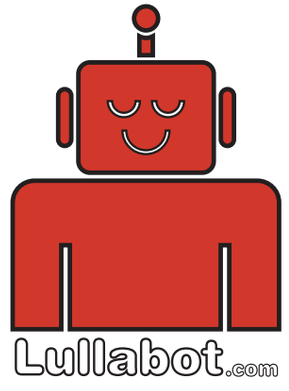
Demystifying Multisite Architecture

John VanDyk and James Walker

Do It With Drupal, December 2008

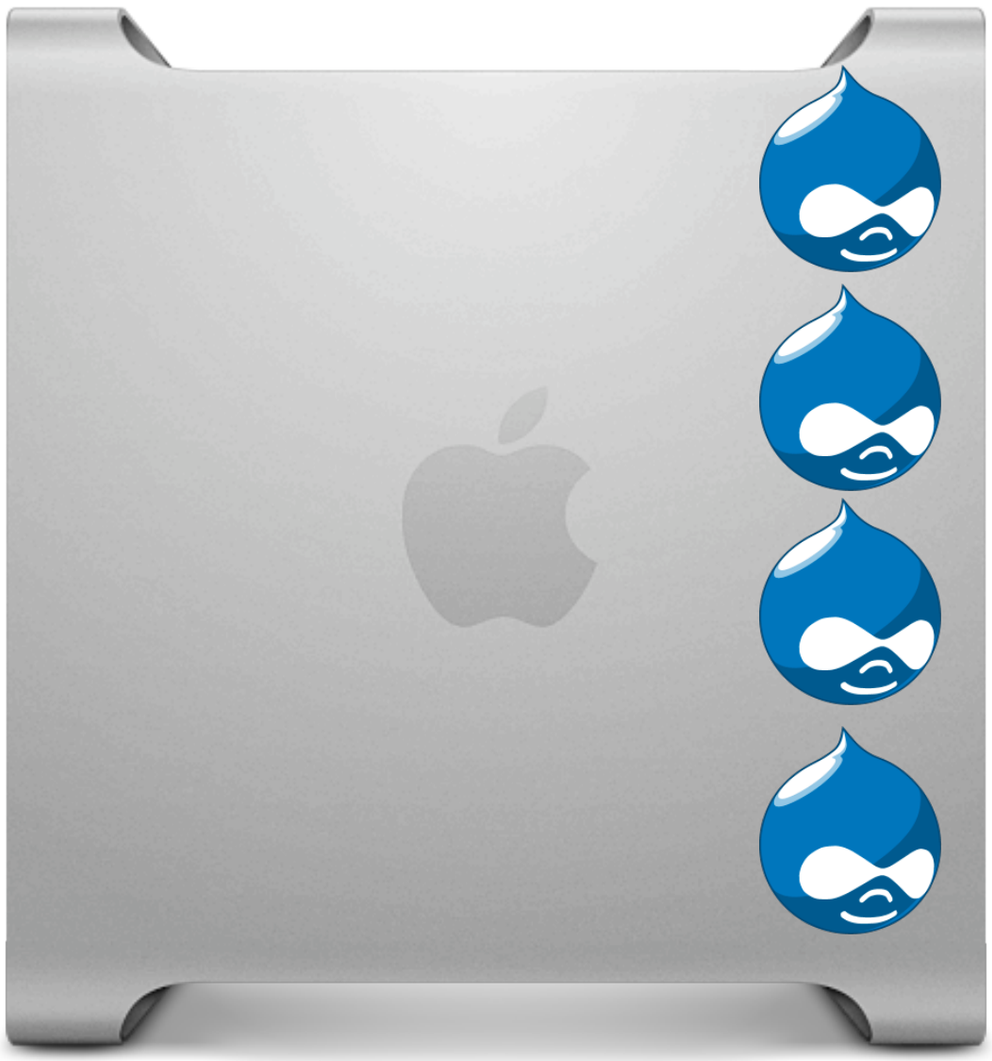


What is Multisite?

How Multisite Works

Sharing Information Between Sites

three sections to this presentation, lots of time for questions



http://www.example.com

http://banana.example.com

http://www.example.com/apple

http://pancakeblog.net

You can always have multiple Drupal sites on a server, with multiple copies of Drupal

http://www.example.com

http://banana.example.com

http://www.example.com/apple

http://pancakeblog.net

We’re talking about having multiple sites on ONE copy of Drupal.

Why?

- Only one copy of the codebase

- Only one copy of the codebase
- Only one codebase to upgrade

- Only one copy of the codebase
- Only one codebase to upgrade
- Only one set of files to debug

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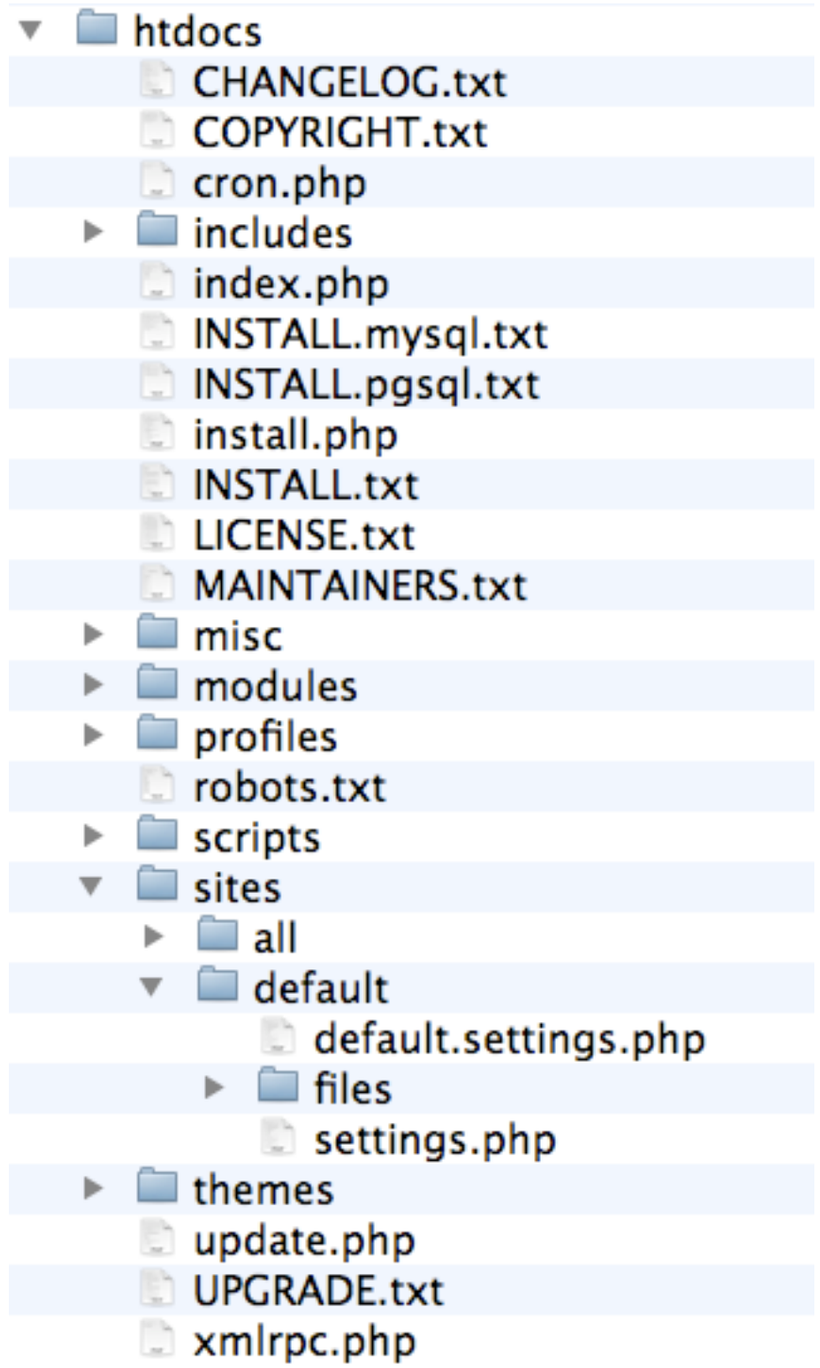
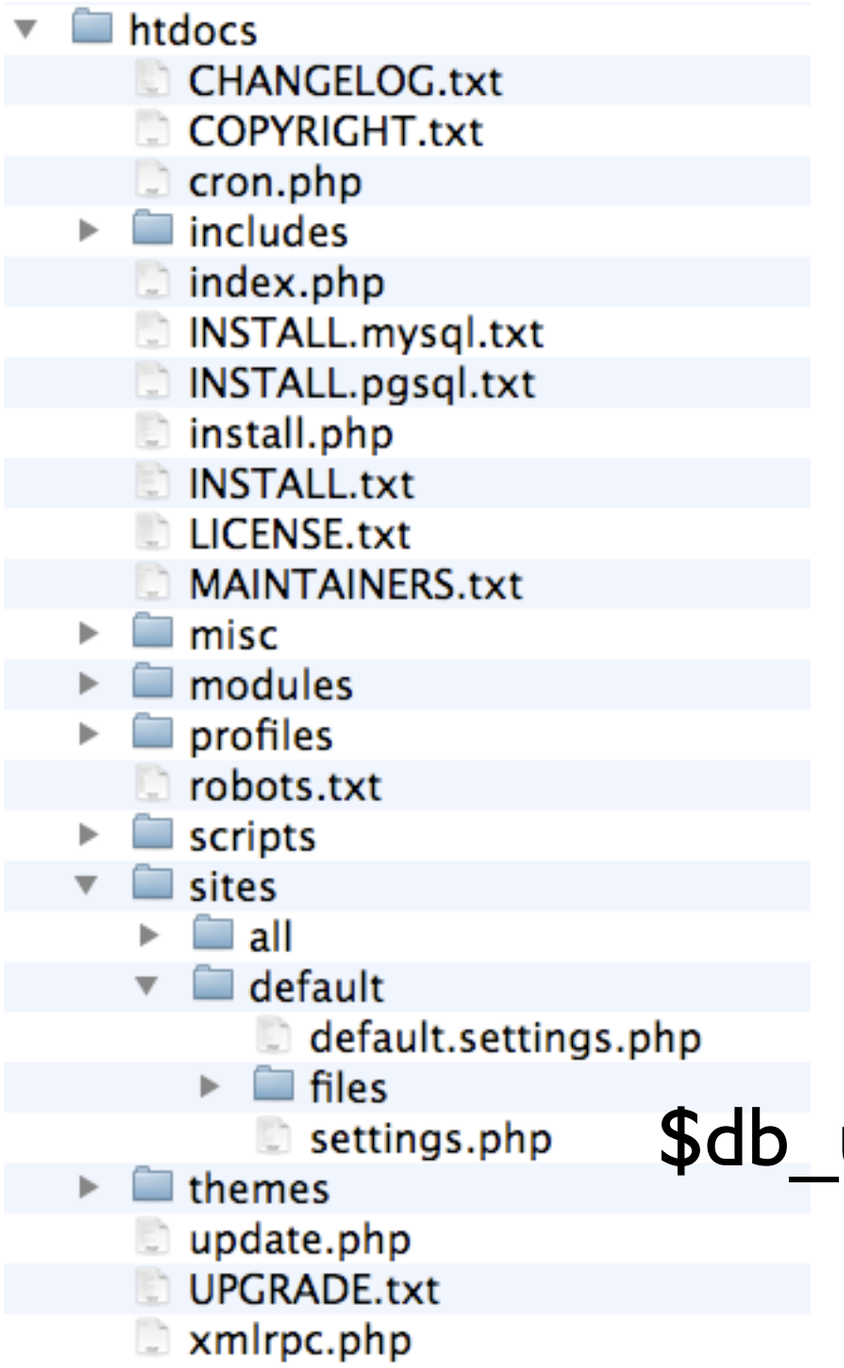
- Only one codebase to upgrade
- Only one set of files to debug
- Still have flexibility for site-specific modules

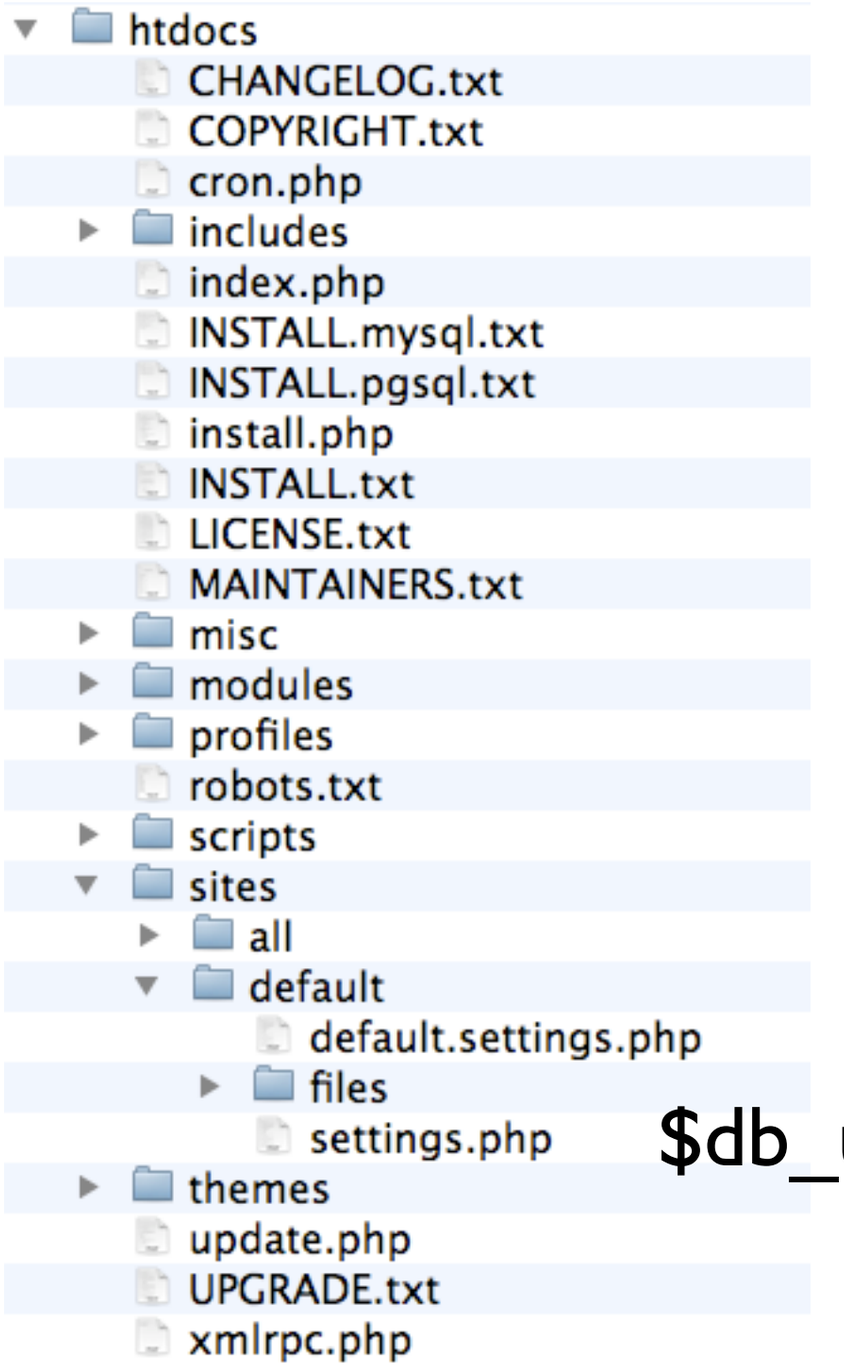


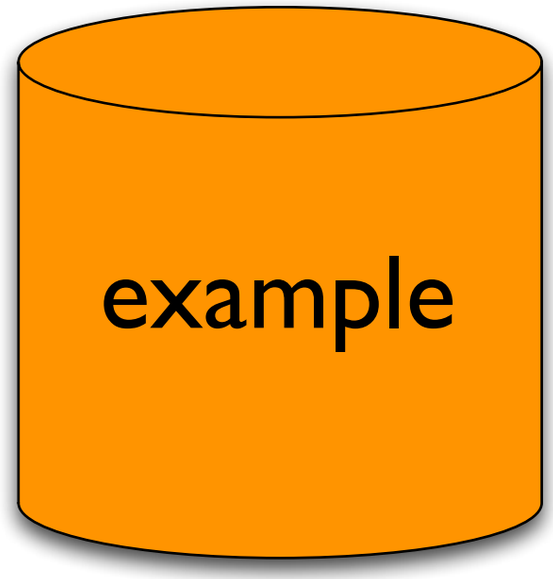
Drupal has three essential components.
The filesystem contains the files that make up the Drupal codebase.




```
$db_url = 'mysqli://joe:secret@localhost/example';
```


The database contains content and most configuration settings.



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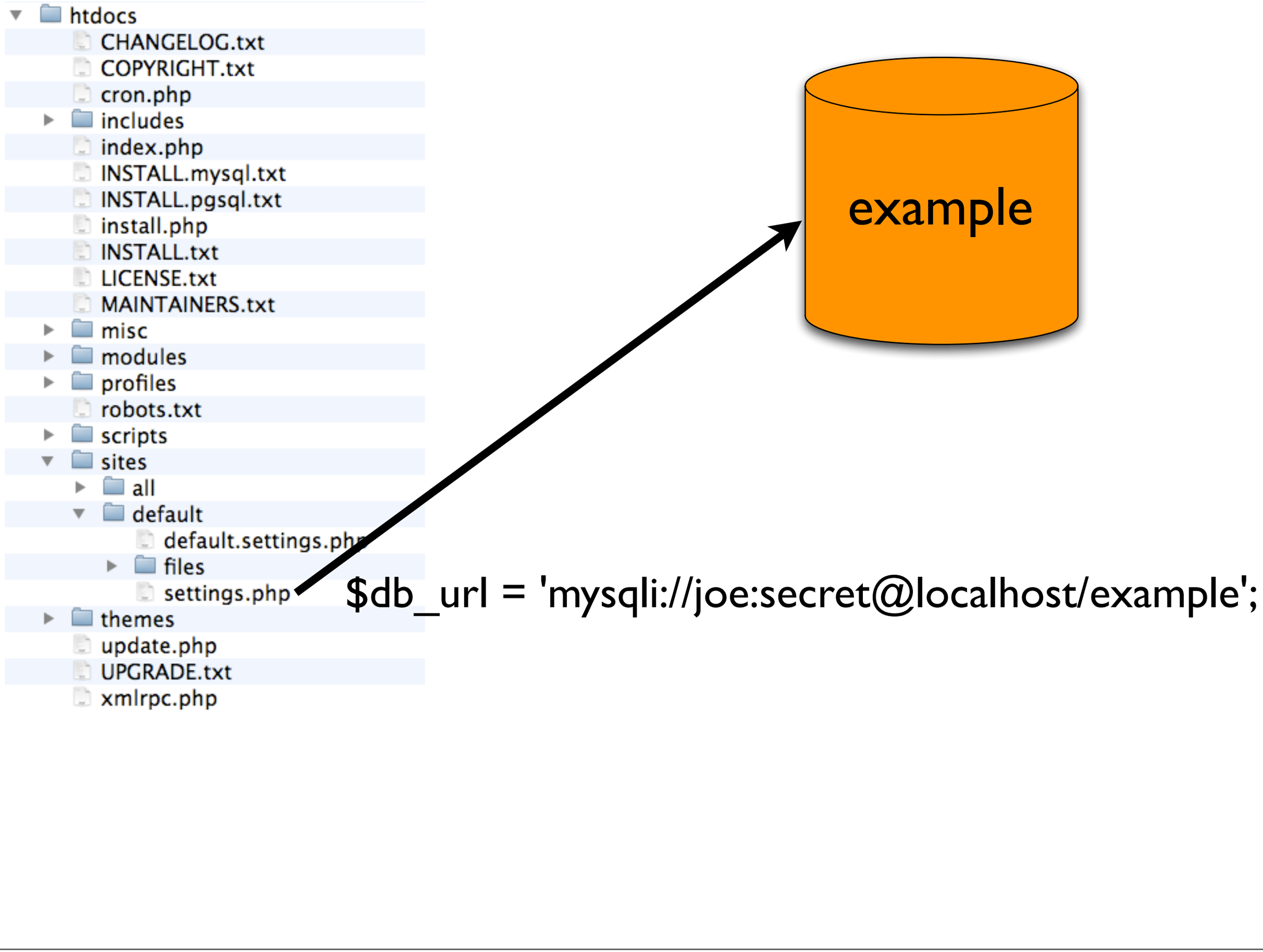

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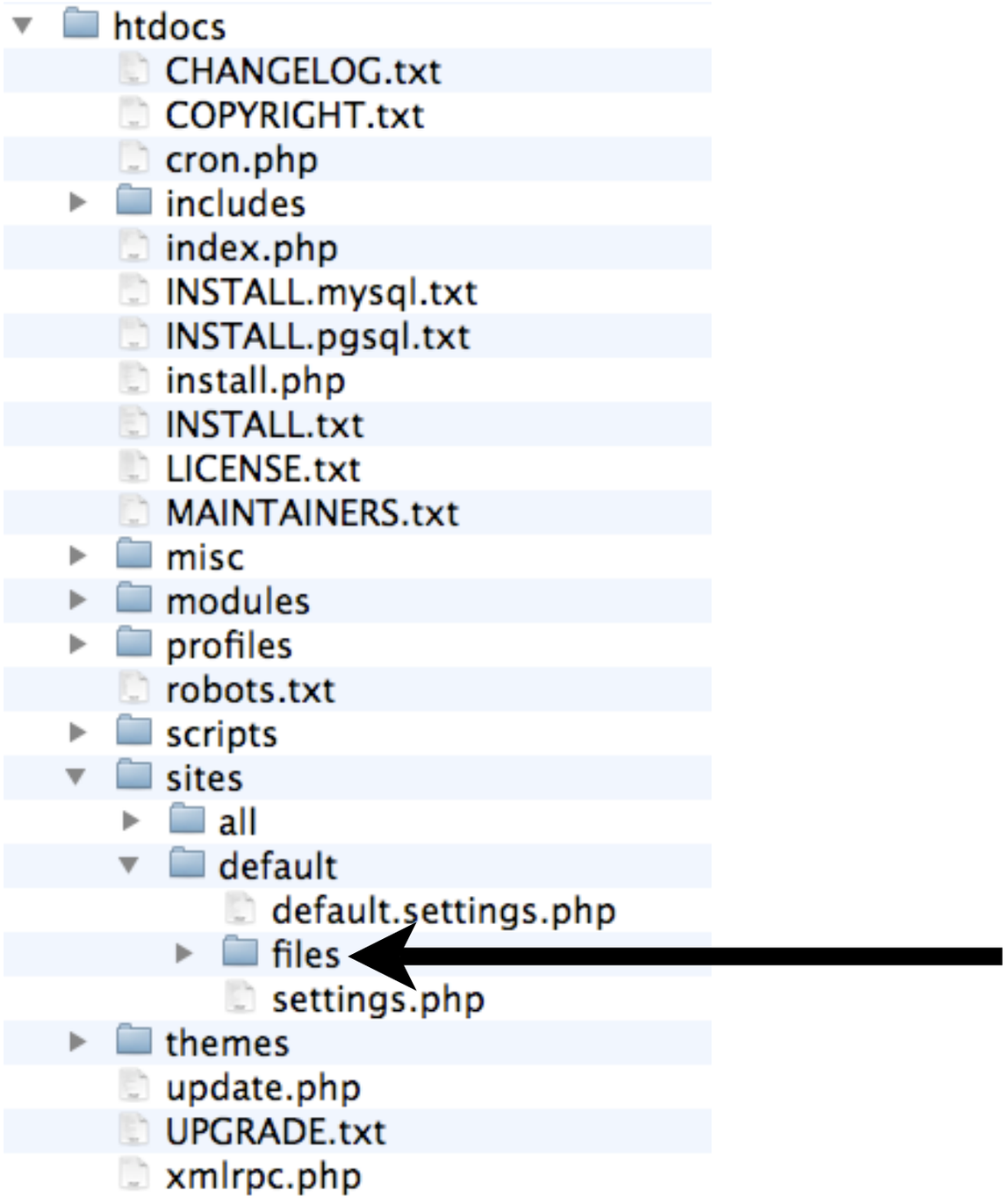
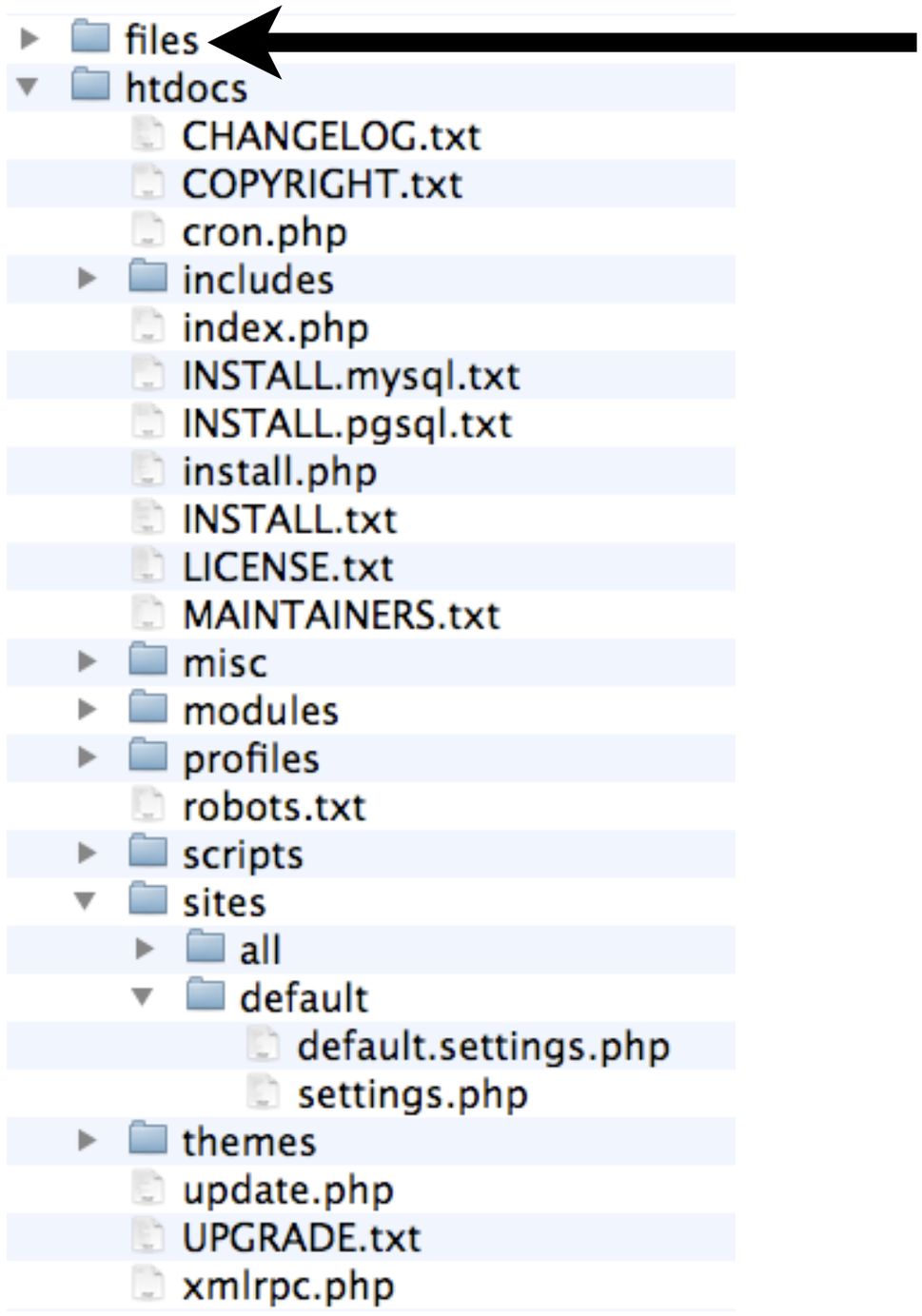
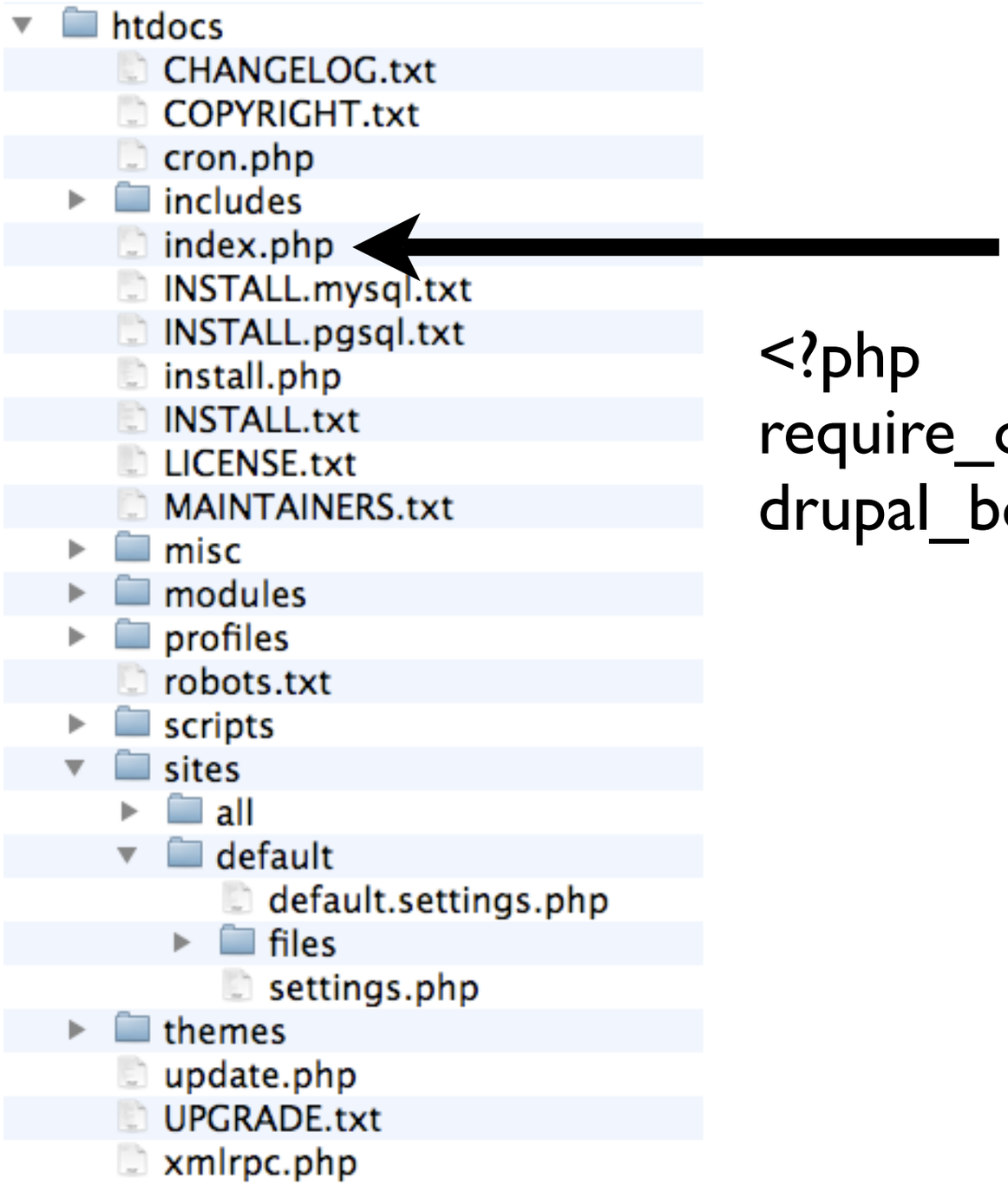


The files directory contains uploaded files.



If using private files, the files directory can be outside of the web root.




```
<?php
require_once './includes/bootstrap.inc';
drupal_bootstrap(FULL);
```

CONFIGURATION: initialize configuration.

EARLY PAGE CACHE

DATABASE: initialize database layer.

ACCESS: identify and reject banned hosts.

SESSION: initialize session handling.

LATE PAGE CACHE

LANGUAGE: identify the language

PATH: path handling

FULL: Drupal is fully loaded

CONFIGURATION: initialize configuration.

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DATABASE: initialize database layer.

ACCESS: identify and reject banned hosts.

SESSION: initialize session handling.

LATE PAGE CACHE

LANGUAGE: identify the language

PATH: path handling

FULL: Drupal is fully loaded

Multisite happens here.

We've got a request for http://www.example.com/
That's from host www.example.com, path /
Let's look for a settings file at

What normally happens.

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sites/www.example.com/settings.php

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We've got a request for http://www.example.com/
That's from host www.example.com, path /
Let's look for a settings file at

sites/www.example.com/settings.php

sites/example.com/settings.php

sites/com/settings.php

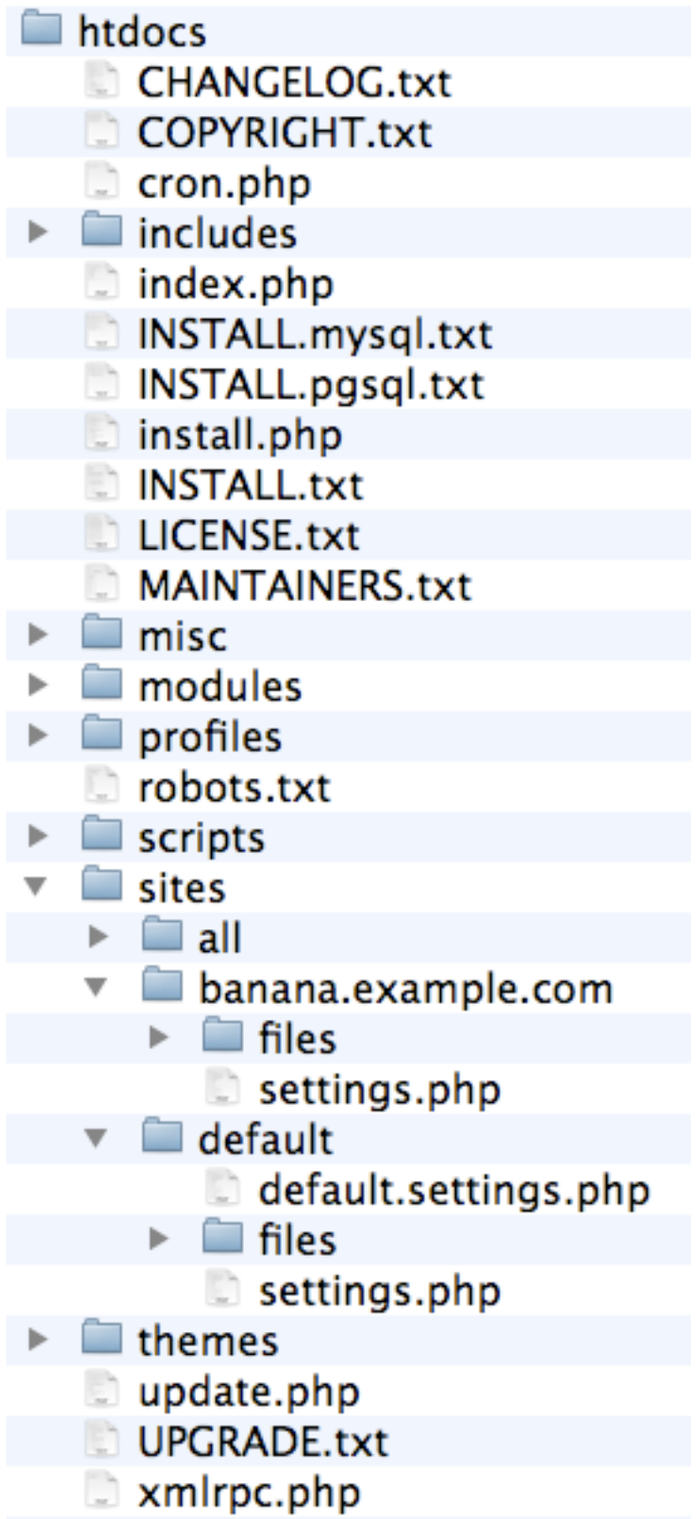
sites/default/settings.php

What normally happens.

http://www.example.com

http://banana.example.com

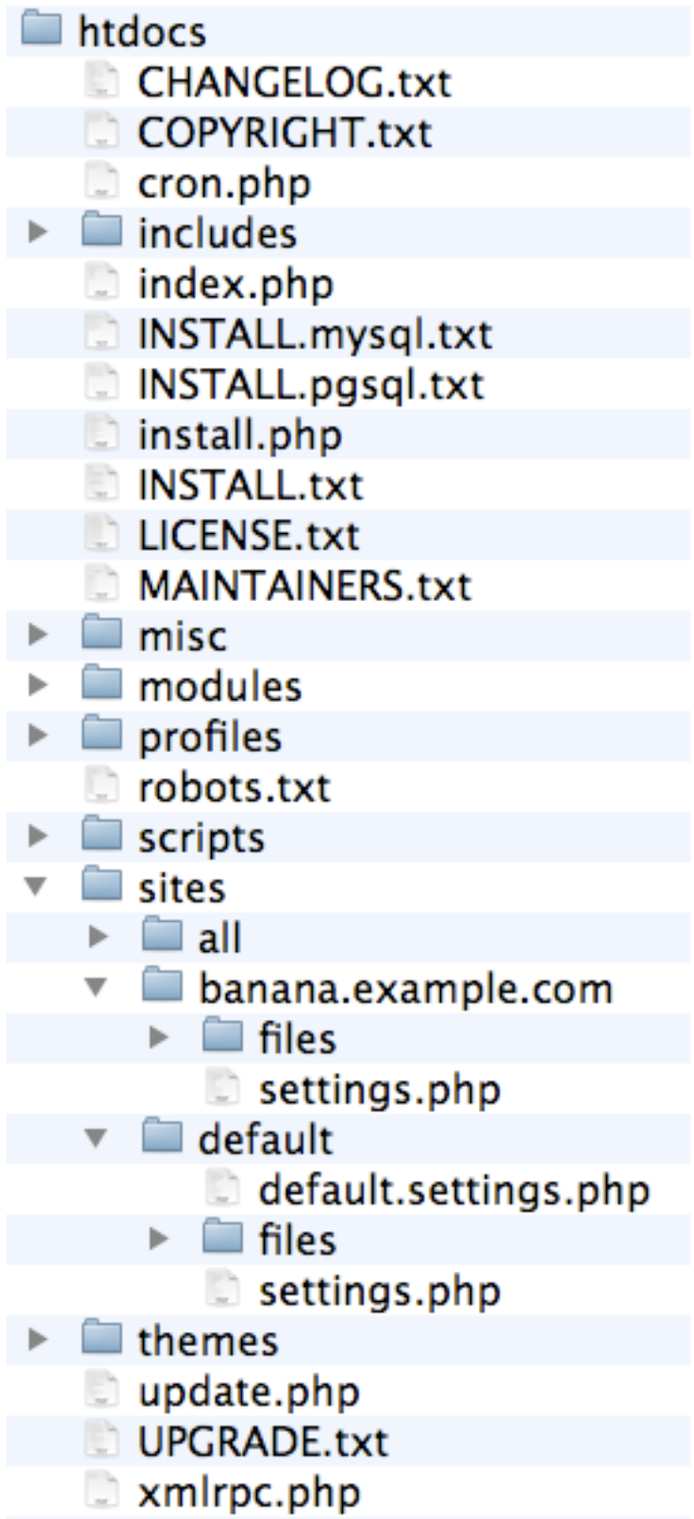
We’re talking about having multiple sites on ONE copy of Drupal.




```
$db_url = 'mysqli://jdoe:secret@localhost/banana';
```

```
$db_url = 'mysqli://moe:shhhh@localhost/www';
```


Now banana.example.com will get a site using the banana database; everything else gets the www database.



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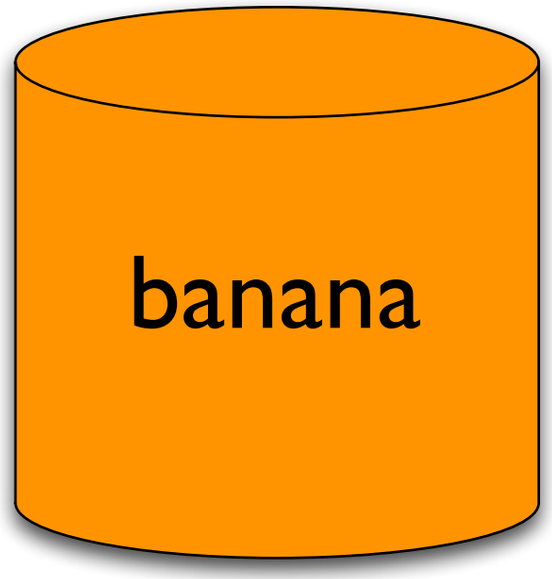

$db_url = 'mysqli://moe:shhhh@localhost/www';

Now banana.example.com will get a site using the banana database; everything else gets the www database.

- htdocs
  - CHANGELOG.txt
  - COPYRIGHT.txt
  - cron.php
  - includes
  - index.php
  - INSTALL.mysql.txt
  - INSTALL.pgsql.txt
  - install.php
  - INSTALL.txt
  - LICENSE.txt
  - MAINTAINERS.txt
  - misc
  - modules
  - profiles
  - robots.txt
  - scripts
  - sites
    - all
    - banana.example.com
      - files
      - settings.php
    - default
      - default.settings.php
      - files
      - settings.php
  - themes
  - update.php
  - UPGRADE.txt
  - xmlrpc.php

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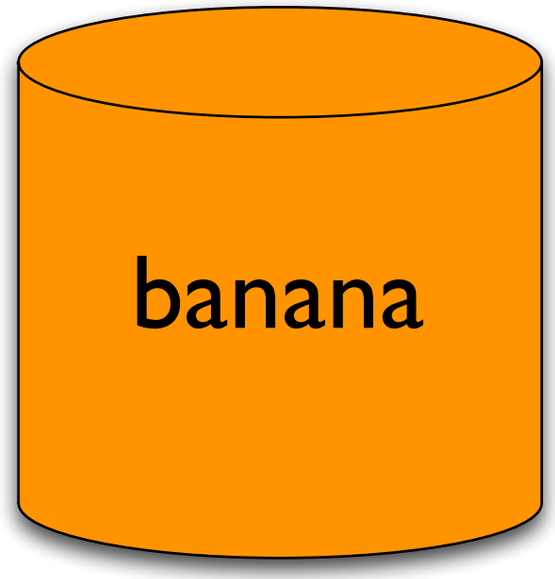

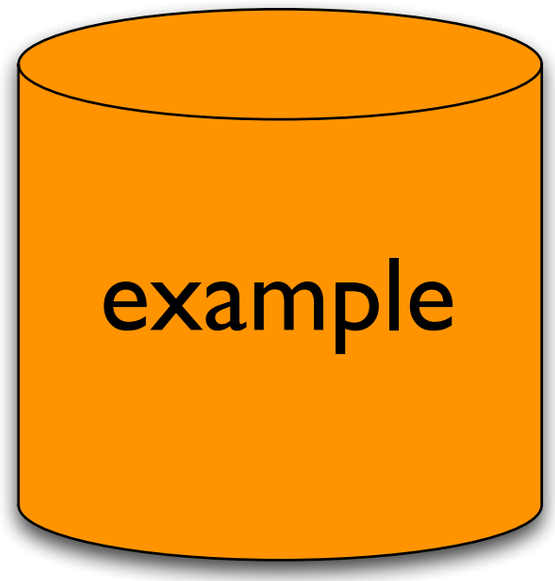

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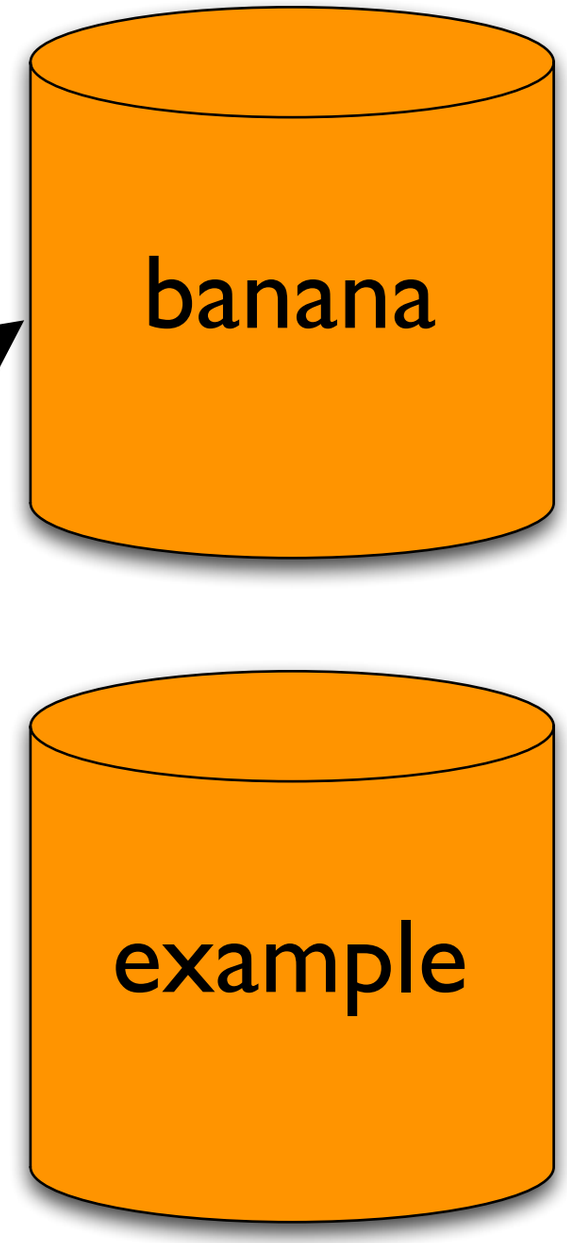

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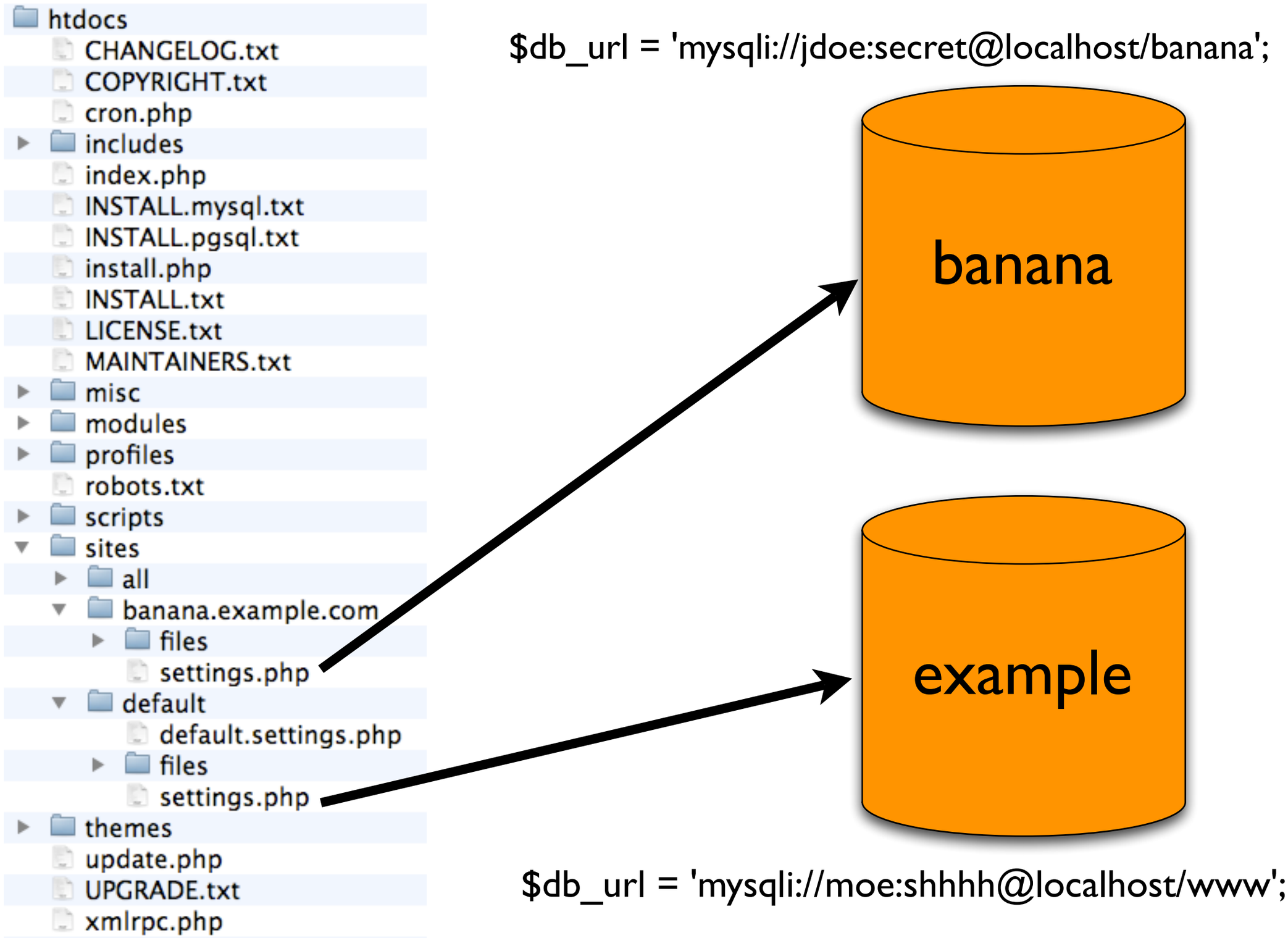
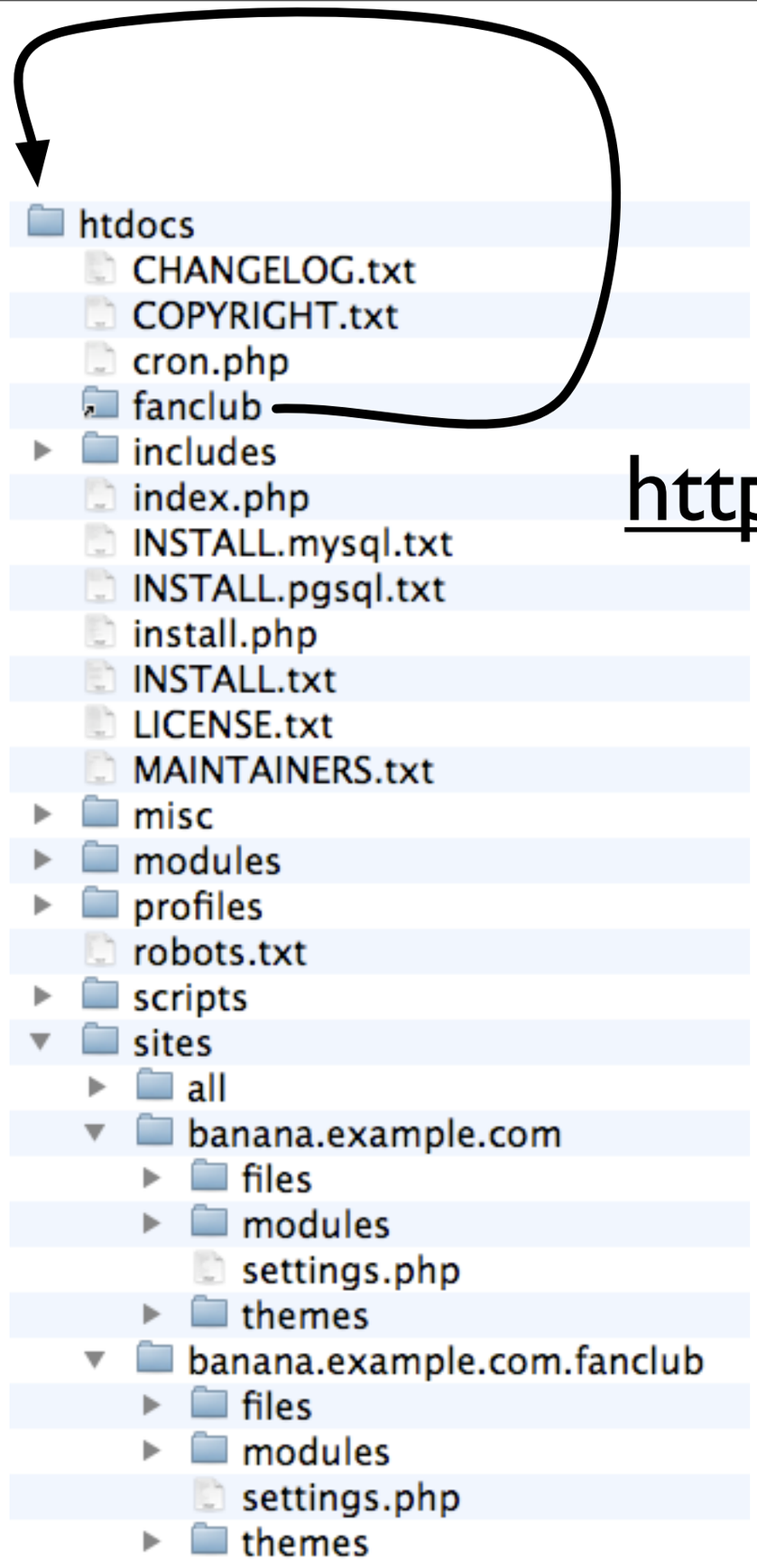


Now banana.example.com will get a site using the banana database; everything else gets the www database.

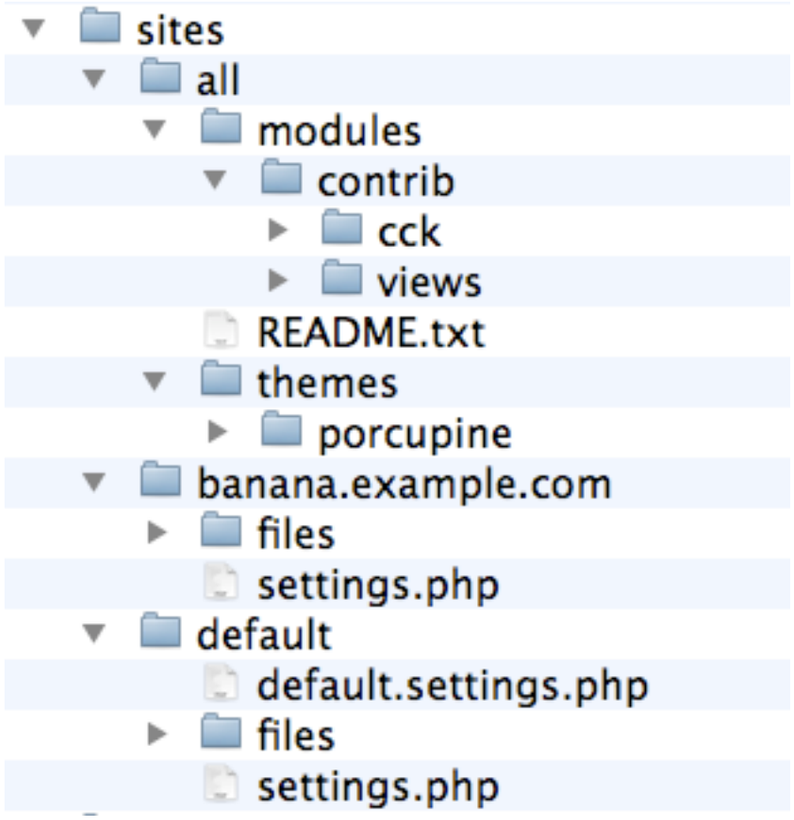
Edge case

http://www.example.com/*something*

Need a symlink

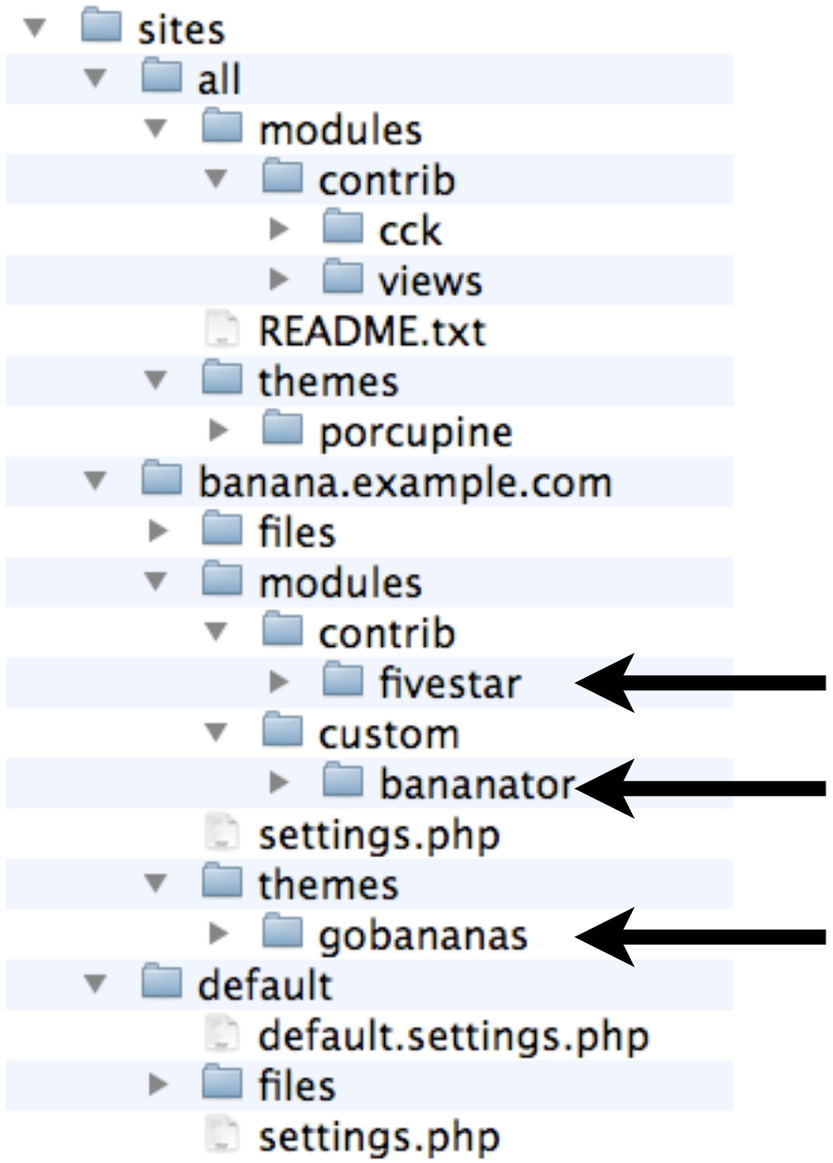


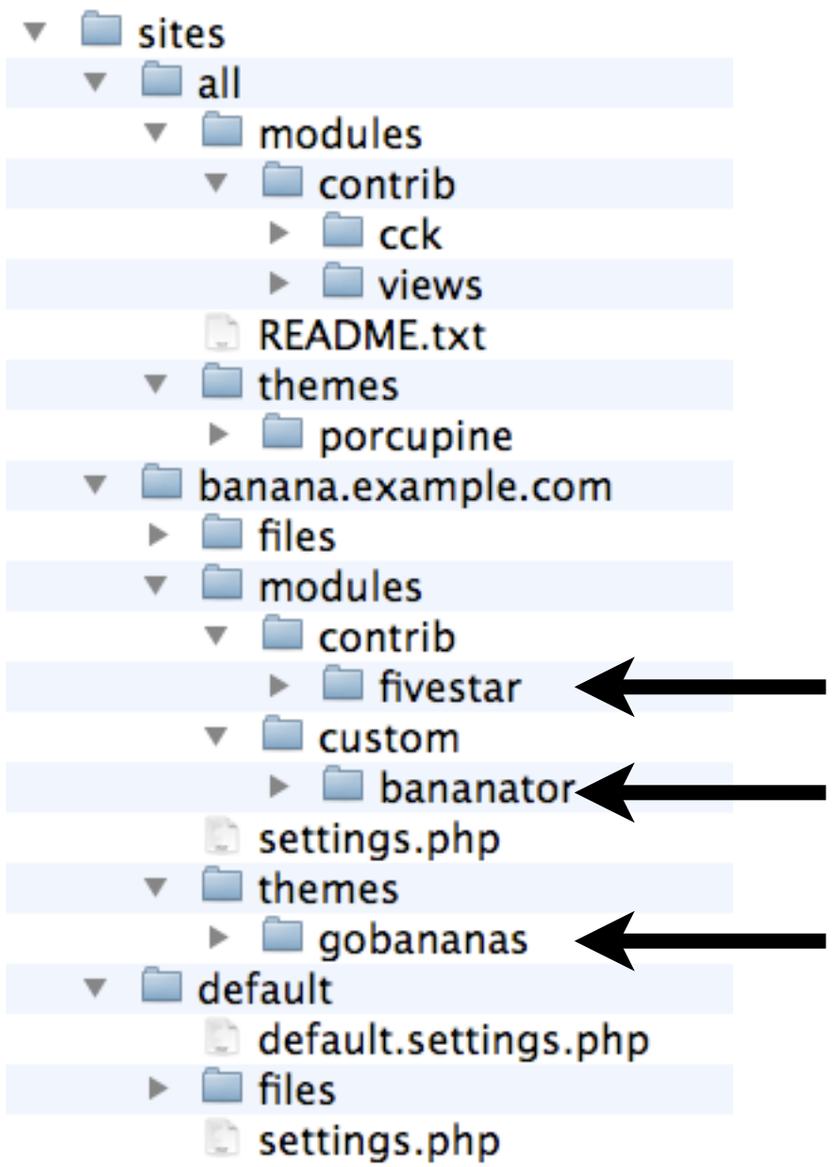
http://banana.example.com/fanclub



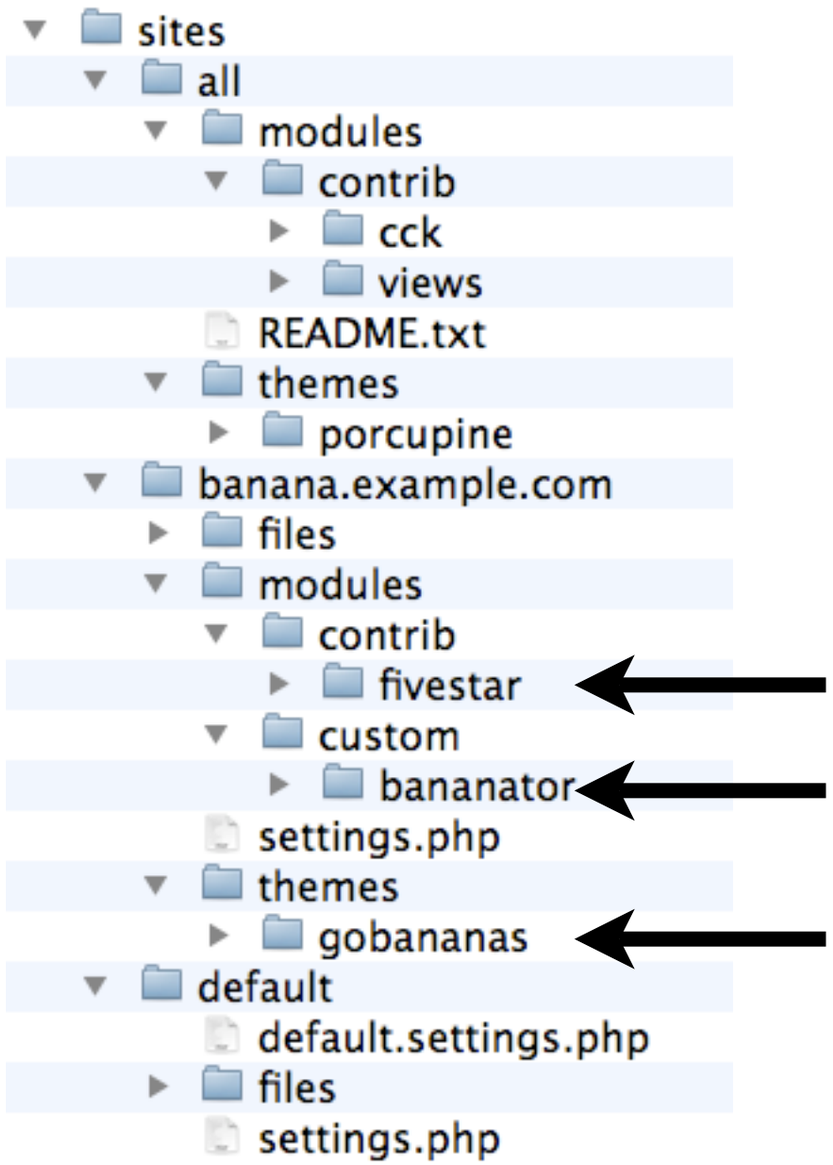
CCK and Views
available for all sites

porcupine theme
available for all sites


sites
all
modules
contrib
cck
views
README.txt
themes
porcupine
banana.example.com
files
modules
contrib
fivestar
custom
bananator
settings.php
themes
gobananas
default
default.settings.php
files
settings.php

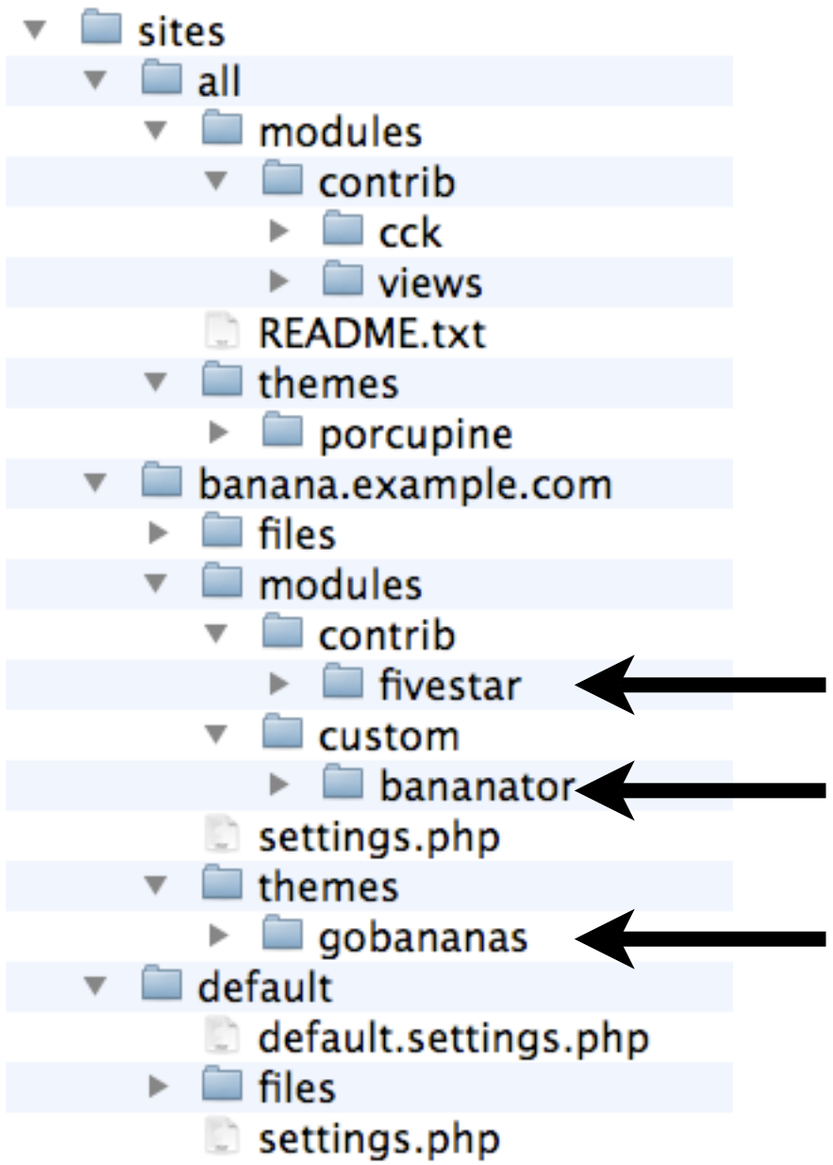


fivestar module
only available
on banana.example.com



fivestar module
only available
on banana.example.com

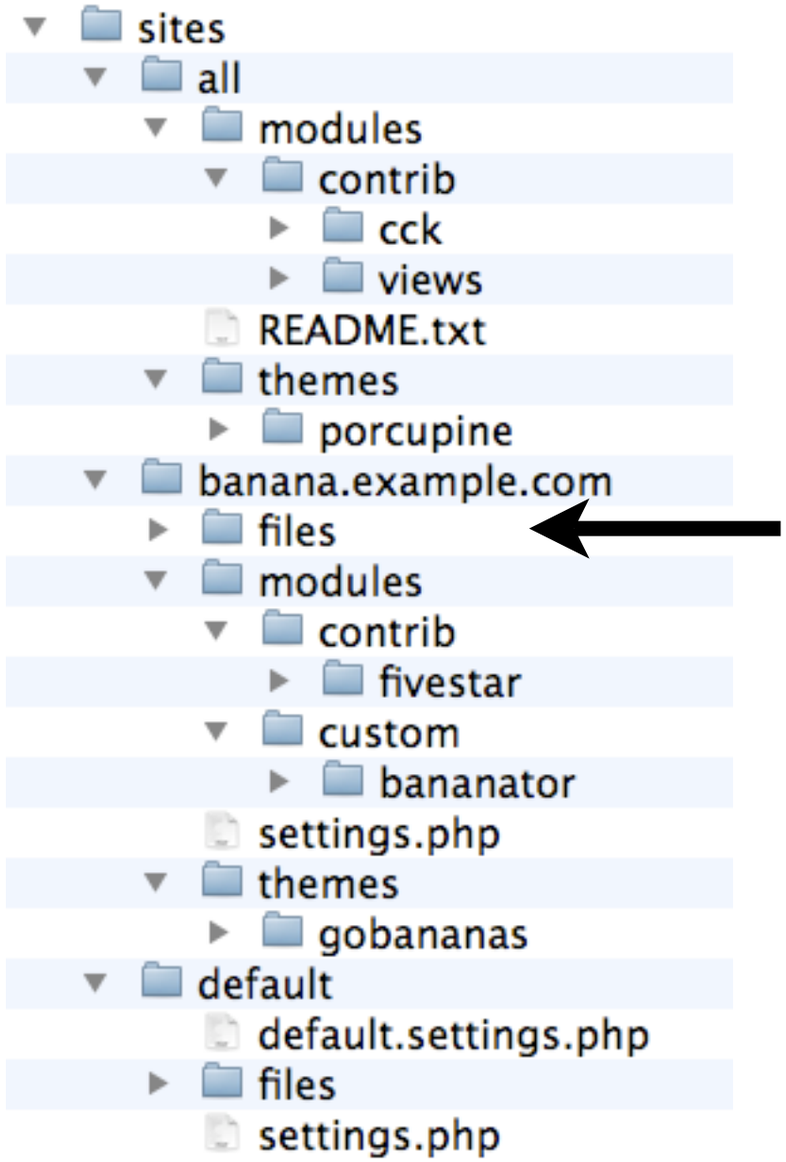
bananator module
only available
on banana.example.com



fivestar module
only available
on banana.example.com

bananator module
only available
on banana.example.com

gobananas theme
only available
on banana.example.com



Each site has its own place to put uploaded files.

http://www.example.com/sites/www.example.com/files/image.jpg

mod_rewrite can help make your URLs more friendly

http://www.example.com/sites/www.example.com/files/image.jpg

RewriteRule ^files/(.*)$ /sites/%{HTTP_HOST}/files/$1 [L]

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mod_rewrite can help make your URLs more friendly

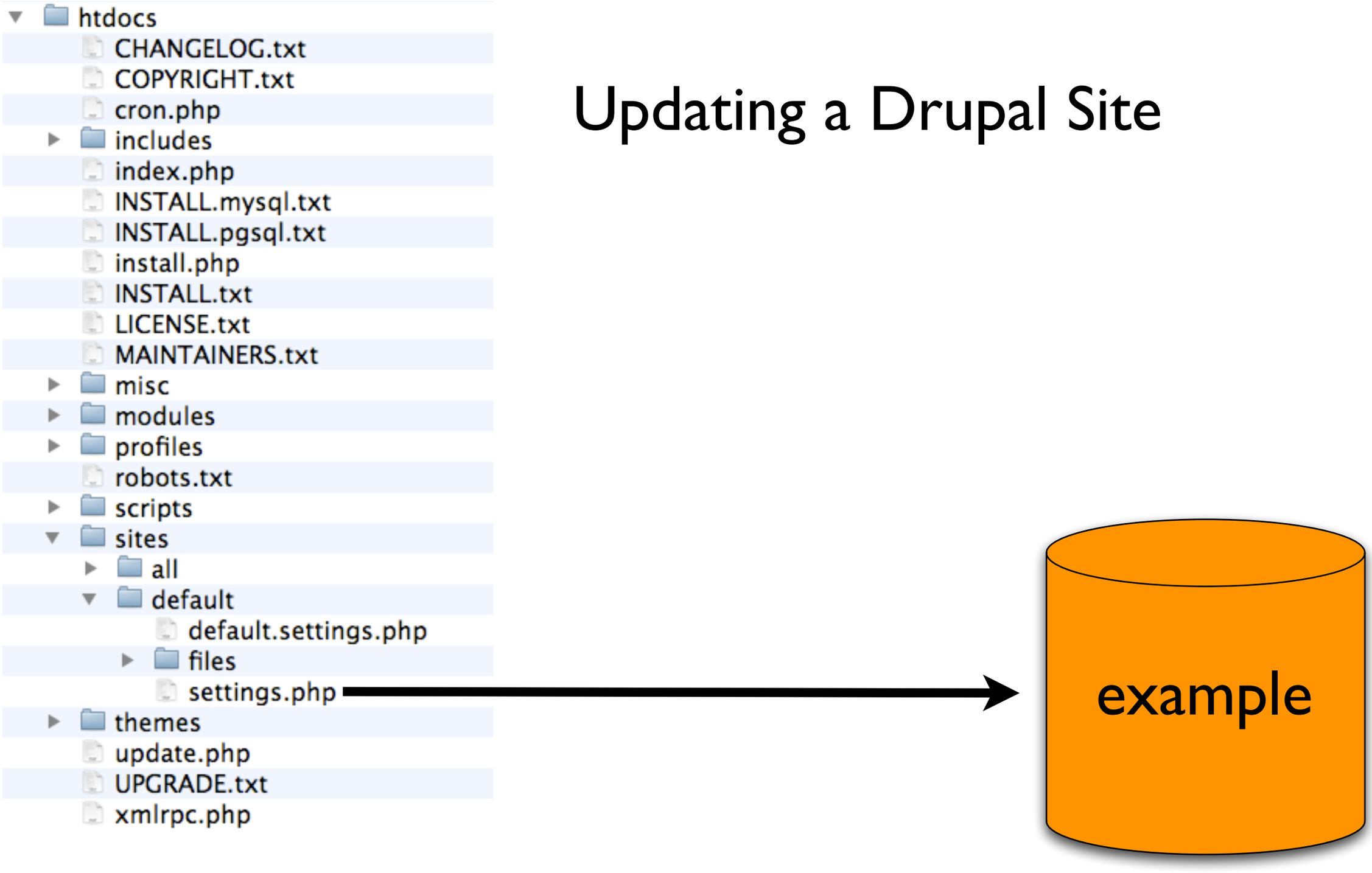
Summary So Far

- Single codebase
- Everything in sites/all is shared: modules, themes
- Site-specific modules and themes go in sites/*sitename*/
- Each site has its own file uploads directory

Cron!

Updating Multisite

Updating a Drupal Site



The database contains content and most configuration settings.

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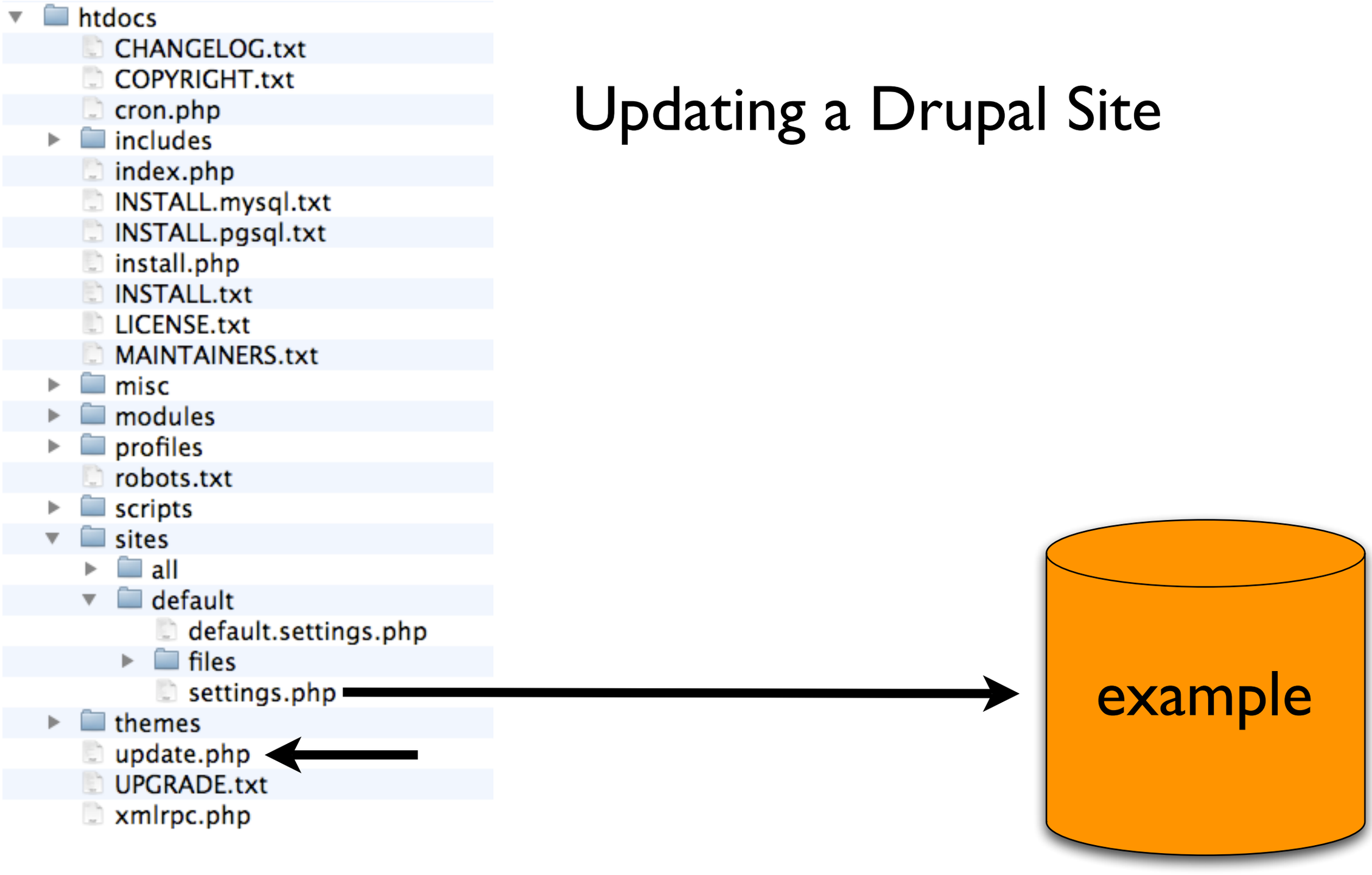

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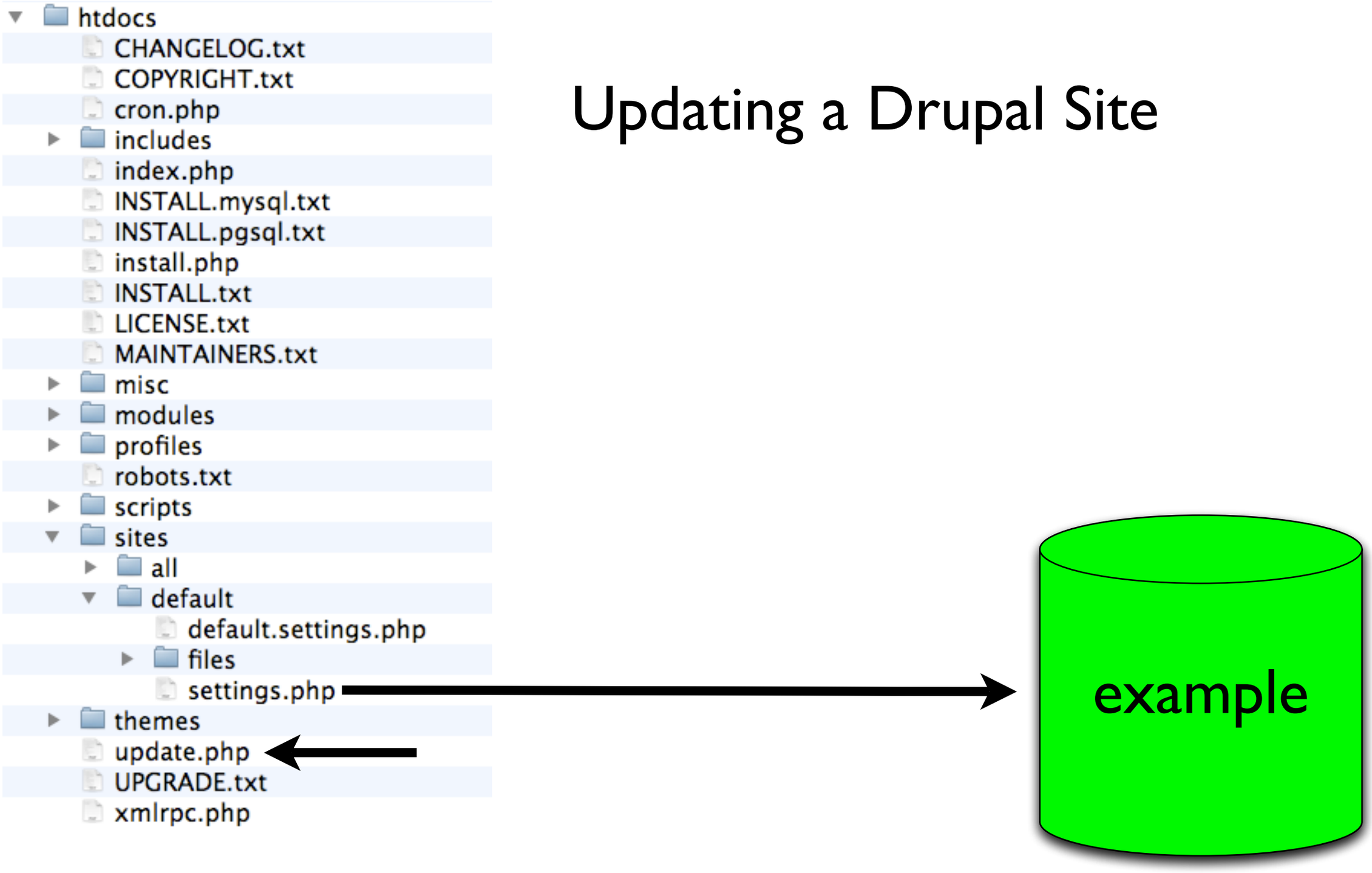

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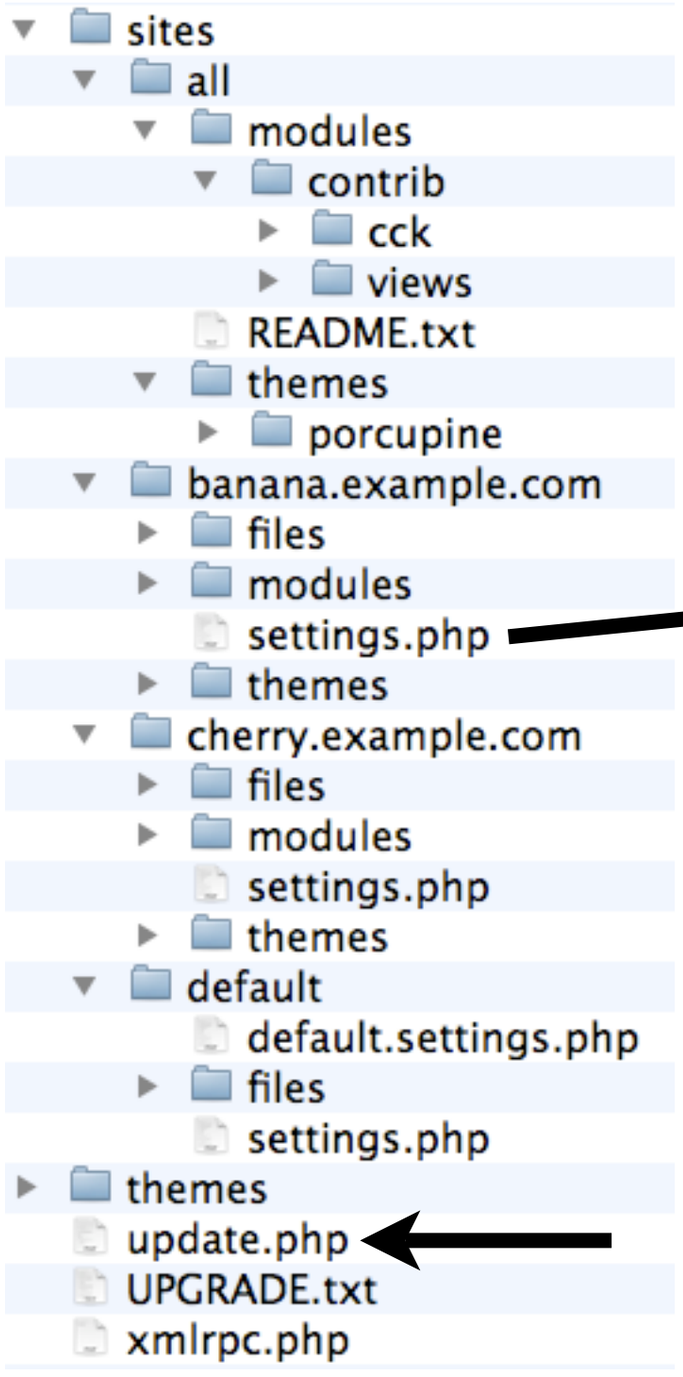
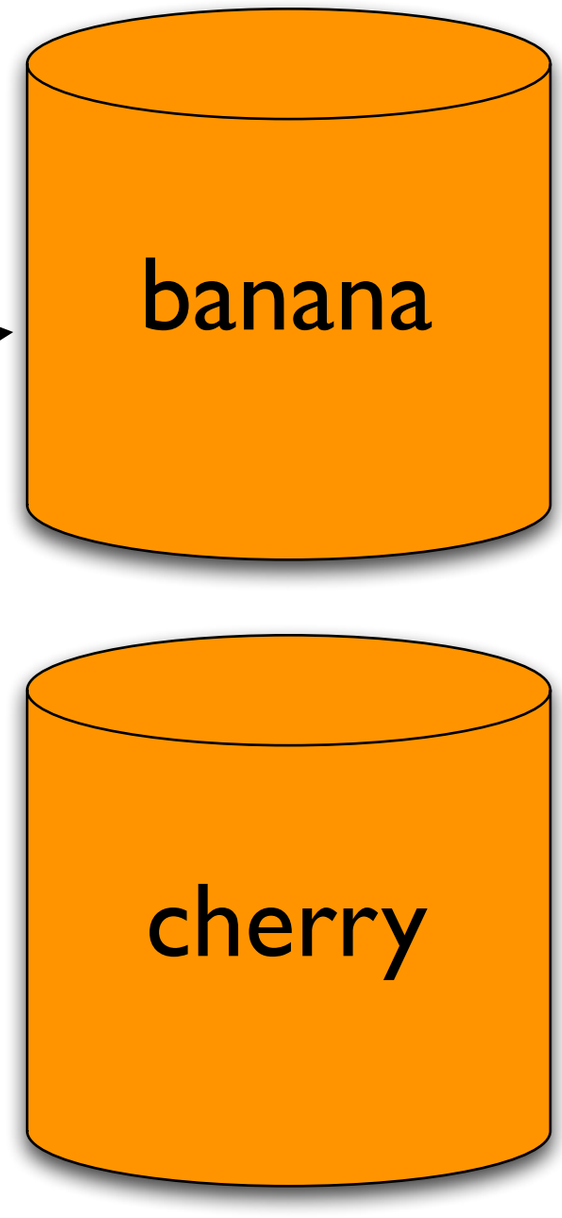
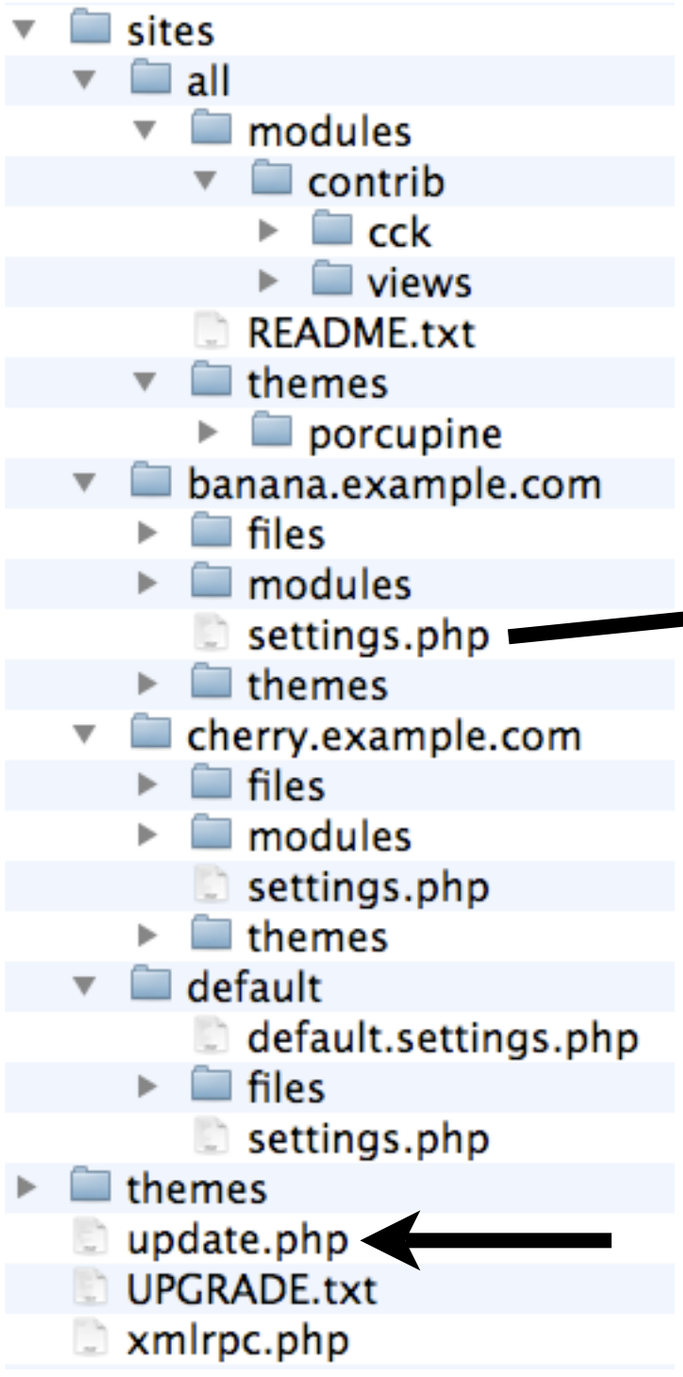
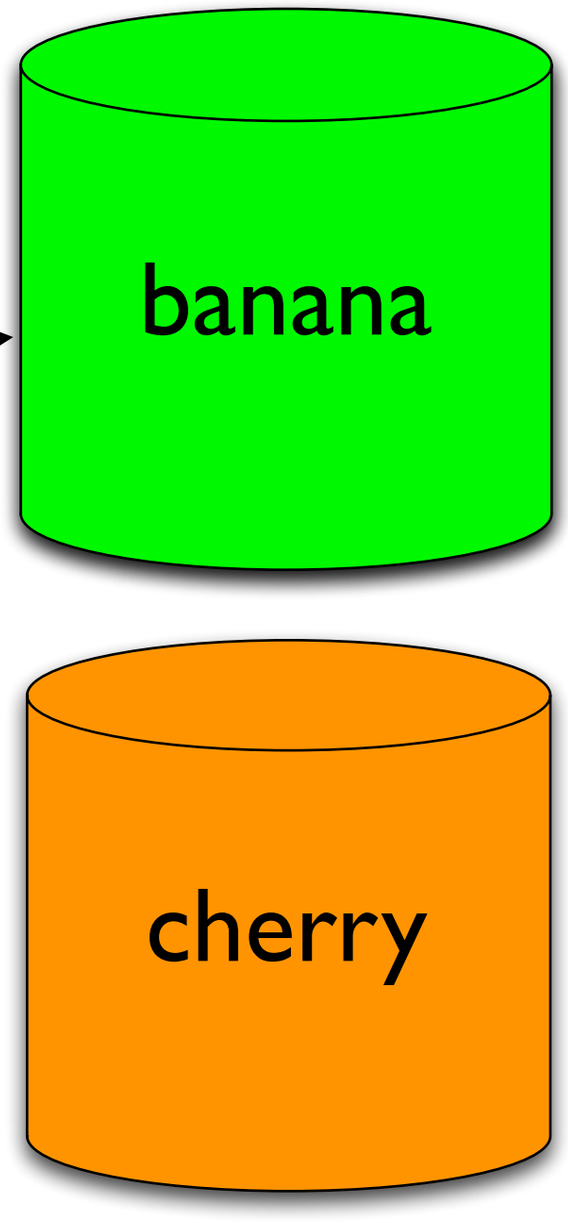




Running update.php once is not enough!

Updating Multisite





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Updating Multisite

- sites
  - all
    - modules
      - contrib
        - cck
        - views
      - README.txt
    - themes
      - porcupine
  - banana.example.com
    - files
    - modules
    - settings.php
    - themes
  - cherry.example.com
    - files
    - modules
    - settings.php
    - themes
  - default
    - default.settings.php
    - files
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- themes
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- UPGRADE.txt
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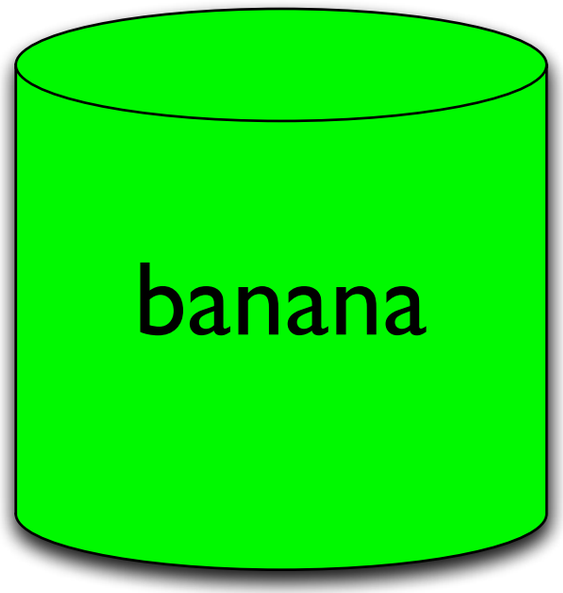

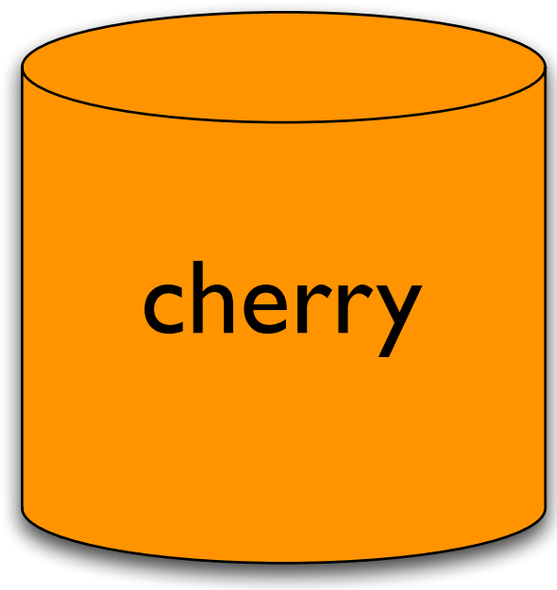

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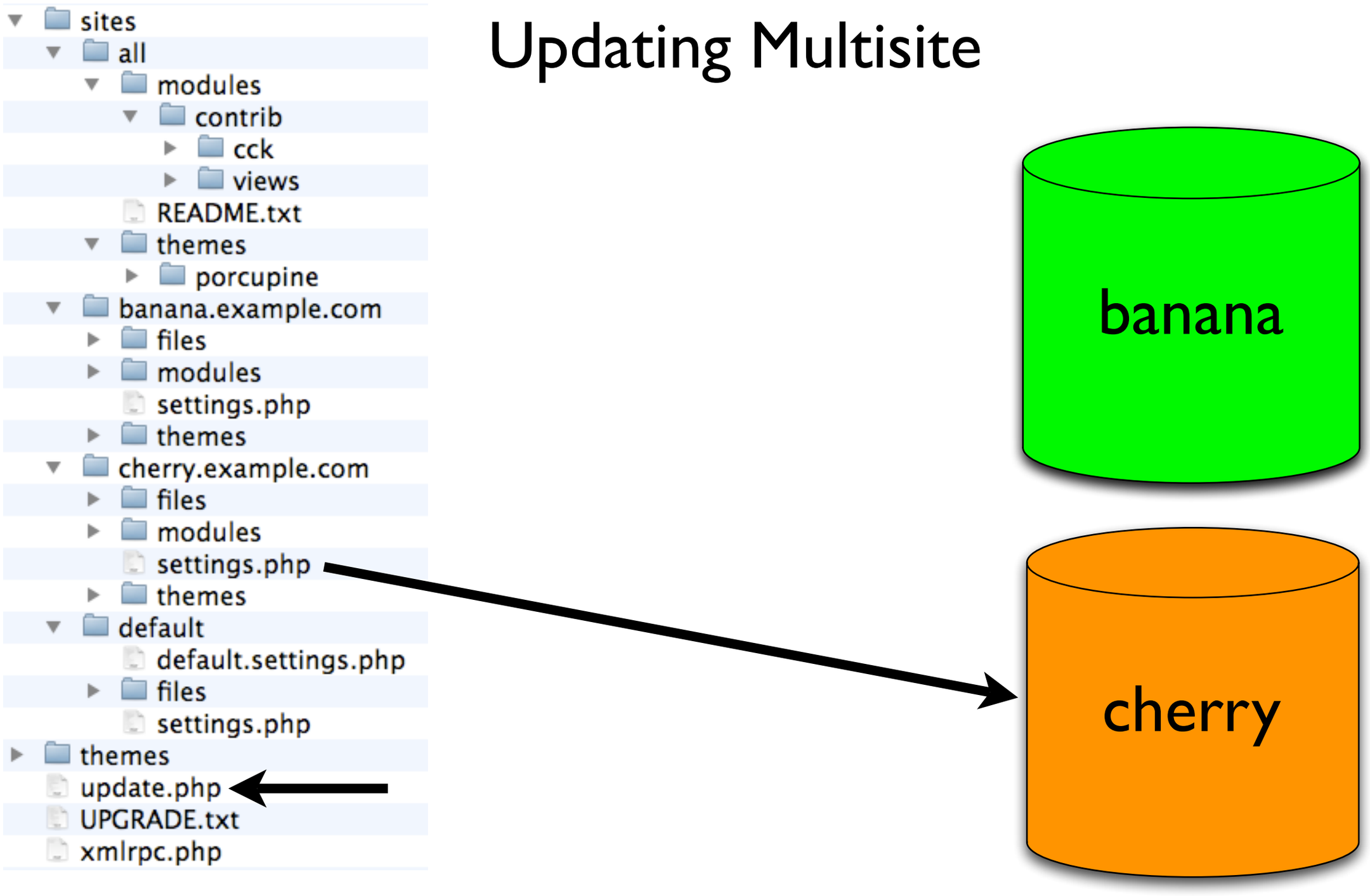

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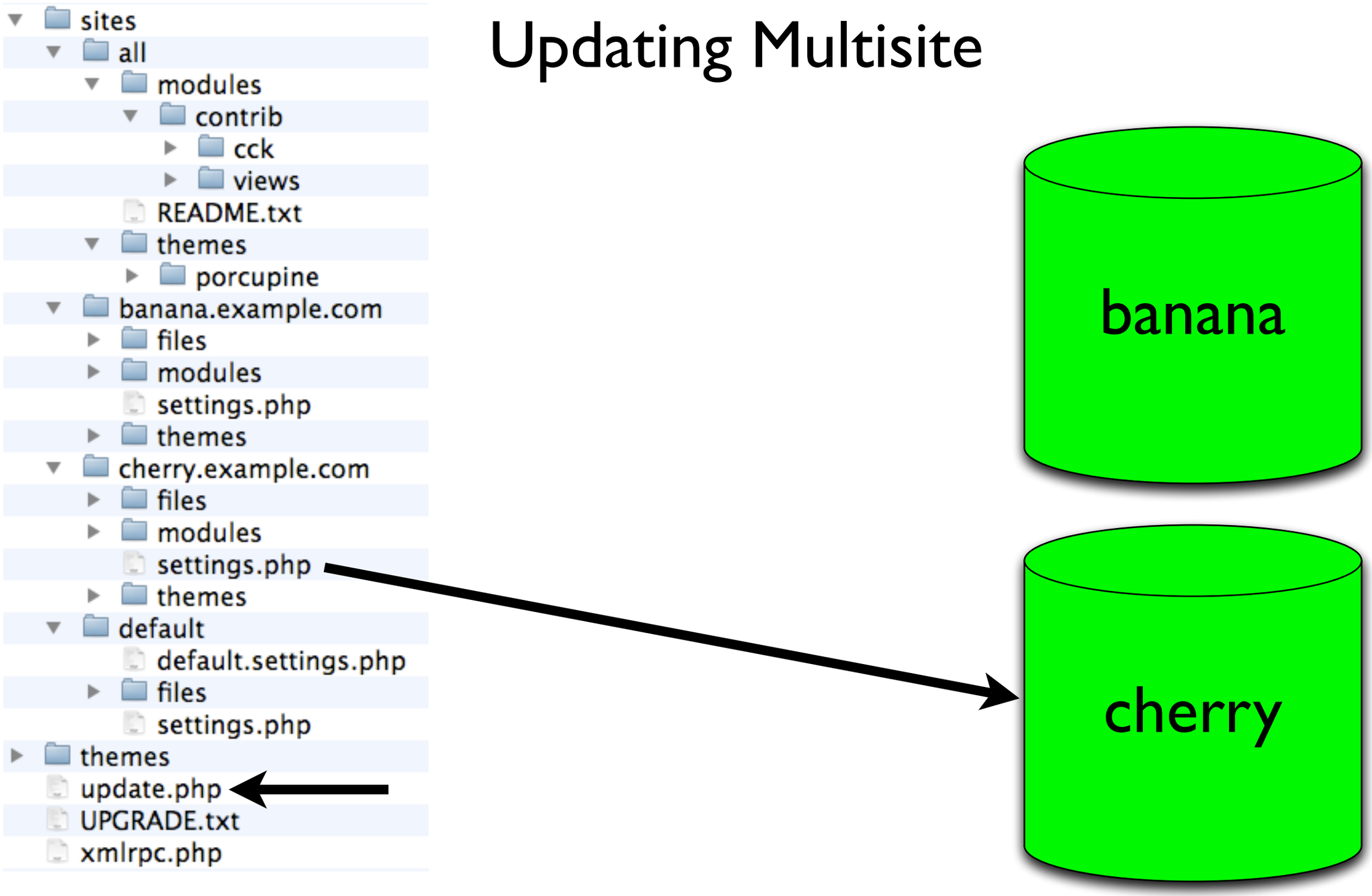

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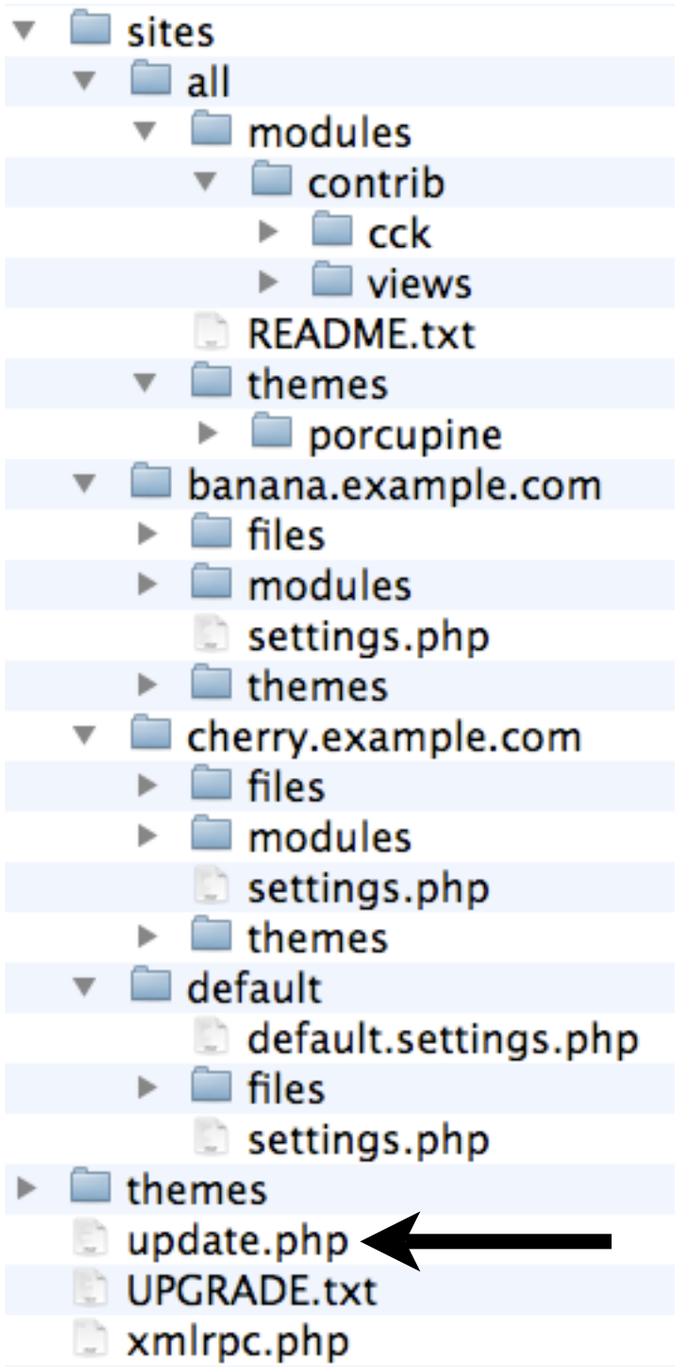

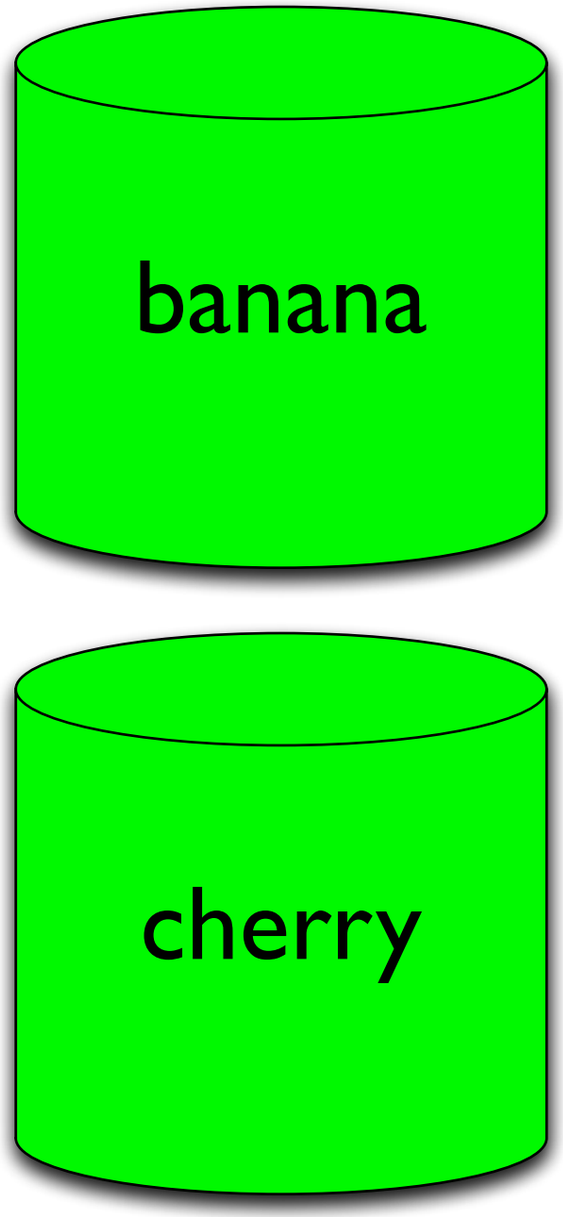

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How Multisite Works

Sharing Information Between Sites

Table Prefixing

Prefixing originally for multiple Drupal sites on cheap hosting

Table Prefixing

GOLD $3.99/mo

- 300 GB Webspace
- 1 Free Domain for Life
- Free Unlimited Templates
- Unlimited Emails
- Ecommerce Enabled
- Free SSL
- MS-SQL (add-on), MySQL
- Windows/Linux Choice

Details Buy

SILVER $2.39/mo

- 1000 MB Webspace
- 1 Free Domain for Life
- Free $10,000 Templates
- Unlimited Emails
- ASP, ASP.NET, PHP
- MS-SQL (add-on), MySQL
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- ASP, ASP.NET, PHP
- MS-SQL (add-on), MySQL
- PLESK Control Panel
- Windows/Linux Choice

Details Buy

BRONZE $1.99/mo

- 100 MB Webspace
- 1 Free Domain for Life
- Free $500 Templates
- Unlimited Emails
- ASP, ASP.NET, PHP
- MS-SQL (add-on), MySQL
- PLESK Control Panel
- Windows/Linux Choice

Details Buy

```
$db_prefix = 'zoinks_';
```


Prefixing originally for multiple Drupal sites on cheap hosting

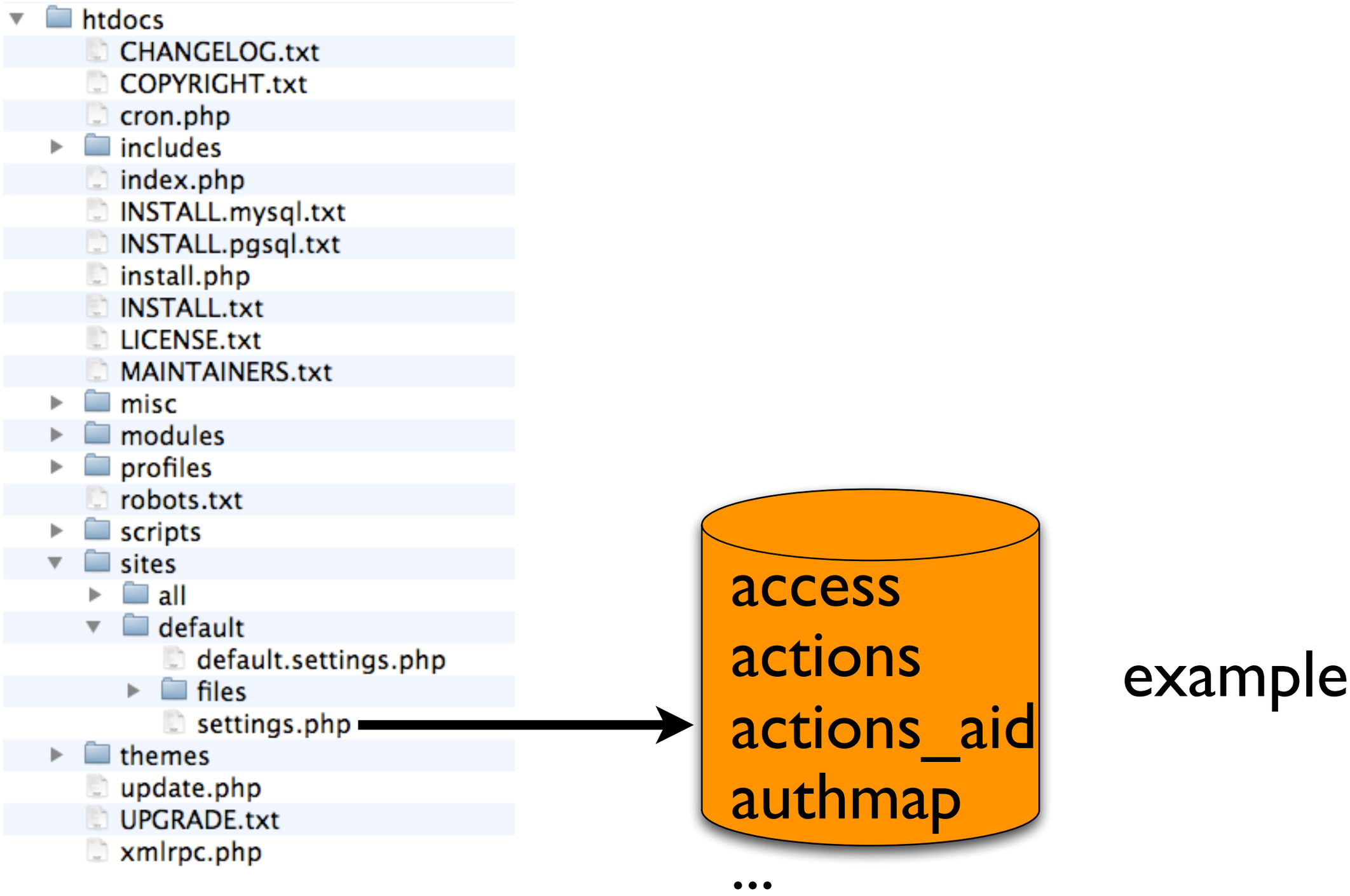
```
$db_prefix = array(
    'default'   => 'main_',
    'users'     => 'shared_',
    'sessions'  => 'shared_',
    'role'      => 'shared_',
    'authmap'   => 'shared_',
);
```


settings.php

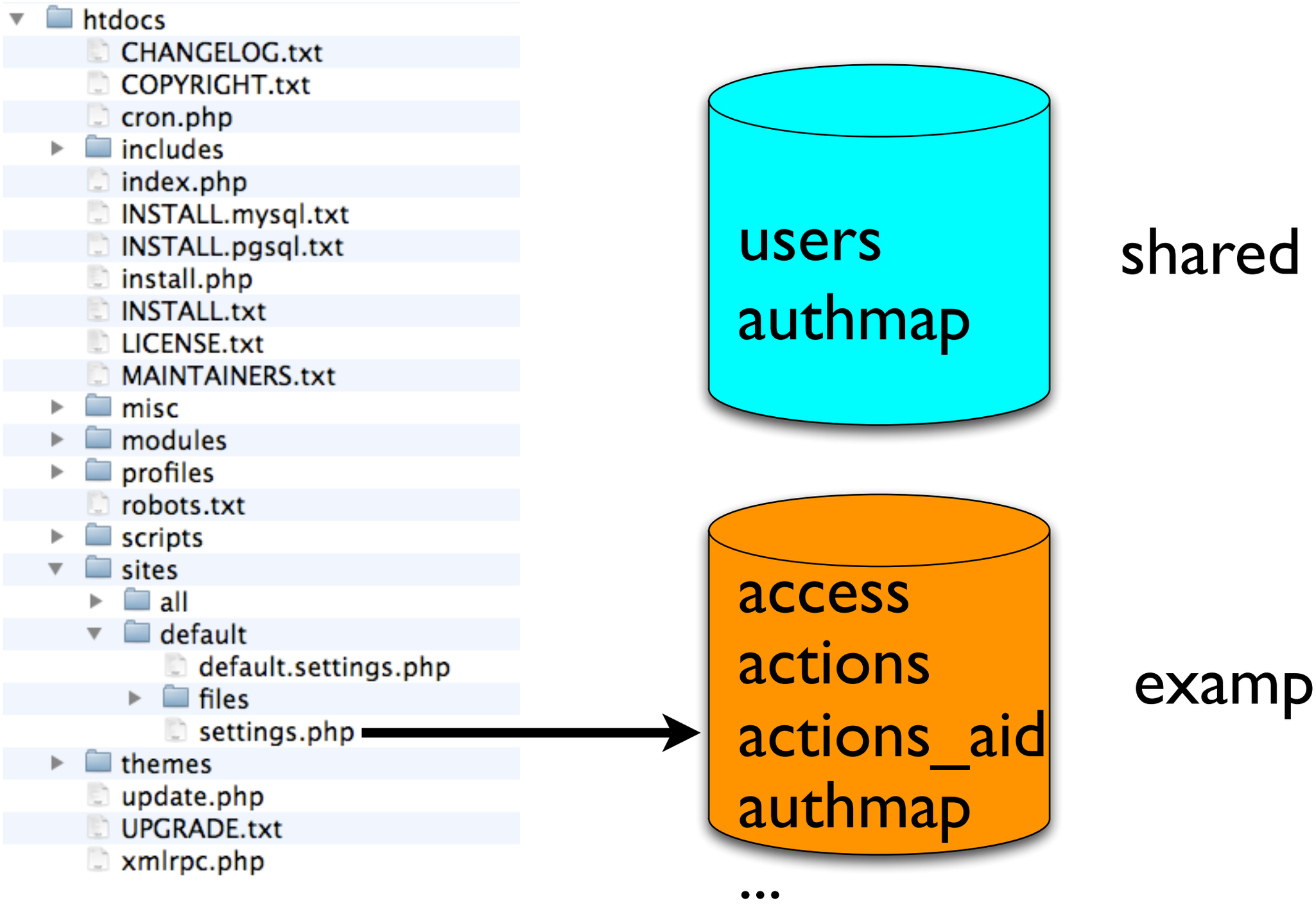
```
$db_prefix = array(
    'default'   => '',
    'users'     => 'shared.',
    'sessions'  => 'shared.',
    'role'      => 'shared.',
    'authmap'   => 'shared.',
);
```

shared.users

databasename.tablename



What will happen with this arrangement? Nothing different! The location of the two tables has just changed (users and authmap tables in the example database are unused).



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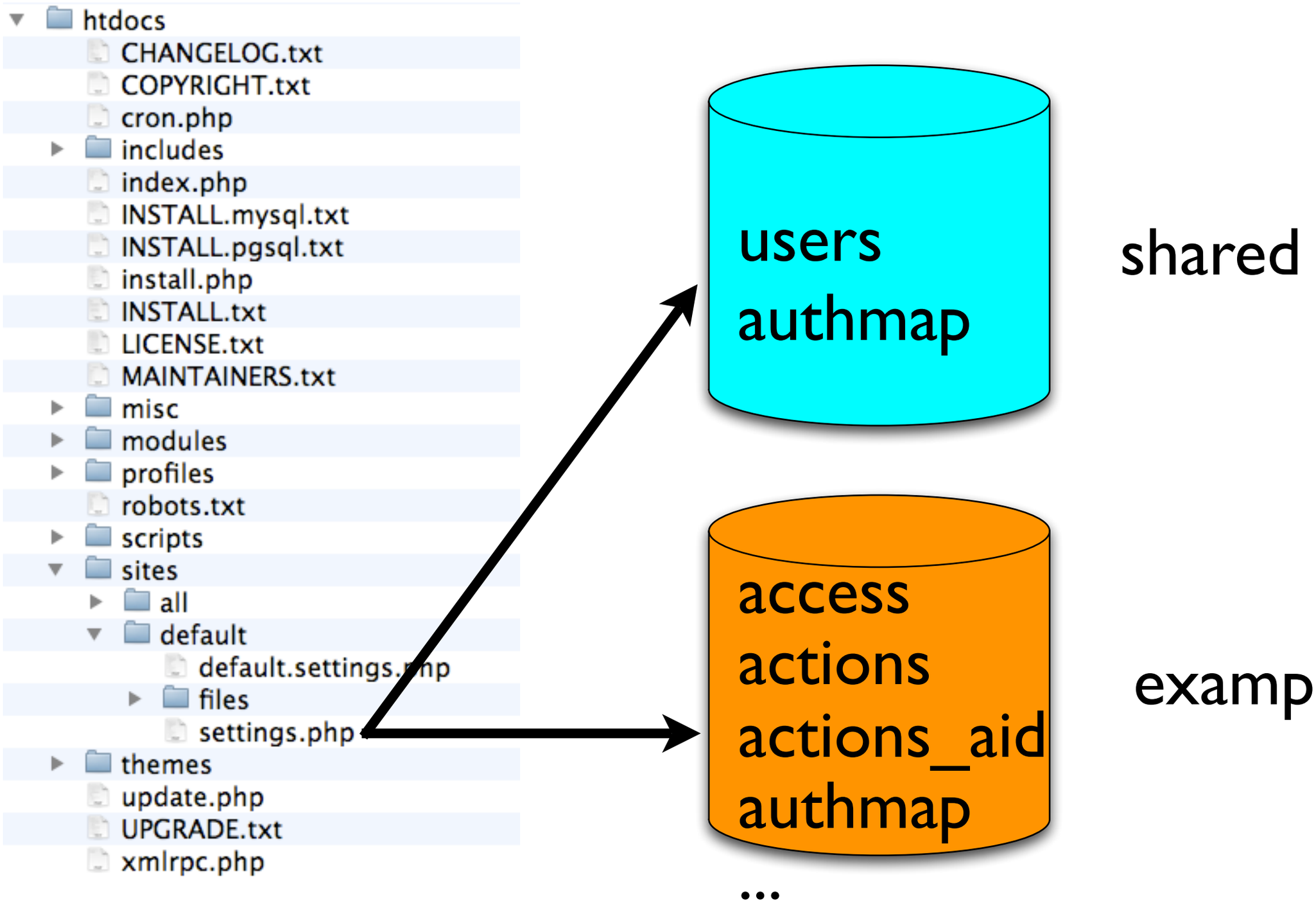

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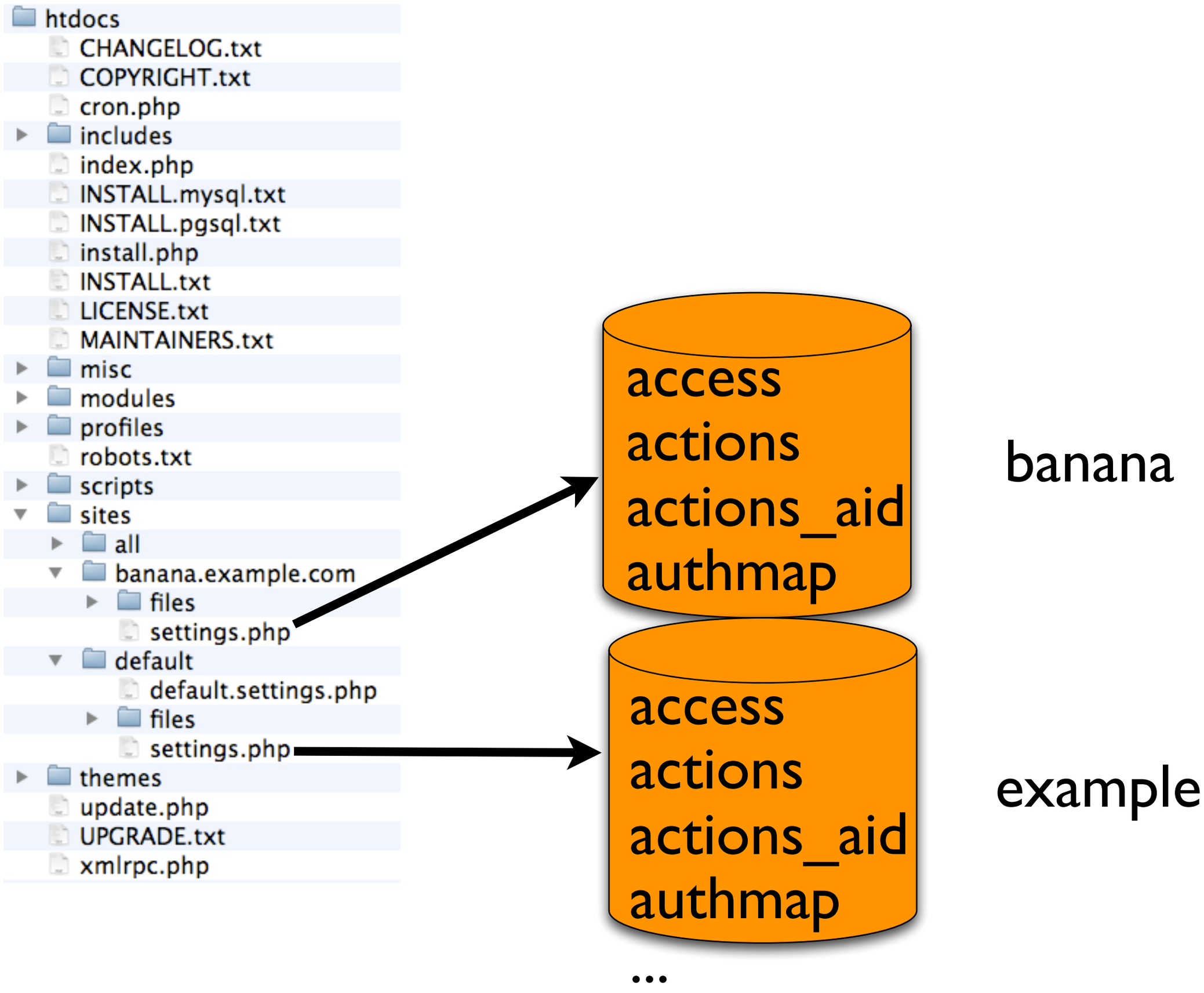
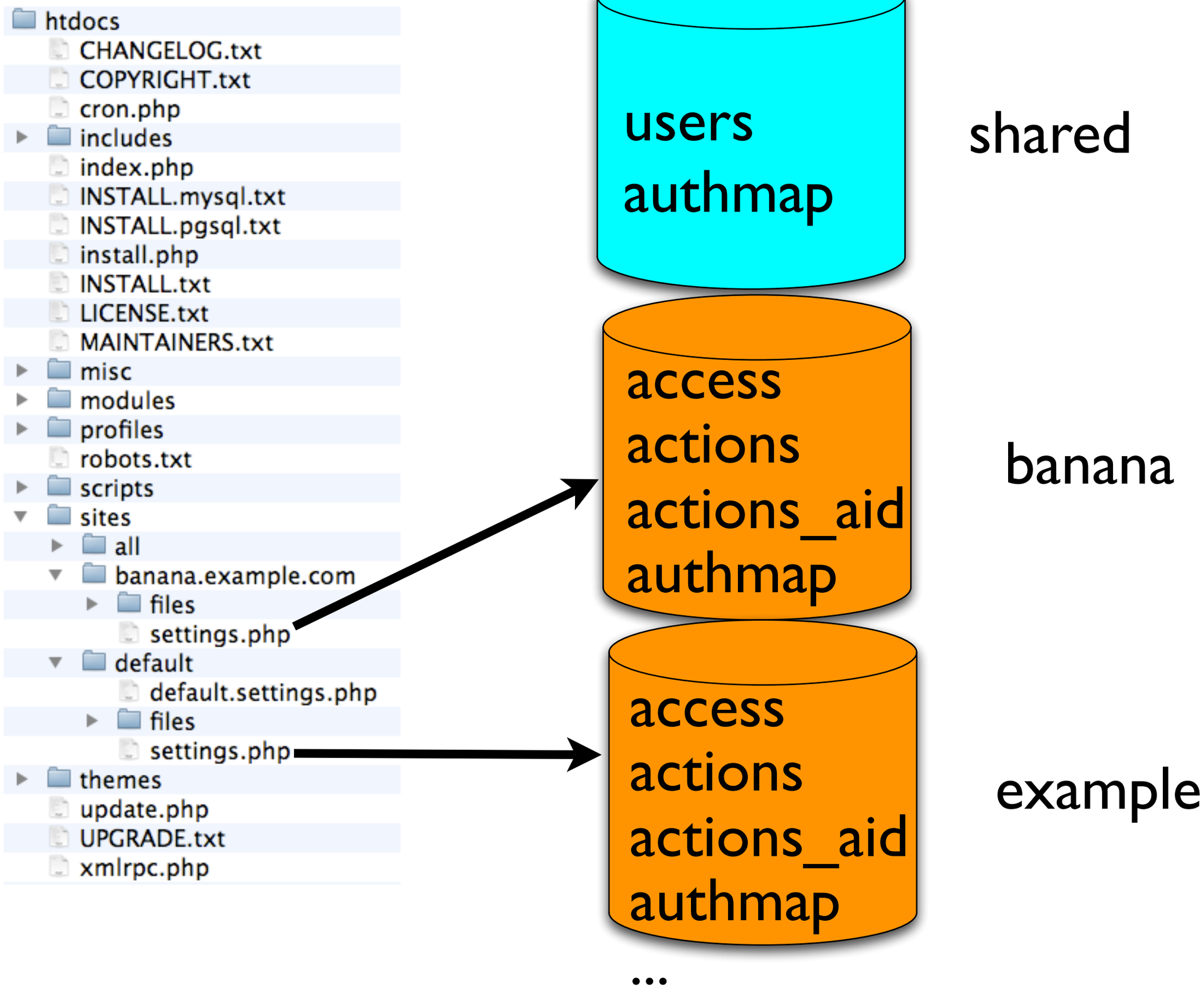
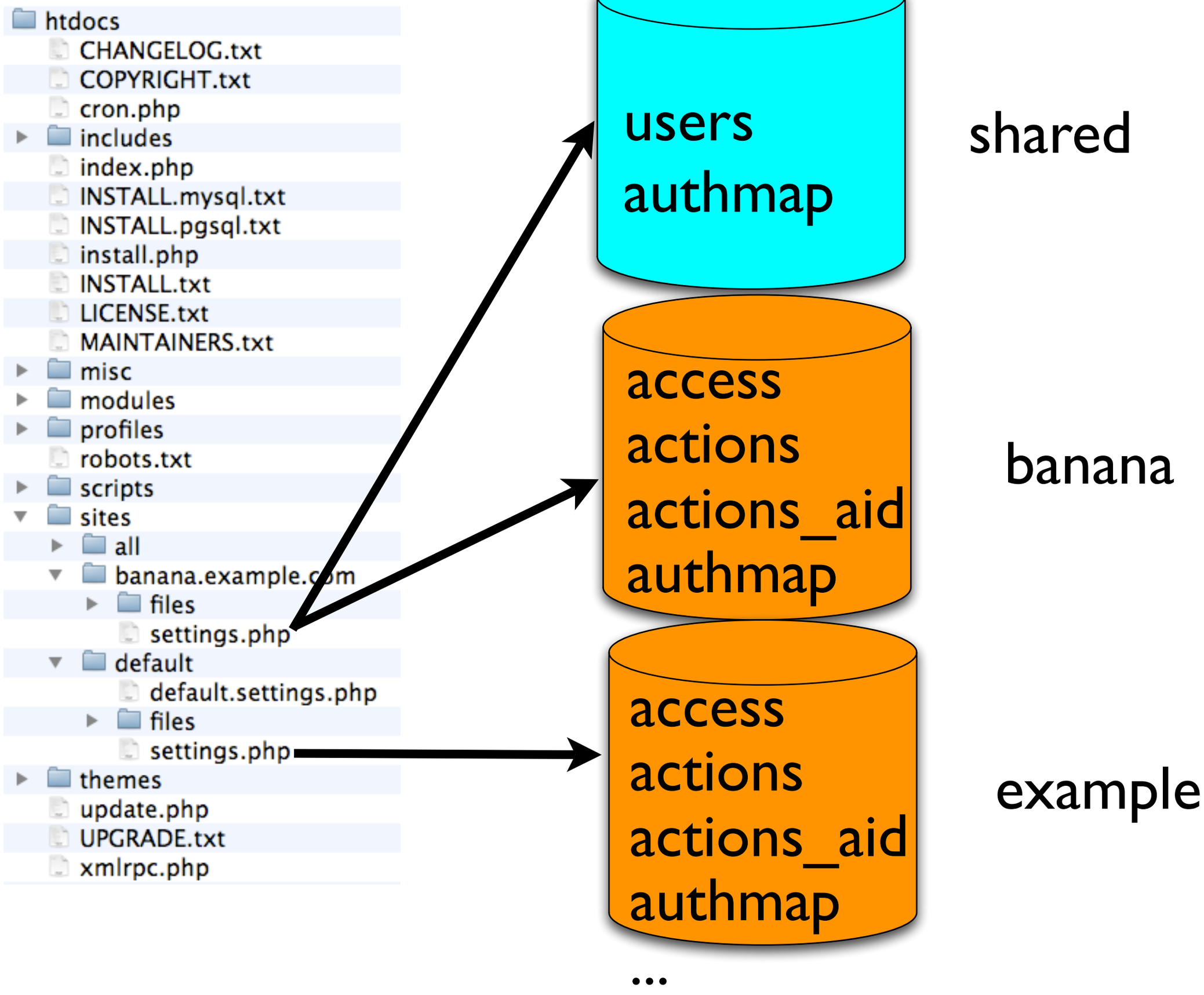


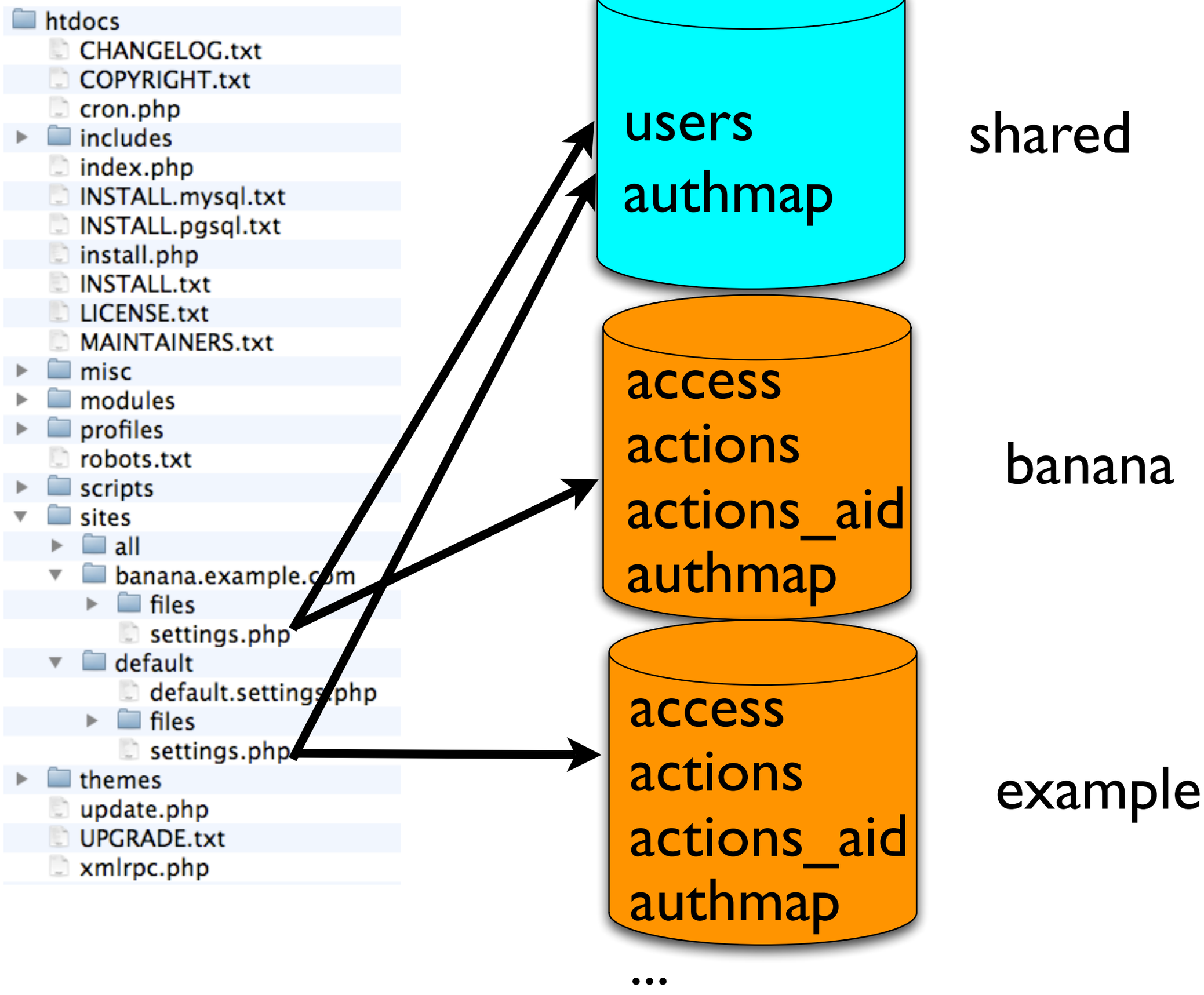
Still no change in behavior!



Still no change in behavior!



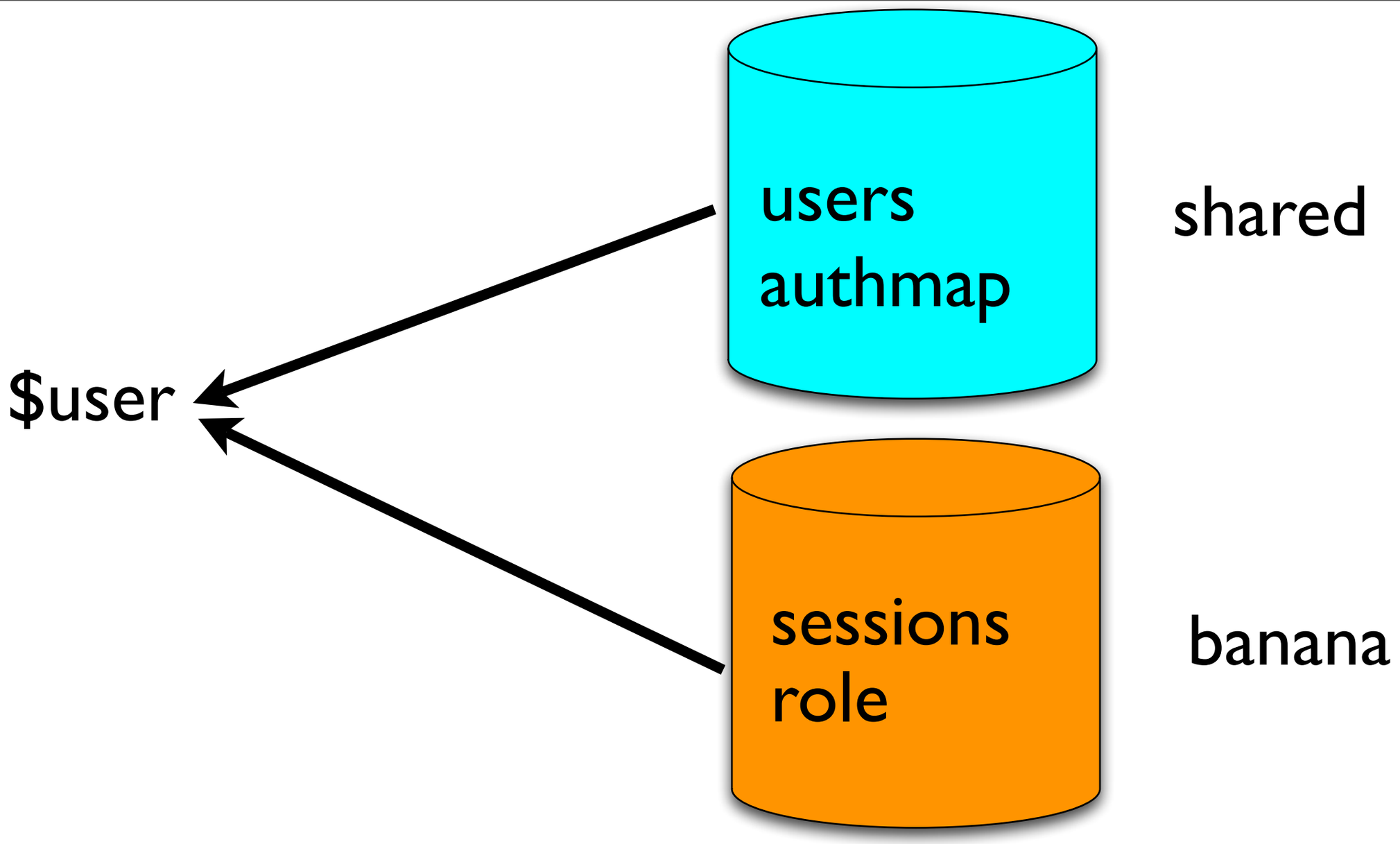
Still no change in behavior!

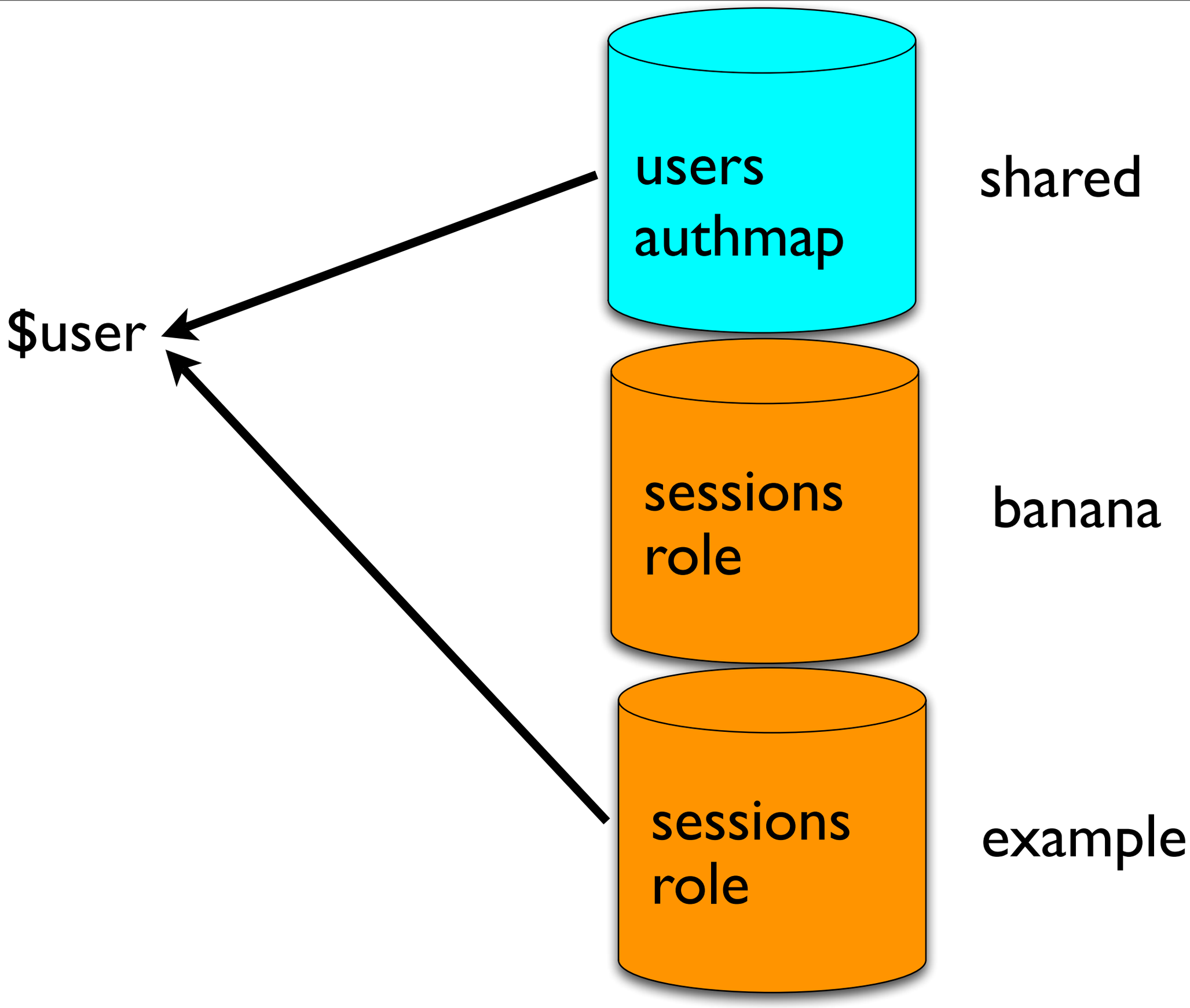


Still no change in behavior!

“Logged in” means

- Cookie containing session ID
- Entry in sessions table containing session ID
- Entry in users table


users
authmap
shared
$user
sessions
role
banana


users
authmap
shared
$user
sessions
role
banana
sessions
role
example

Share user, authmap

Separate login on each site

Simultaneous logins!

User record shared

Roles are *not* shared

Role assignments are *not* shared

Share user, authmap

Separate login on each site

Simultaneous logins!

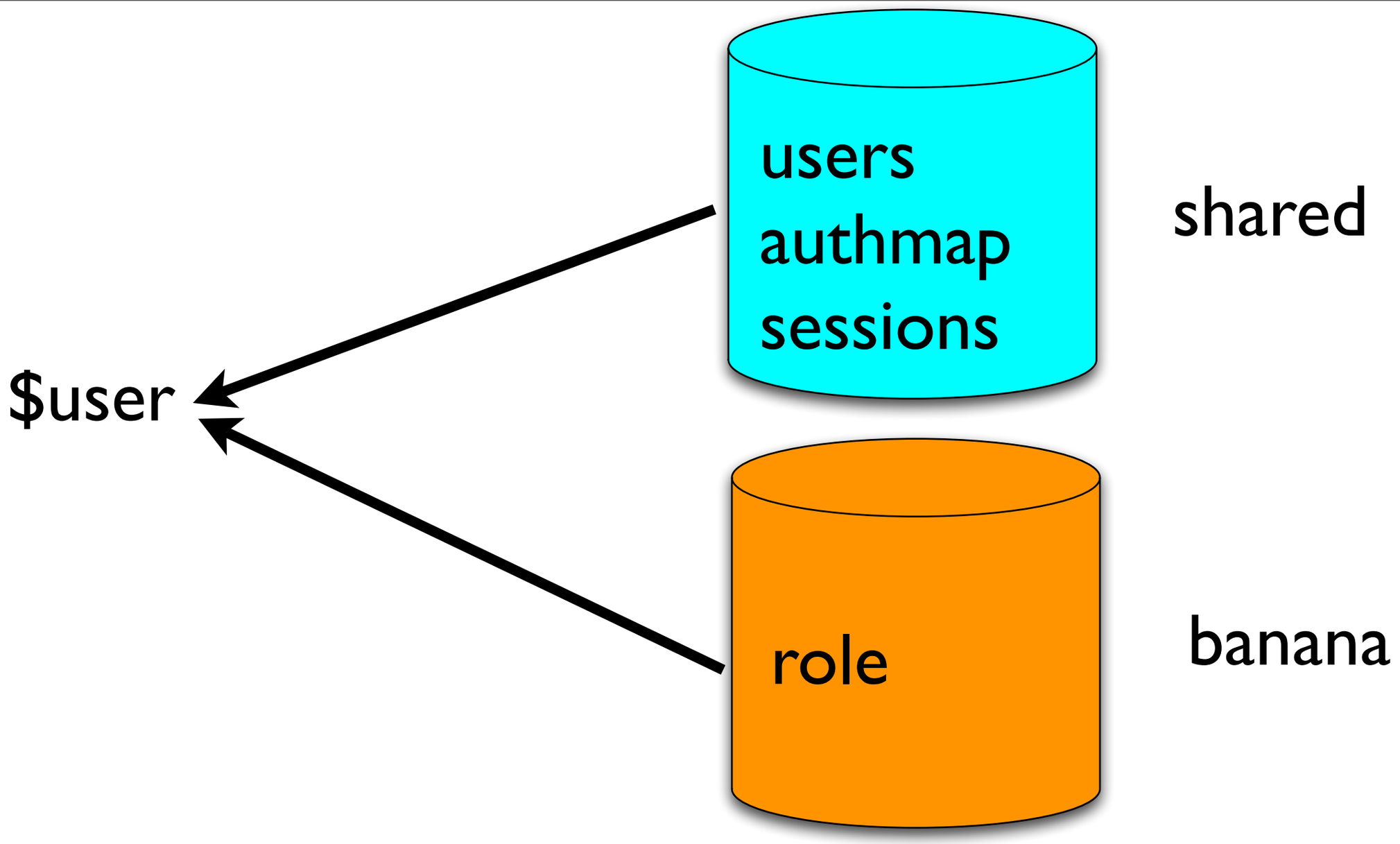
User record shared

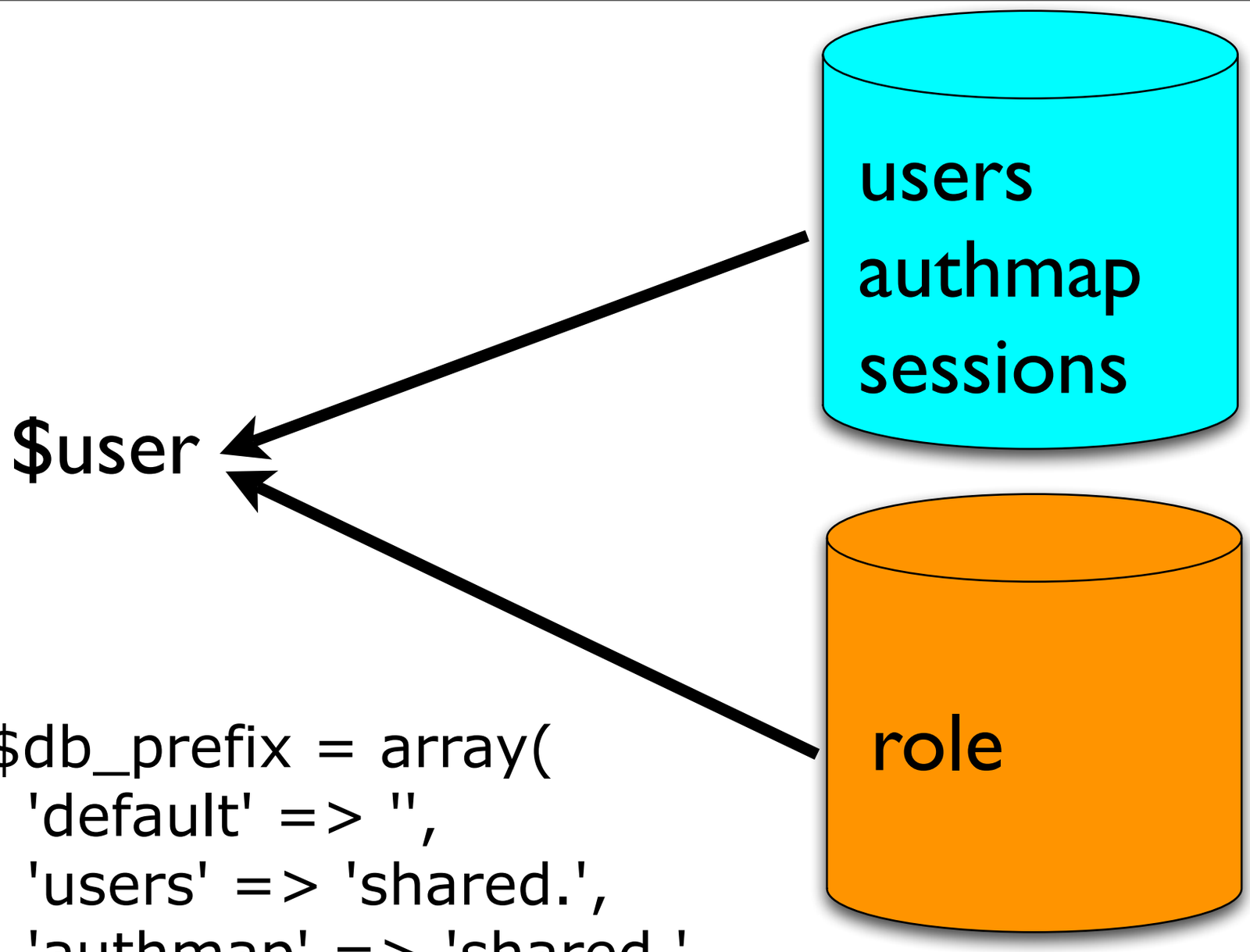
Roles are *not* shared

Role assignments are *not* shared

Field
uid
name
pass
mail
mode
sort
threshold
theme
signature
created
access
login
status
timezone
language
picture
init
data

Shared Logins


users
authmap
sessions
shared
$user
role
banana




```
$db_prefix = array(
  'default' => '',
  'users' => 'shared.',
  'authmap' => 'shared.',
  'sessions' => 'shared.',
);
```

What happens?

What happens?

- Log into http://banana.example.com

What happens?

- Log into http://banana.example.com
- Go to http://www.example.com

What happens?

- Log into http://banana.example.com
- Go to http://www.example.com
- We're not logged in!

What happens?

- Log into http://banana.example.com
- Go to http://www.example.com
- We're not logged in!
- Huh?

What's wrong with this picture?

SESS0787a3dbcceb3bde85599fd17a876fa8de:
d977085b070ee1f8def0fa7c2fb26ada

SESS2611eb8d937302f9383947cd79a86d6888:
26bd9e318d607b0581696431bcfb93b1

$cookie_domain = ‘example.com’

What happens?

What happens?

- Log into http://banana.example.com

What happens?

- Log into http://banana.example.com
- Go to http://www.example.com

What happens?

- Log into http://banana.example.com
- Go to http://www.example.com
- We're already logged in!

What happens?

- Log into http://banana.example.com
- Go to http://www.example.com
- We're already logged in!
- Yay!

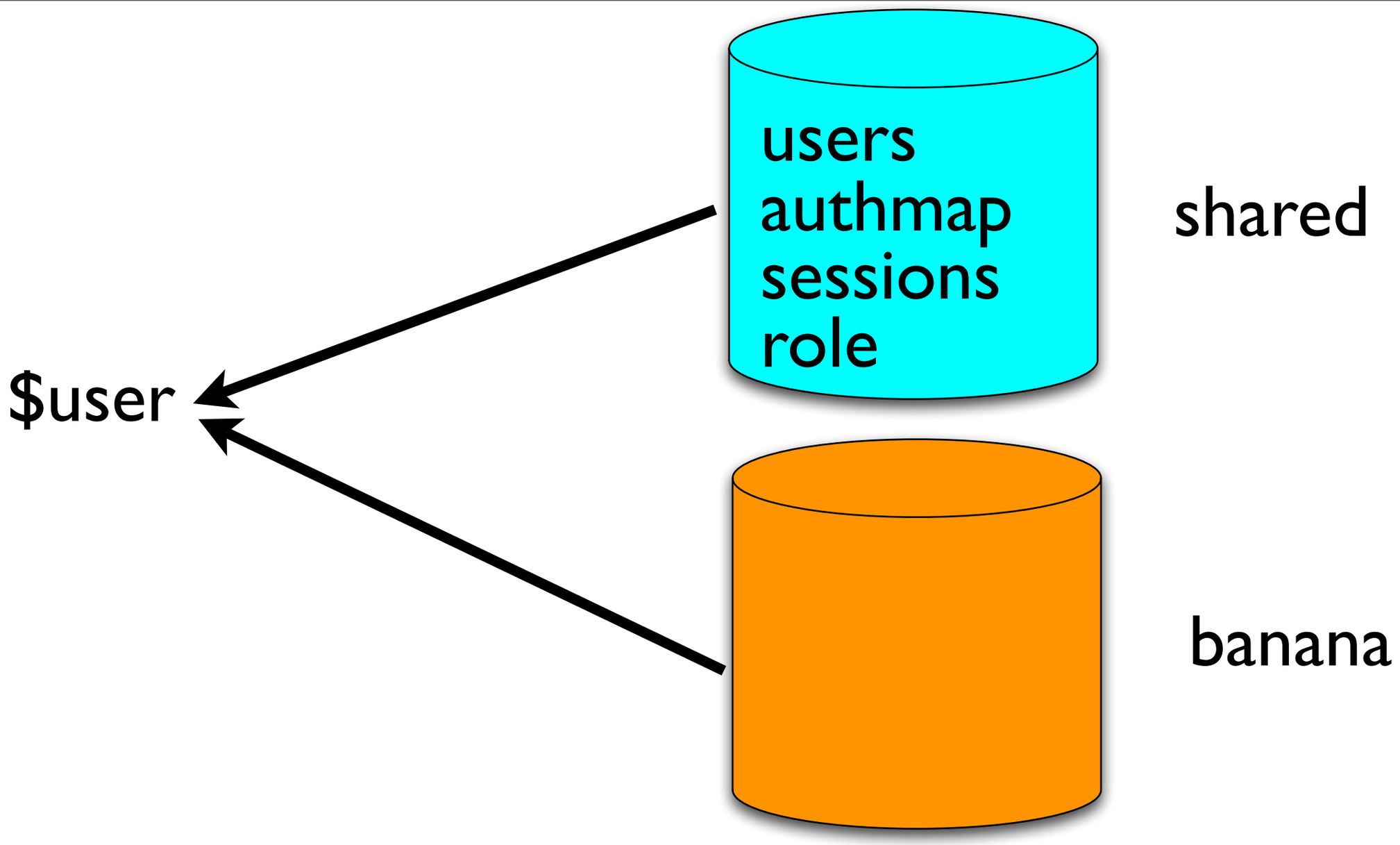
user, authmap, sessions + $cookie_domain

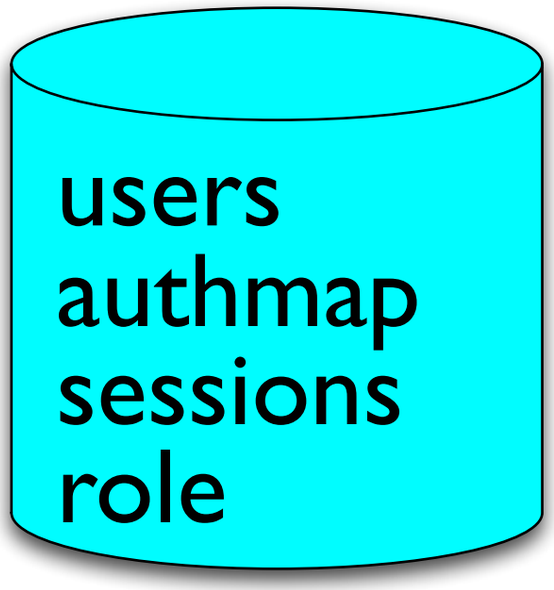
One login for all sites

User record shared

Roles are *not* shared

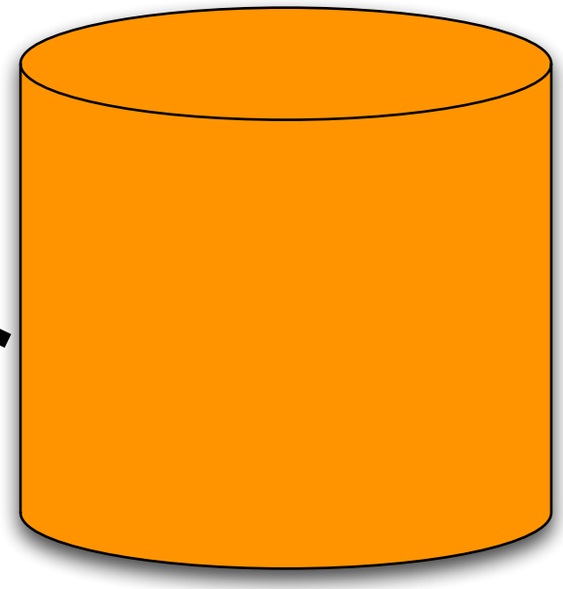
Role assignments are *not* shared


users
authmap
sessions
role
shared
$user
banana



shared

$user



banana

```
$db_prefix = array(
  'default' => '',
  'users' => 'shared.',
  'authmap' => 'shared.',
  'sessions' => 'shared.',
  'role' => 'shared.',
);
```

banana.example.com

Home › Administer › User management

jvandyk

- My account
- Create content
- Administer
  - Content management
  - Site building
  - Site configuration
  - User management
    - Access rules
    - Permissions
    - Roles
    - User settings
    - Users
  - Reports
  - Help
- Log out

Roles

Roles allow you to fine tune the security and administration of Drupal. A role defines a group of users that have privileges as defined in user permissions. Examples of roles include: anonymous user, authenticated user, mod administrator and so on. In this area you will define the *role names* of the various roles. To delete a role choose

By default, Drupal comes with two user roles:

- Anonymous user: this role is used for users that don't have a user account or that are not authenticated.
- Authenticated user: this role is automatically granted to all logged in users.

Name	Operations	
anonymous user	locked	edit permissions
authenticated user	locked	edit permissions
content reviewer	edit role	edit permissions
devil's advocate	edit role	edit permissions
site editor	edit role	edit permissions

Add role

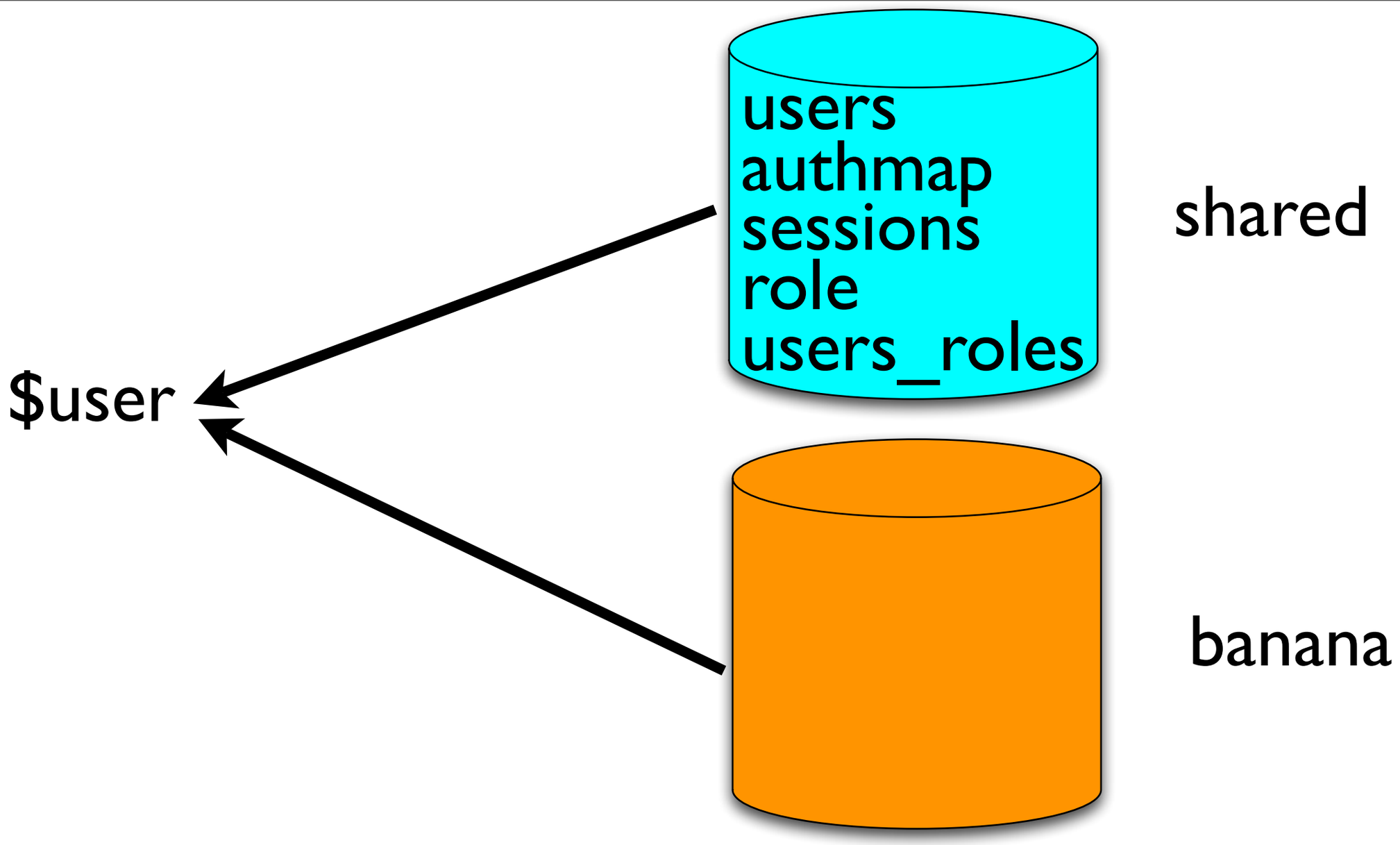
user, authmap, sessions, role + $cookie_domain

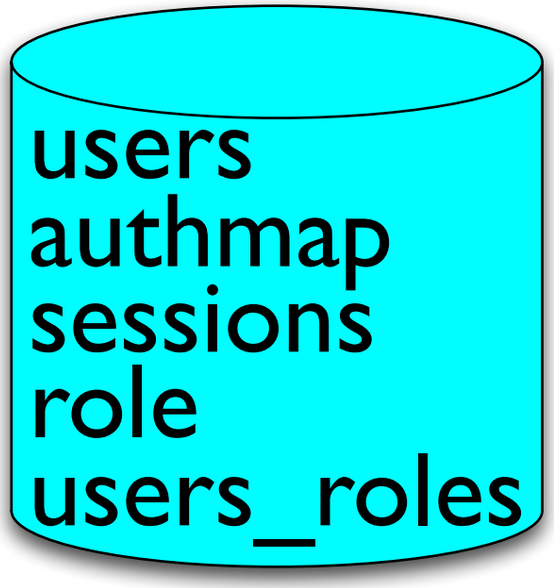
One login for all sites

User record shared

Role names/ids shared

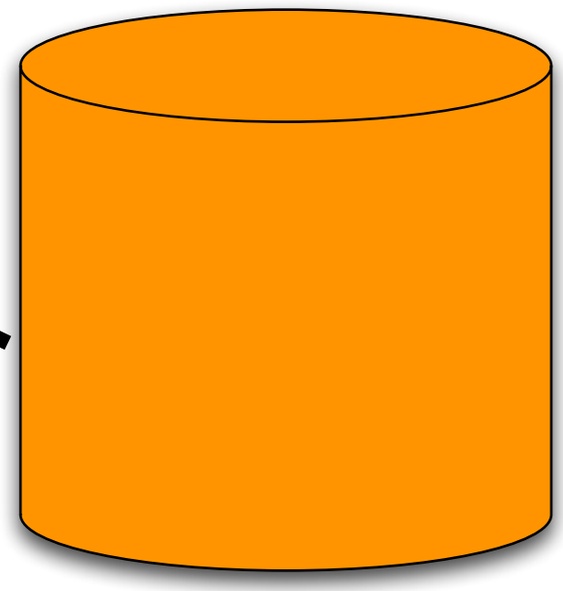
Role assignments are *not* shared


users
authmap
sessions
role
users_roles
shared
$user
banana



shared

$user



banana

```
$db_prefix = array(
  'default' => '',
  'users' => 'shared.',
  'authmap' => 'shared.',
  'sessions' => 'shared.',
  'role' => 'shared.',
  'users_roles' => 'shared.',
);
```

user, authmap, sessions, role, users_roles + $cookie_domain

One login for all sites

User record shared

Role names/ids shared

Role assignments shared

	User record	Login	Role	Role assignment
user				
+ sessions		*		
+ role				
+ users_role				

Caution!

Caution!

- Table contention

Caution!

- Table contention
- Database updates

Caution!

- Table contention
- Database updates
- Don’t share role assignments and not role IDs!

Caution!

- Table contention
- Database updates
- Don't share role assignments and not role IDs!
- Think it out using stories!

What is Multisite?

How Multisite Works

Sharing Information Between Sites