Helpful Links

→ Install Apache, MySQL, PHP on macOS High Sierra 10.13
→ Set up localhost on macOS High Sierra (Apache, MySQL, and PHP 7) with SSL/HTTPS

Turn on apache

- At the terminal, type: `> sudo apachectl start`
- In a browser type: `localhost` or `localhost/index.html`
- If you see: **It Works!**, it works.

Apache General Information

Apache Doc Root Directory	/Library/WebServer/Documents
httpd.conf lives in:	/etc/apache2/httpd.conf
localhost web access	**http://localhost/index.php**
Other docs and dirs in Document Root	phpinfo.php, phpmyadmin, php.ini, inc/
bash alias	`docroot='cd /Library/WebServer/Documents\'`

Turn on PHP

At the terminal, type: **$>** `sudo vi /etc/apache2/httpd.conf`

Uncomment: `#LoadModule php7_module libexec/apache2/libphp7.so`

Save file then restart apache: **$>** `sudo apachectl restart`

In the document root: **$>** `sudo vi index.php`

Enter:
```
<?php
phpinfo();
?>
```

Save file then restart apache: **$>** `sudo apachectl restart`

In a browser, type: `localhost/index.php`

Install MySQL

- Download from https://dev.mysql.com/downloads/mysql
- Choose the version for your OS
- Click "No thanks, just start my download"
- Go through the download process
- Make sure you copy the password for root@localhost
- Start MySQL Server
- Add `/usr/local/mysql/bin` to path in `.bash_profile`

To update password, see '**If you lock yourself out of phpmyadmin**"

Install phpmyadmin

- Download phpmyadmin
- Make new directory in the document root: `sudo mkdir phpmyadmin`
- Make it writeable by owner (which could be root): `sudo chmod 755 phpmyadmin`
- Unzip or unpack the zip file and copy to new directory

Also see: phpmyadmin setup doc

- From `localhost/phpmyadmin/setup` create a new server connection by clicking **New server**
- Under Authentication tab, enter `root` as user and new password for root

Then click **Save**.

- Now navigate to `localhost/phpmyadmin`

If you lock yourself out of phpmyadmin:

...by turning on no password **IN** phpmyadmin:

At the command line:

```
$ sudo mysql
```
mysql> `SET PASSWORD FOR root@localhost=PASSWORD('letmein');`
mysql> `quit;`

Now use username *root* and password *letmein*

Database Access Information

Directory for include files	[docroot]/inc
MySQL Login file	db_conn.php
PHP include line	`require_once 'inc/db_conn.php';`

[docroot]/inc/db_conn.php

```php
<?php
// credentials for connecting to database
$host = 'hostname'; //database hostname
$user = 'db_user'; //database username
$pw = 'db_user_pw'; //database user password
$db = 'database'; //mysql database name
?>
```

Database normalization

FIRST NORMAL FORM

➔ NO repeating columns containing same type of data
➔ ALL columns contain a single value
➔ Unique PRIMARY KEY for each row

SECOND NORMAL FORM

➔ Table must be in First Normal Form
➔ Create new tables for any data that is repeated in columns
➔ Each new table needs a unique PRIMARY KEY for each row. `AUTO_INCREMENT` can do this.

THIRD NORMAL FORM

➔ Table must be in First and Second Normal Form. This is usually all that is necessary.
➔ Any data that is *not* dependent on a primary key, but *is* dependent on another value, should be removed to another table. This is a very strict use of normalization.