test that your `.htaccess` file is working, navigate to `http://zf-tutorial.localhost/1234` , and you should see the 404 page as noted earlier. If you see a standard Apache 404 error, then you need to fix your `.htaccess` usage before continuing.

If you're are using IIS with the URL Rewrite Module, import the following:

```
 RewriteCond %{REQUEST_FILENAME} !-f
RewriteRule ^ index.php [NC,L]
```

You now have a working skeleton application and we can start adding the specifics for our application.

Error reporting

Optionally, *when using Apache*, you can use the `APPLICATION_ENV` setting in your `VirtualHost` to let PHP output all its errors to the browser. This can be useful during the development of your application.

Edit `zf-tutorial/public/index.php` directory and change it to the following:

```
<?php

use Zend\Mvc\Application;


if ($_SERVER['APPLICATION_ENV'] === 'development') {
    error_reporting(E_ALL);
    ini_set("display_errors", 1);
}


chdir(dirname(__DIR__));


if (php_sapi_name() === 'cli-server') {
    $path = realpath(__DIR__ . parse_url($_SERVER['REQUEST_URI'],
PHP_URL_PATH));
    if (__FILE__ !== $path && is_file($path)) {
        return false;
    }
    unset($path);
}


include __DIR__ . '/../vendor/autoload.php';

if (! class_exists(Application::class)) {
    throw new RuntimeException(
        "Unable to load application.\n"
        . "- Type `composer install` if you are developing locally.\n"
        . "- Type `vagrant ssh -c 'composer install'` if you are using
Vagrant.\n"
        . "- Type `docker-compose run zf composer install` if you are
using Docker.\n"
    );
}


$appConfig = require __DIR__ . '/../config/application.config.php';
if (file_exists(__DIR__ . '/../config/development.config.php')) {
    $appConfig = ArrayUtils::merge($appConfig, require __DIR__ .
'/../config/development.config.php');
}


Application::init($appConfig)->run();
```

Development mode

Before we begin, we're going to enable *development mode* for the application. The skeleton application provides two files that allow us to specify general development settings we want to use everywhere; these may include enabling modules for debugging, or enabling error display in our view scripts. These files are located at:

- `config/development.config.php.dist`
- `config/autoload/development.local.php.dist`

When we enable development mode, these files are copied to:

- `config/development.config.php`
- `config/autoload/development.local.php`

This allows them to be merged into our application. When we disable development mode, these two files that were created are then removed, leaving only the `.dist` versions. (The repository also contains rules to ignore the copies.)

Let's enable development mode now:

```
$ composer development-enable
```

> **Never enable development mode in production**
>
> You should never enable development mode in production, as the typical reason to enable it is to enable debugging! As noted, the artifacts generated by enabling development mode cannot be committed to your repository, so assuming you don't run the command in production, you should be safe.
>
> You can test the status of development mode using:
>
> ```
> $ composer development-status
> ```

> And you can disable it using:
>
> ```
> $ composer development-disable
> ```