SWE Project

RESTful APIs
Fall 2019
Team 7

Team 7 Roster

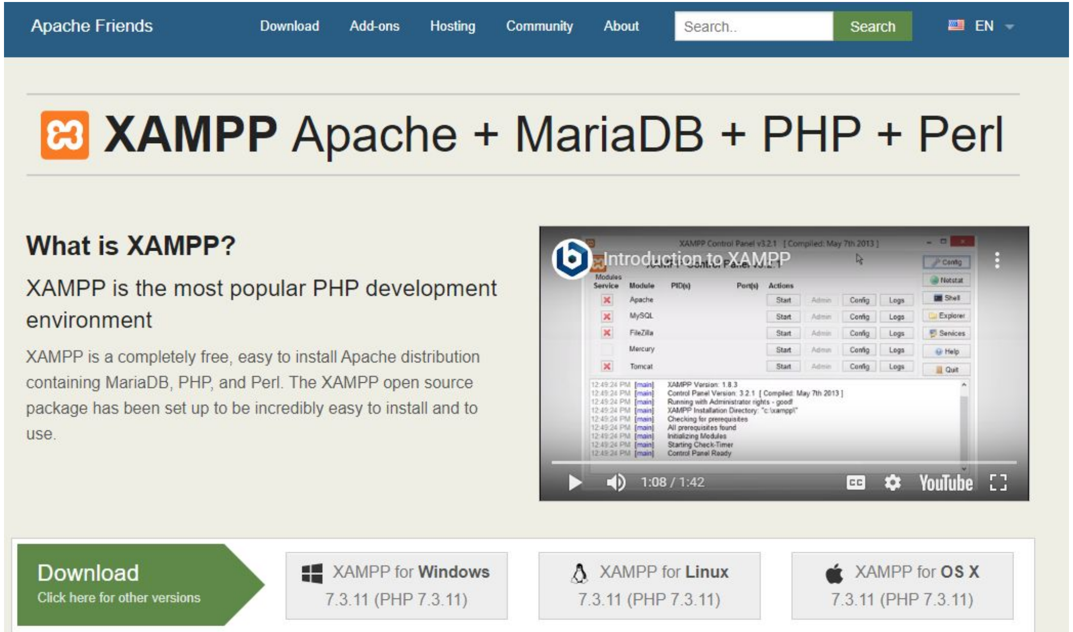
- Lateef
- Anthony
- Austin
- Christine
- David
- Andrew

Technology Overview

- XAMPP
- Windows OS
- PHP
- MySQL
- MariaDB
- myPHPadmin
- HTML/CSS/Bootstrap
- Postman
- Windows Task Scheduler
- SQLify.io (third party tool/website)

Downloaded XAMPP

- https://www.apachefriends.org/index.html
- Downloaded XAMPP
- https://www.youtube.com/watch?time_continue=68&v=h6DEDm7C37A&feature=emb_title



XAMPP Apache + MariaDB + PHP + Perl

What is XAMPP?

XAMPP is the most popular PHP development environment

XAMPP is a completely free, easy to install Apache distribution containing MariaDB, PHP, and Perl. The XAMPP open source package has been set up to be incredibly easy to install and to use.

XAMPP Control Panel v3.2.1 [Compiled: May 7th 2013]

Service	Module	PID(s)	Port(s)	Actions			
☒	Apache			Start	Admin	Config	Logs
☒	MySQL			Start	Admin	Config	Logs
☒	FileZilla			Start	Admin	Config	Logs
	Mercury			Start	Admin	Config	Logs
☒	Tomcat			Start	Admin	Config	Logs

```
12:49:24 PM  [main]   XAMPP Version: 1.8.3
12:49:24 PM  [main]   Control Panel Version: 3.2.1  [ Compiled: May 7th 2013 ]
12:49:24 PM  [main]   Running with Administrator rights - good!
12:49:24 PM  [main]   XAMPP Installation Directory: "c:\xampp\"
12:49:24 PM  [main]   Checking for prerequisites
12:49:24 PM  [main]   All prerequisites found
12:49:24 PM  [main]   Initializing Modules
12:49:24 PM  [main]   Starting Check-Timer
12:49:24 PM  [main]   Control Panel Ready
```

Download
Click here for other versions

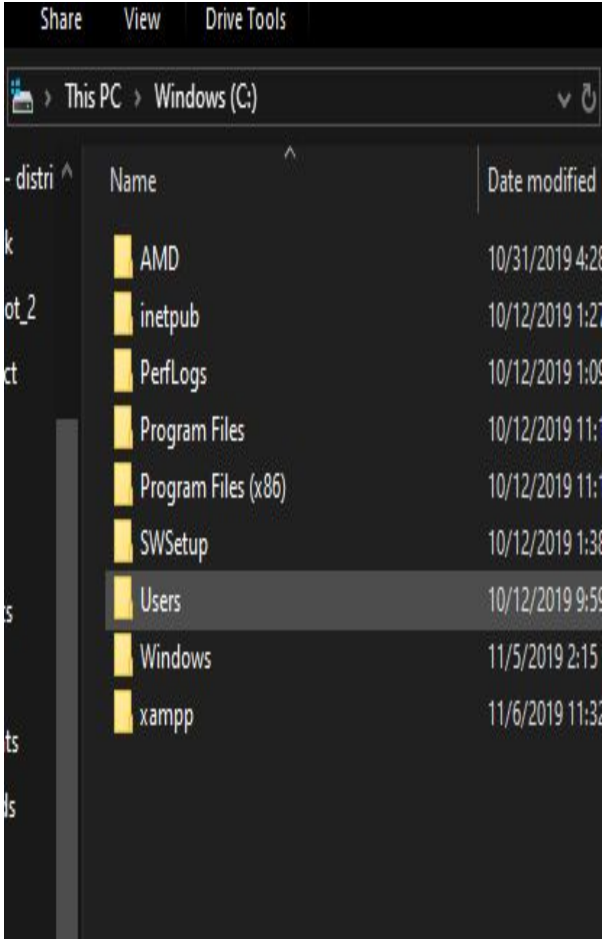
XAMPP for **Windows**
7.3.11 (PHP 7.3.11)

XAMPP for **Linux**
7.3.11 (PHP 7.3.11)

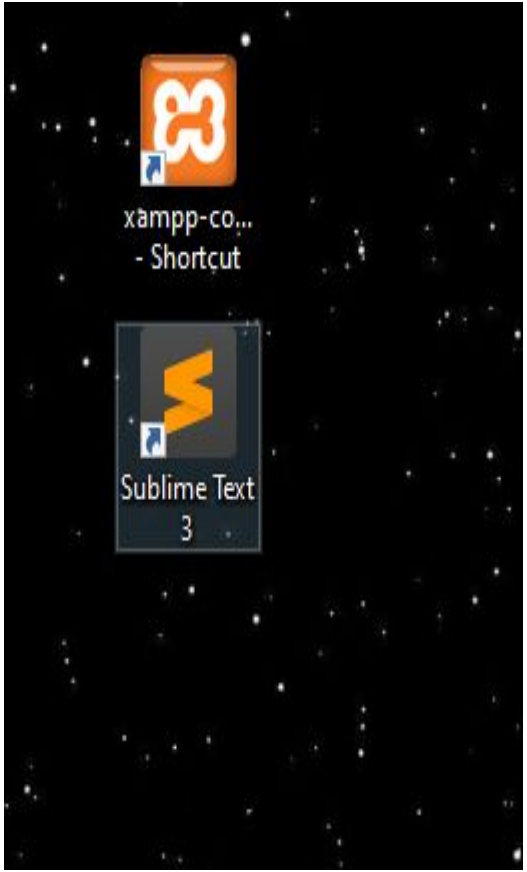
XAMPP for **OS X**
7.3.11 (PHP 7.3.11)

Setting it up

- Download is simple
- When down, created shortcut of Control Panel and XAMPP Folder from C drive. Control panel was inside xampp folder in C drive.
- Sublime Text 3 editor would be the editor of choice.



Name	Date modified
AMD	10/31/2019 4:28
inetpub	10/12/2019 1:27
PerfLogs	10/12/2019 1:09
Program Files	10/12/2019 11:1
Program Files (x86)	10/12/2019 11:1
SWSetup	10/12/2019 1:38
Users	10/12/2019 9:59
Windows	11/5/2019 2:15
xampp	11/6/2019 11:32

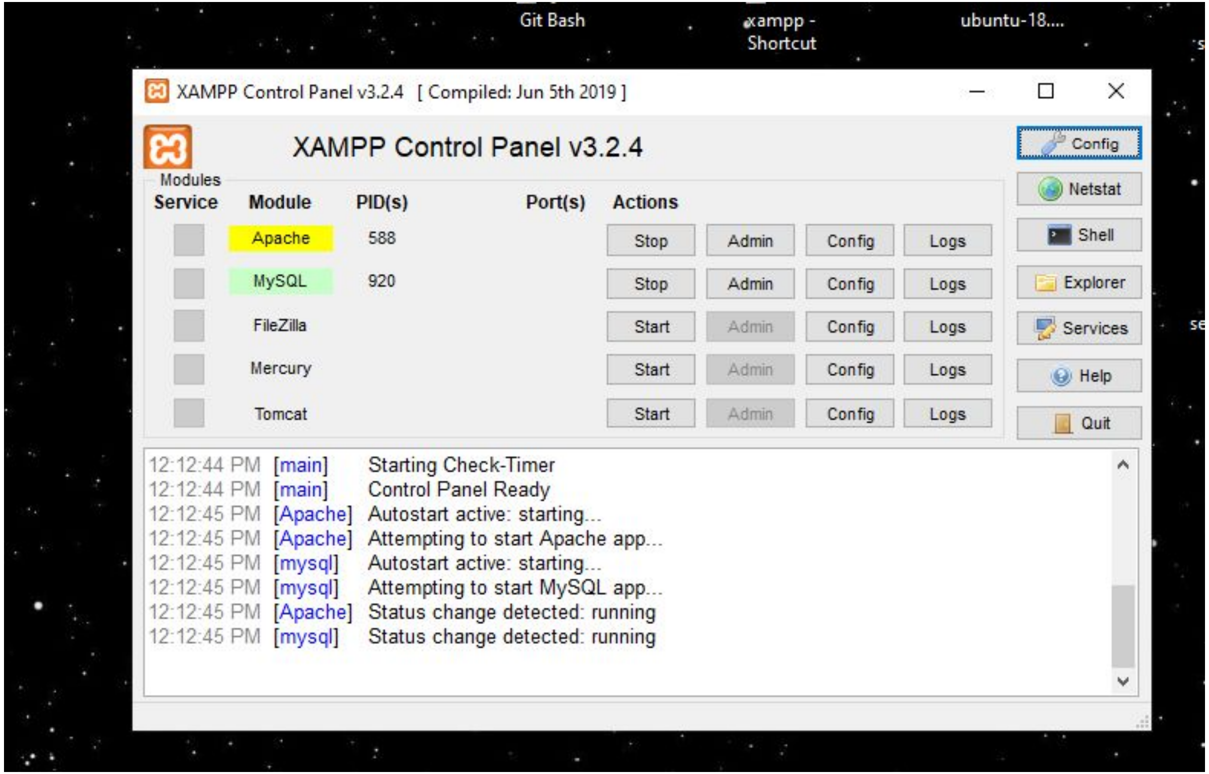


Languages Used

- Since we were using XAMPP, we had to try and abide by its main languages, MySQL and PHP.
- MariaDB is the standard of MySQL that was being used, thus documentation was read from their site.
- For front end was HTML, CSS, Bootstrap.

Working with XAMPP

- Allows us to turn our computer into server (localhost), and run server side operations.
- Same for database events.
- Open Control Panel ShortCut
- Click start on Apache and MySQL parts

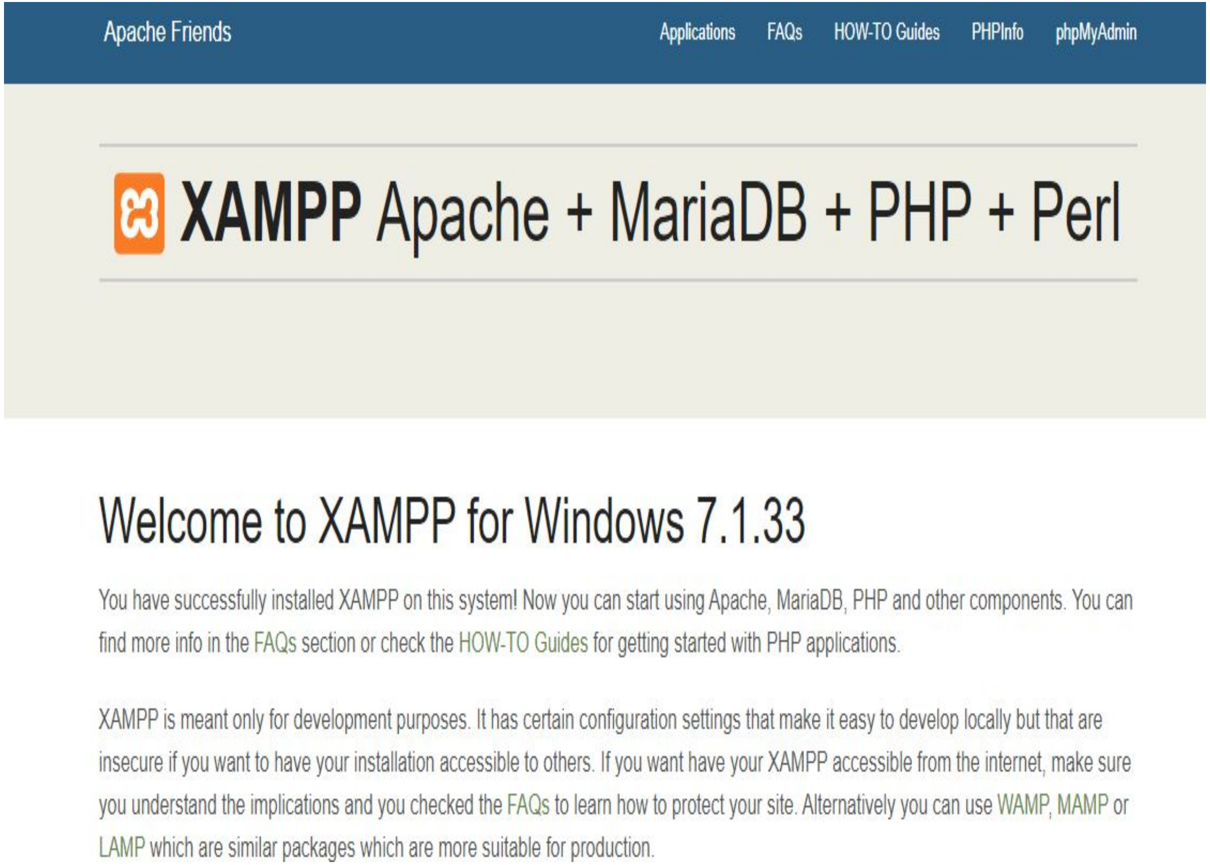


Service	Module	PID(s)	Port(s)	Actions			
	Apache	588		Stop	Admin	Config	Logs
	MySQL	920		Stop	Admin	Config	Logs
	FileZilla			Start	Admin	Config	Logs
	Mercury			Start	Admin	Config	Logs
	Tomcat			Start	Admin	Config	Logs

```
12:12:44 PM  [main]    Starting Check-Timer
12:12:44 PM  [main]    Control Panel Ready
12:12:45 PM  [Apache]  Autostart active: starting...
12:12:45 PM  [Apache]  Attempting to start Apache app...
12:12:45 PM  [mysql]   Autostart active: starting...
12:12:45 PM  [mysql]   Attempting to start MySQL app...
12:12:45 PM  [Apache]  Status change detected: running
12:12:45 PM  [mysql]   Status change detected: running
```

Open Web browser

- Our team used Google Chrome
- Type localhost in the url bar, and hit enter
- Should see screen similar to right (apache and mysql need to be on)



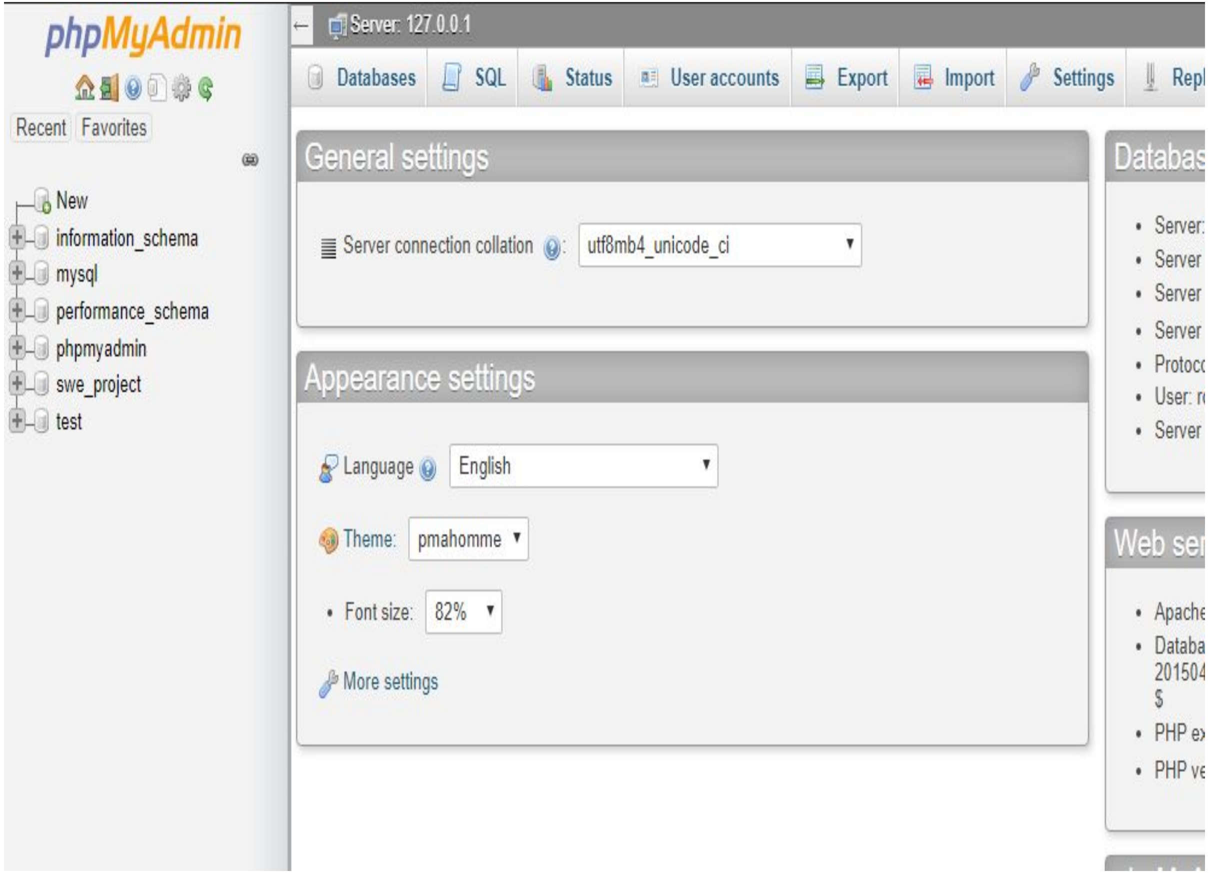
Welcome to XAMPP for Windows 7.1.33

You have successfully installed XAMPP on this system! Now you can start using Apache, MariaDB, PHP and other components. You can find more info in the FAQs section or check the HOW-TO Guides for getting started with PHP applications.

XAMPP is meant only for development purposes. It has certain configuration settings that make it easy to develop locally but that are insecure if you want to have your installation accessible to others. If you want have your XAMPP accessible from the internet, make sure you understand the implications and you checked the FAQs to learn how to protect your site. Alternatively you can use WAMP, MAMP or LAMP which are similar packages which are more suitable for production.

myPHPadmin

- Click on top right where it says myPHPadmin
- Once there, you should see screen similar to right
- This is a GUI that comes with XAMPP.
- Allows for table manipulation, database creation, setting events, managing permissions, etc.
- Simpler and helpful to go with MySQL shell,



Server connection collation: utf8mb4_unicode_ci

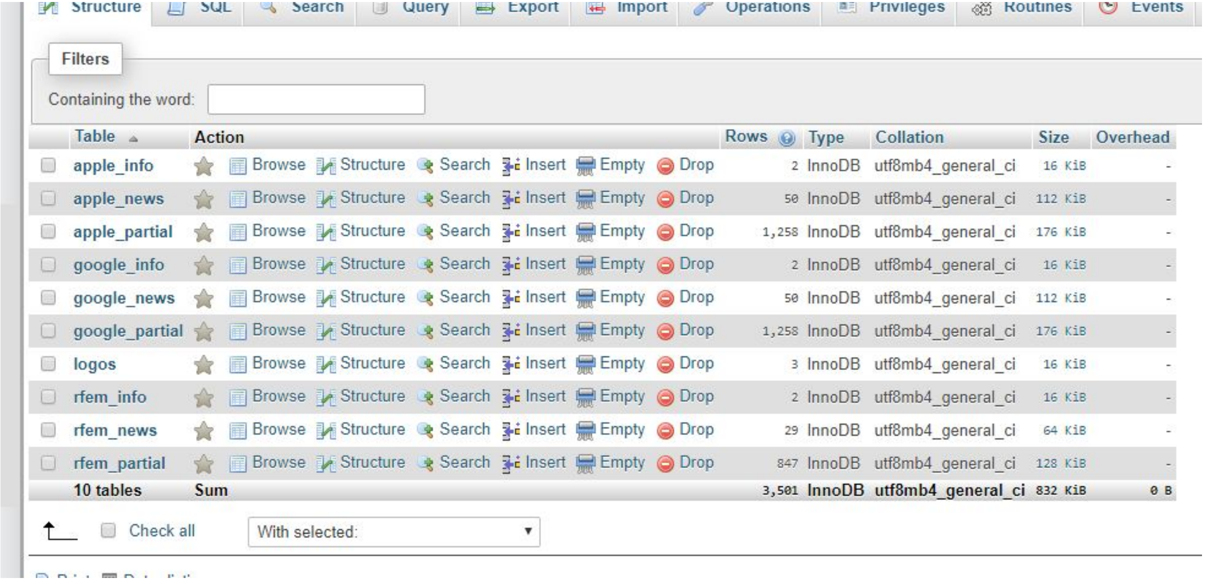
Language: English

Theme: pmahomme

Font size: 82%

myPHPadmin

- Relevant tables
- Database is MariaDB
- Comes installed with XAMPP



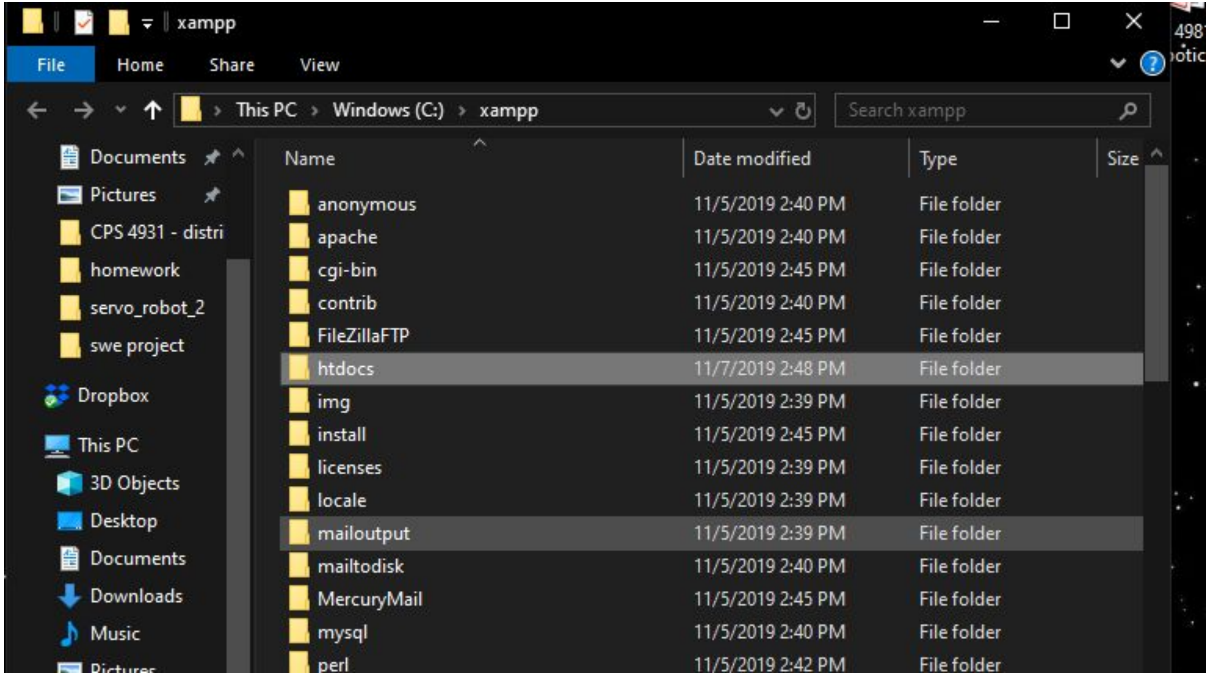
Containing the word:

	Table	Action	Rows	Type	Collation	Size	Overhead
□	apple_info	★ Browse Structure Search Insert Empty Drop	2	InnoDB	utf8mb4_general_ci	16 KiB	-
□	apple_news	★ Browse Structure Search Insert Empty Drop	50	InnoDB	utf8mb4_general_ci	112 KiB	-
□	apple_partial	★ Browse Structure Search Insert Empty Drop	1,258	InnoDB	utf8mb4_general_ci	176 KiB	-
□	google_info	★ Browse Structure Search Insert Empty Drop	2	InnoDB	utf8mb4_general_ci	16 KiB	-
□	google_news	★ Browse Structure Search Insert Empty Drop	50	InnoDB	utf8mb4_general_ci	112 KiB	-
□	google_partial	★ Browse Structure Search Insert Empty Drop	1,258	InnoDB	utf8mb4_general_ci	176 KiB	-
□	logos	★ Browse Structure Search Insert Empty Drop	3	InnoDB	utf8mb4_general_ci	16 KiB	-
□	rfem_info	★ Browse Structure Search Insert Empty Drop	2	InnoDB	utf8mb4_general_ci	16 KiB	-
□	rfem_news	★ Browse Structure Search Insert Empty Drop	29	InnoDB	utf8mb4_general_ci	64 KiB	-
□	rfem_partial	★ Browse Structure Search Insert Empty Drop	847	InnoDB	utf8mb4_general_ci	128 KiB	-
	10 tables	Sum	3,501	InnoDB	utf8mb4_general_ci	832 KiB	0 B

□ Check all   With selected: ▾

Coding

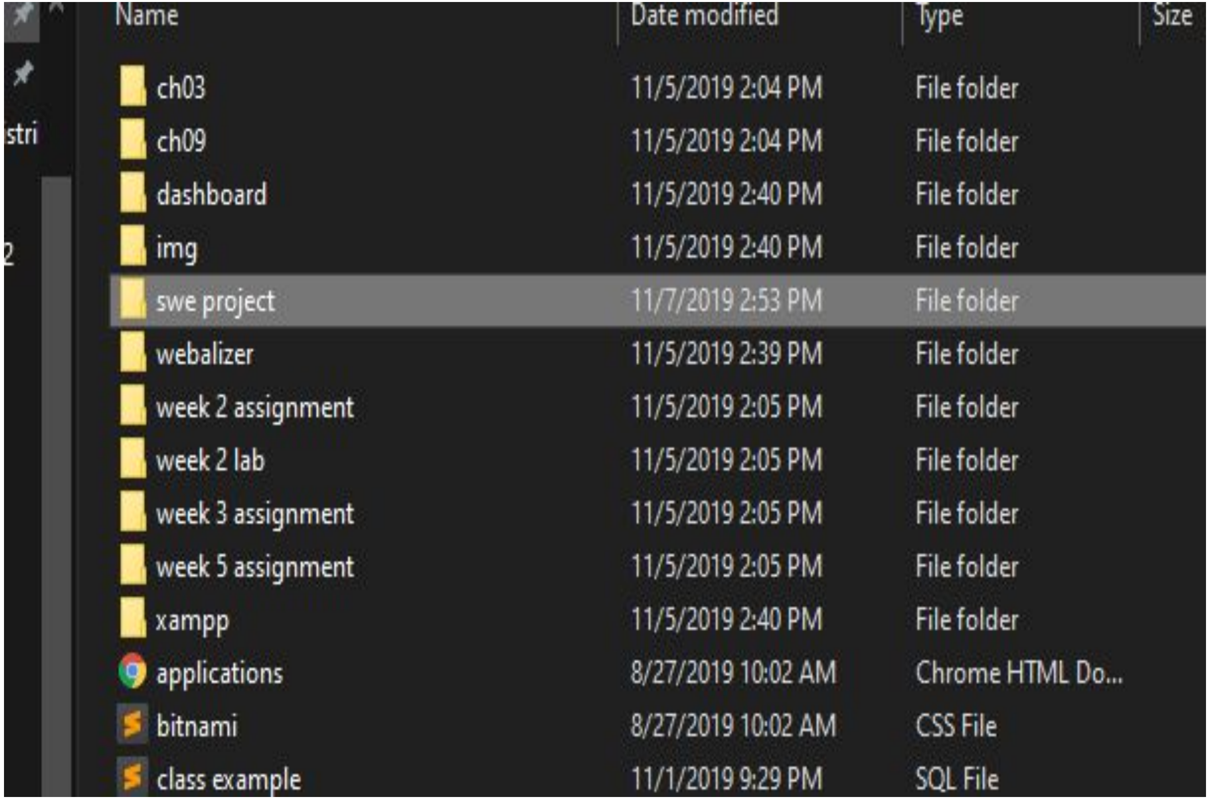
- To create and run files, open up XAMPP folder
- Go to htdocs
- Create relevant folder
- From there, place relevant source PHP, html, etc.



Name	Date modified	Type	Size
anonymous	11/5/2019 2:40 PM	File folder	
apache	11/5/2019 2:40 PM	File folder	
cgi-bin	11/5/2019 2:45 PM	File folder	
contrib	11/5/2019 2:40 PM	File folder	
FileZillaFTP	11/5/2019 2:45 PM	File folder	
htdocs	11/7/2019 2:48 PM	File folder	
img	11/5/2019 2:39 PM	File folder	
install	11/5/2019 2:45 PM	File folder	
licenses	11/5/2019 2:39 PM	File folder	
locale	11/5/2019 2:39 PM	File folder	
mailoutput	11/5/2019 2:39 PM	File folder	
mailtodisk	11/5/2019 2:40 PM	File folder	
MercuryMail	11/5/2019 2:45 PM	File folder	
mysql	11/5/2019 2:40 PM	File folder	
perl	11/5/2019 2:42 PM	File folder	

Coding

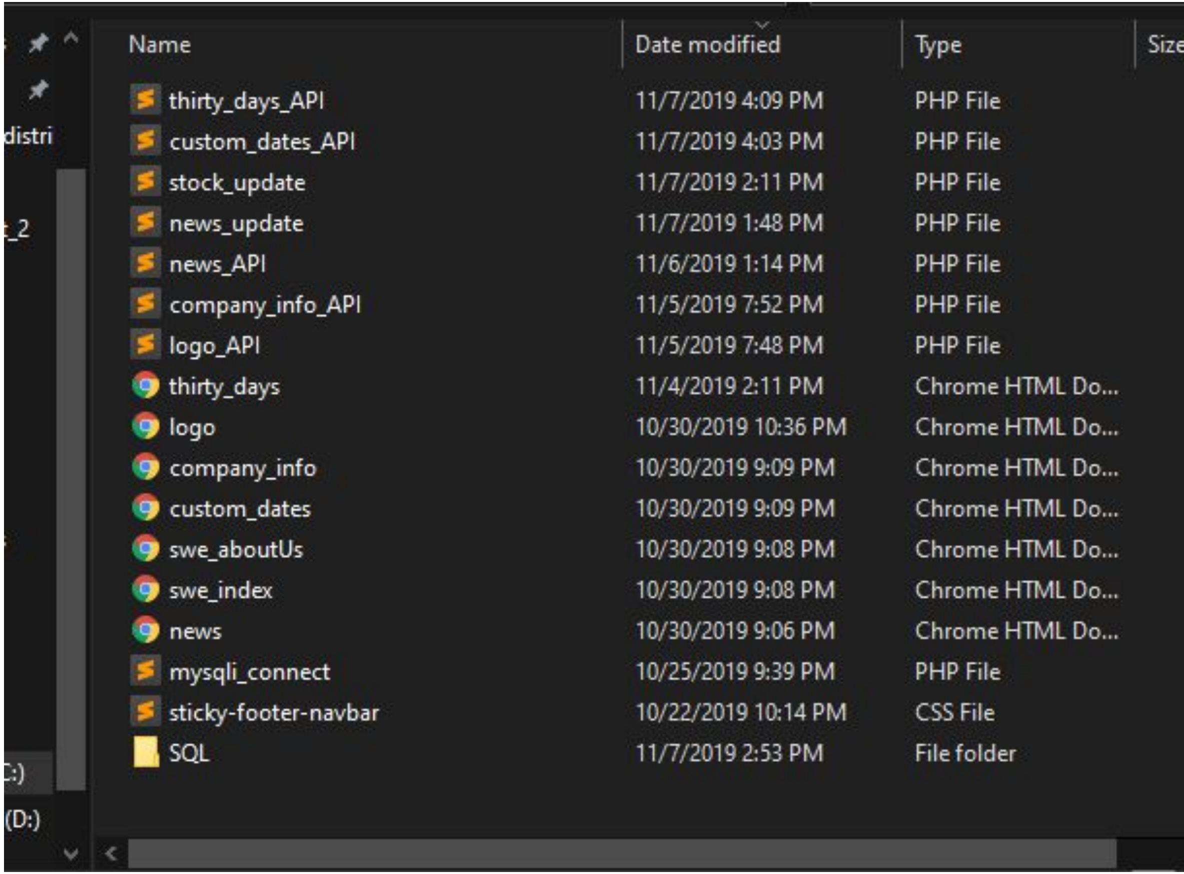
- To create and run files, open up XAMPP folder
- Go to htdocs
- Create relevant folder
- From there, place relevant source PHP, html, etc.
- Our project folder would be called ‘swe project’



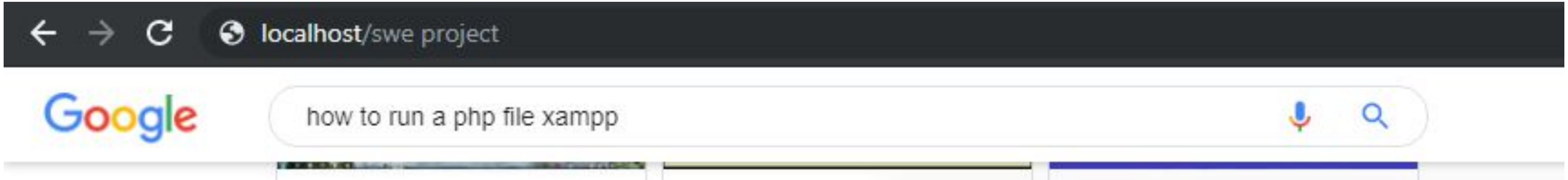
Name	Date modified	Type	Size
ch03	11/5/2019 2:04 PM	File folder	
ch09	11/5/2019 2:04 PM	File folder	
dashboard	11/5/2019 2:40 PM	File folder	
img	11/5/2019 2:40 PM	File folder	
swe project	11/7/2019 2:53 PM	File folder	
webalizer	11/5/2019 2:39 PM	File folder	
week 2 assignment	11/5/2019 2:05 PM	File folder	
week 2 lab	11/5/2019 2:05 PM	File folder	
week 3 assignment	11/5/2019 2:05 PM	File folder	
week 5 assignment	11/5/2019 2:05 PM	File folder	
xampp	11/5/2019 2:40 PM	File folder	
applications	8/27/2019 10:02 AM	Chrome HTML Do...	
bitnami	8/27/2019 10:02 AM	CSS File	
class example	11/1/2019 9:29 PM	SQL File	

Coding

- Once files are created, you are ready to test on browser.
- myPHPadmin will also help, with setting up database and table configuration, and just being an overall strong GUI
- Make sure apache and mySQL are still on control panel



Name	Date modified	Type	Size
thirty_days_API	11/7/2019 4:09 PM	PHP File	
custom_dates_API	11/7/2019 4:03 PM	PHP File	
stock_update	11/7/2019 2:11 PM	PHP File	
news_update	11/7/2019 1:48 PM	PHP File	
news_API	11/6/2019 1:14 PM	PHP File	
company_info_API	11/5/2019 7:52 PM	PHP File	
logo_API	11/5/2019 7:48 PM	PHP File	
thirty_days	11/4/2019 2:11 PM	Chrome HTML Do...	
logo	10/30/2019 10:36 PM	Chrome HTML Do...	
company_info	10/30/2019 9:09 PM	Chrome HTML Do...	
custom_dates	10/30/2019 9:09 PM	Chrome HTML Do...	
swe_aboutUs	10/30/2019 9:08 PM	Chrome HTML Do...	
swe_index	10/30/2019 9:08 PM	Chrome HTML Do...	
news	10/30/2019 9:06 PM	Chrome HTML Do...	
mysqli_connect	10/25/2019 9:39 PM	PHP File	
sticky-footer-navbar	10/22/2019 10:14 PM	CSS File	
SQL	11/7/2019 2:53 PM	File folder	



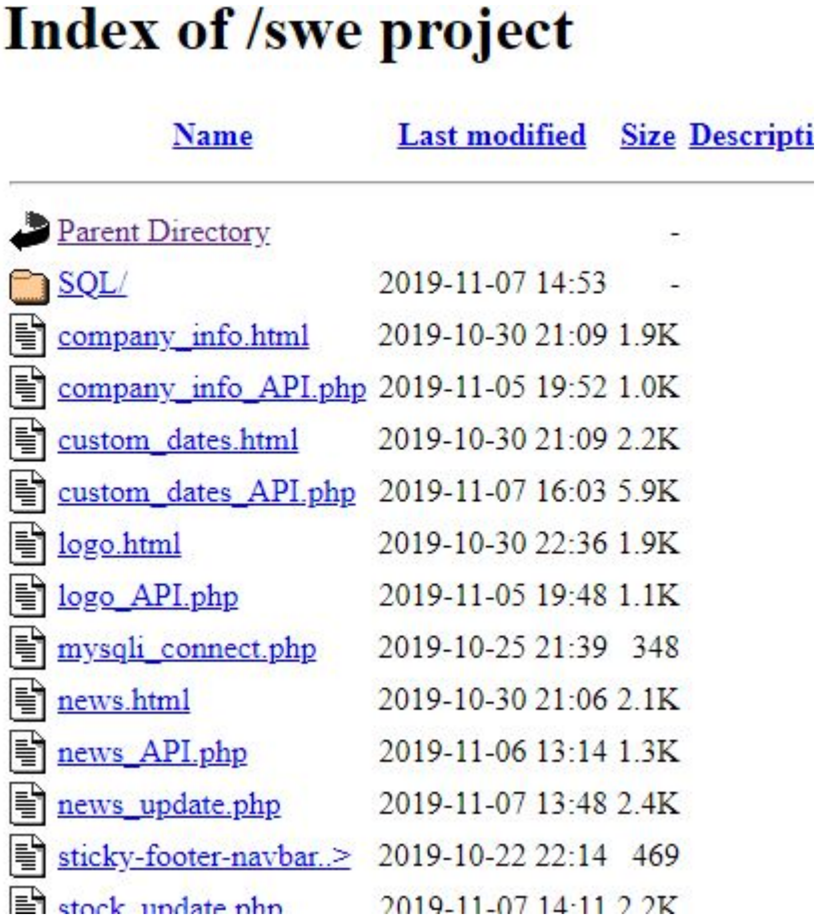
localhost/swe project

how to run a php file xampp

- Type localhost and folder name. You don't need to type full path, and include htdocs.
- Hit enter
- You should see directory of files or just home index, depending on how files are titled.

File directory

- From here, you can see your files
- You can then click and start troubleshooting.

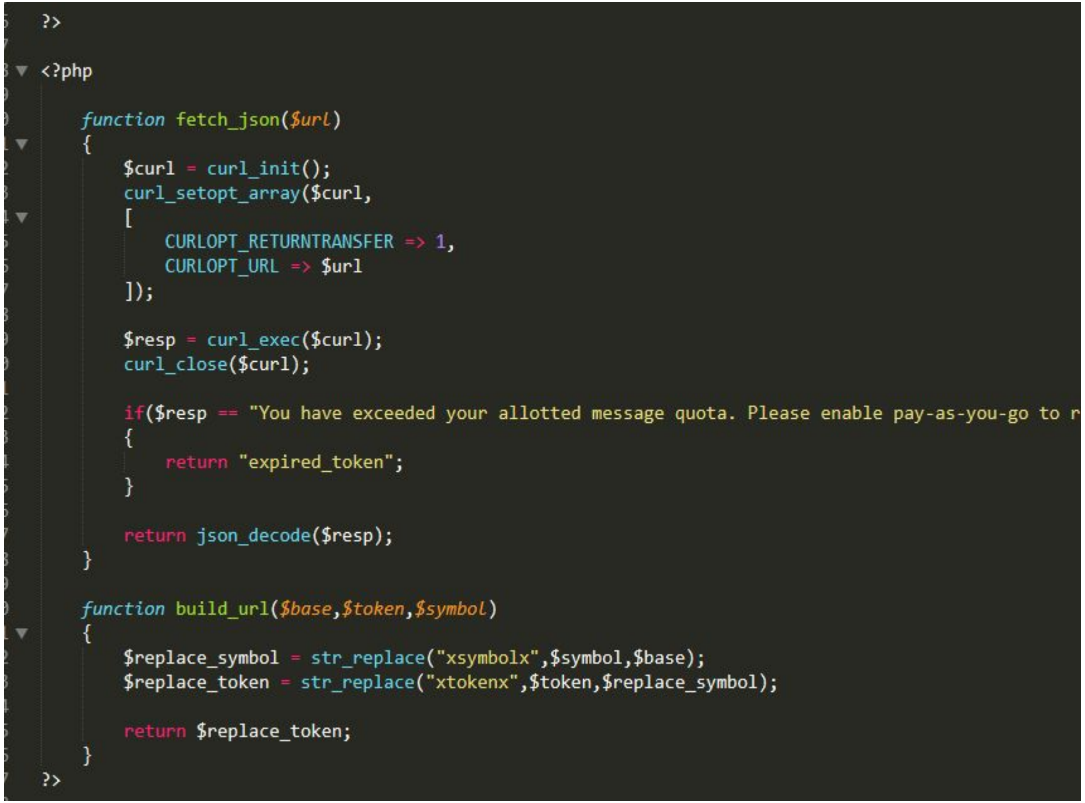


Index of /swe project

Name	Last modified	Size	Descripti
Parent Directory		-	
SQL/	2019-11-07 14:53	-	
company_info.html	2019-10-30 21:09	1.9K	
company_info_API.php	2019-11-05 19:52	1.0K	
custom_dates.html	2019-10-30 21:09	2.2K	
custom_dates_API.php	2019-11-07 16:03	5.9K	
logo.html	2019-10-30 22:36	1.9K	
logo_API.php	2019-11-05 19:48	1.1K	
mysqli_connect.php	2019-10-25 21:39	348	
news.html	2019-10-30 21:06	2.1K	
news_API.php	2019-11-06 13:14	1.3K	
news_update.php	2019-11-07 13:48	2.4K	
sticky-footer-navbar..>	2019-10-22 22:14	469	
stock_update.php	2019-11-07 14:11	2.2K	

After troubleshooting and testing

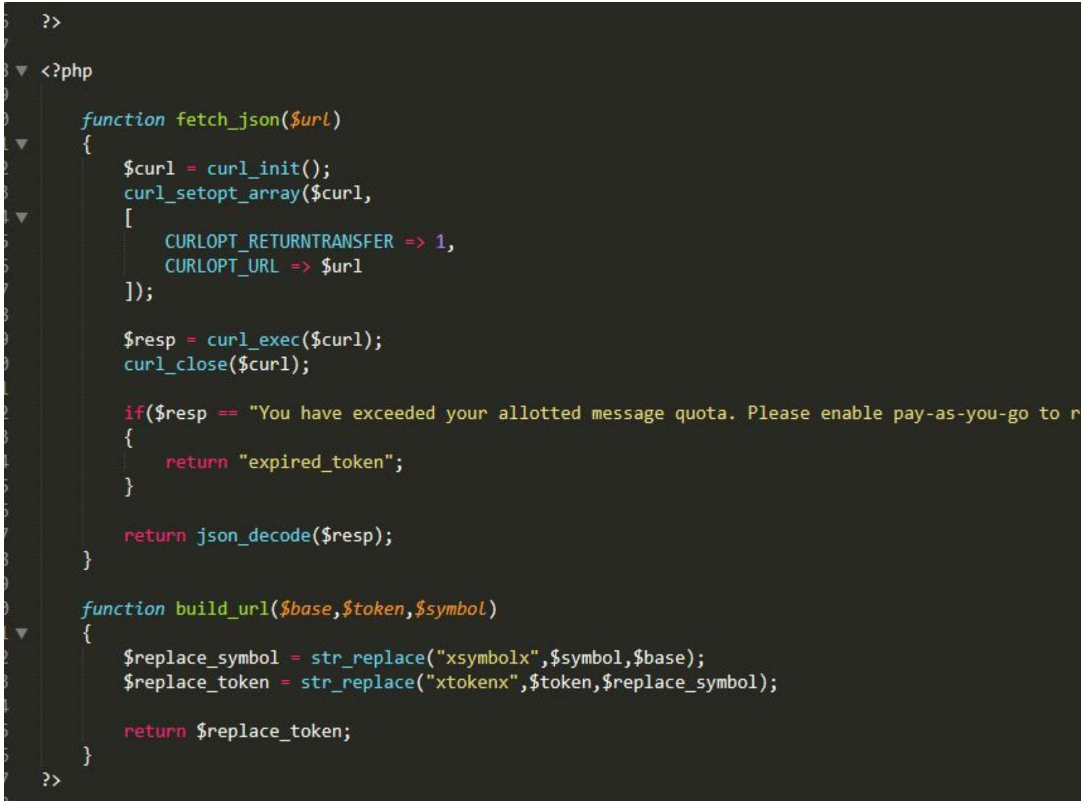
- We have to make sure the database is updated daily with appropriate values
- We, again, used PHP and mySQL to facilitate that.



```
?>

<?php

    function fetch_json($url)
    {
        $curl = curl_init();
        curl_setopt_array($curl,
        [
            CURLOPT_RETURNTRANSFER => 1,
            CURLOPT_URL => $url
        ]);

        $resp = curl_exec($curl);
        curl_close($curl);

        if($resp == "You have exceeded your allotted message quota. Please enable pay-as-you-go to r
        {
            return "expired_token";
        }

        return json_decode($resp);
    }

    function build_url($base,$token,$symbol)
    {
        $replace_symbol = str_replace("xsymbolx",$symbol,$base);
        $replace_token = str_replace("xtokenx",$token,$replace_symbol);

        return $replace_token;
    }
?>
```

After troubleshooting and testing

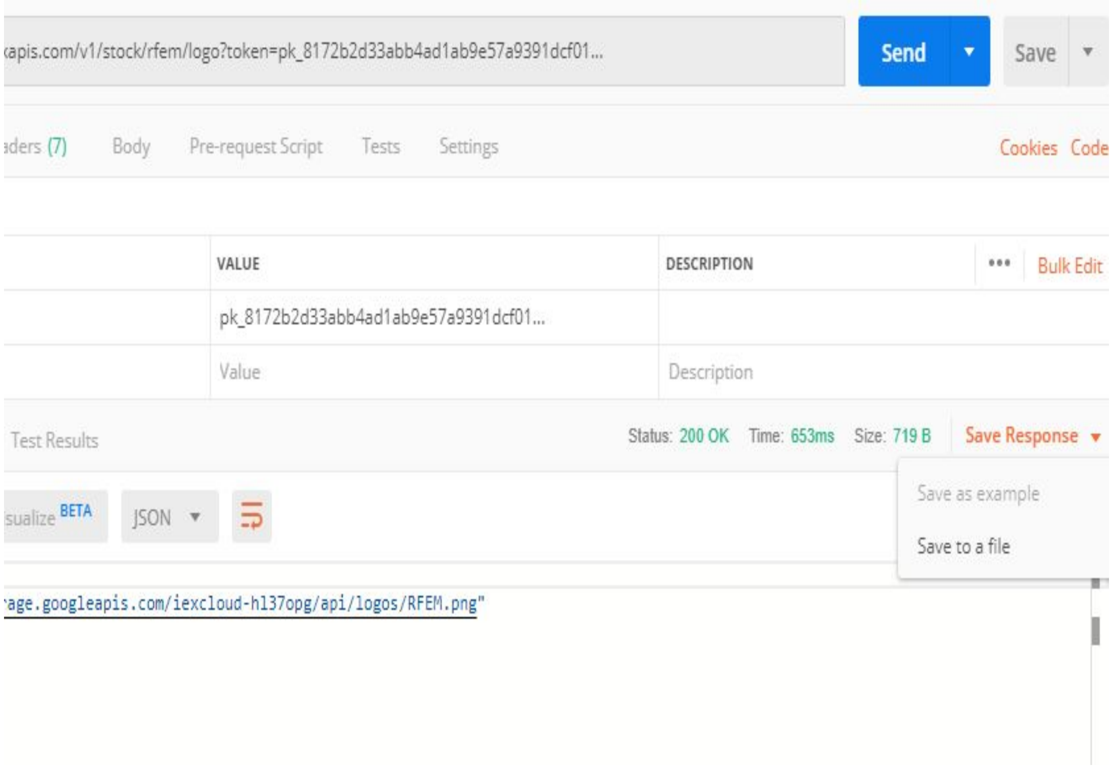
- Ensure that daily IEX API calls are made
- Take the JSON from the calls, process it, and story it in our MariaDB



```
?>

<?php

    function fetch_json($url)
    {
        $curl = curl_init();
        curl_setopt_array($curl,
        [
            CURLOPT_RETURNTRANSFER => 1,
            CURLOPT_URL => $url
        ]);

        $resp = curl_exec($curl);
        curl_close($curl);

        if($resp == "You have exceeded your allotted message quota. Please enable pay-as-you-go to r
        {
            return "expired_token";
        }

        return json_decode($resp);
    }

    function build_url($base,$token,$symbol)
    {
        $replace_symbol = str_replace("xsymbolx",$symbol,$base);
        $replace_token = str_replace("xtokenx",$token,$replace_symbol);

        return $replace_token;
    }
?>
```

Initial database setup

- We used Postman to visualize and perfect our API calls
- Once we got our proper calls, we downloaded the output into JSON files.



xapis.com/v1/stock/rfem/logo?token=pk_8172b2d33abb4ad1ab9e57a9391dcf01...

VALUE	DESCRIPTION
pk_8172b2d33abb4ad1ab9e57a9391dcf01...	
Value	Description

Status: 200 OK Time: 653ms Size: 719 B

```
age.googleapis.com/iexcloud-h137opg/api/logos/RFEM.png"
```

IEX API calls used

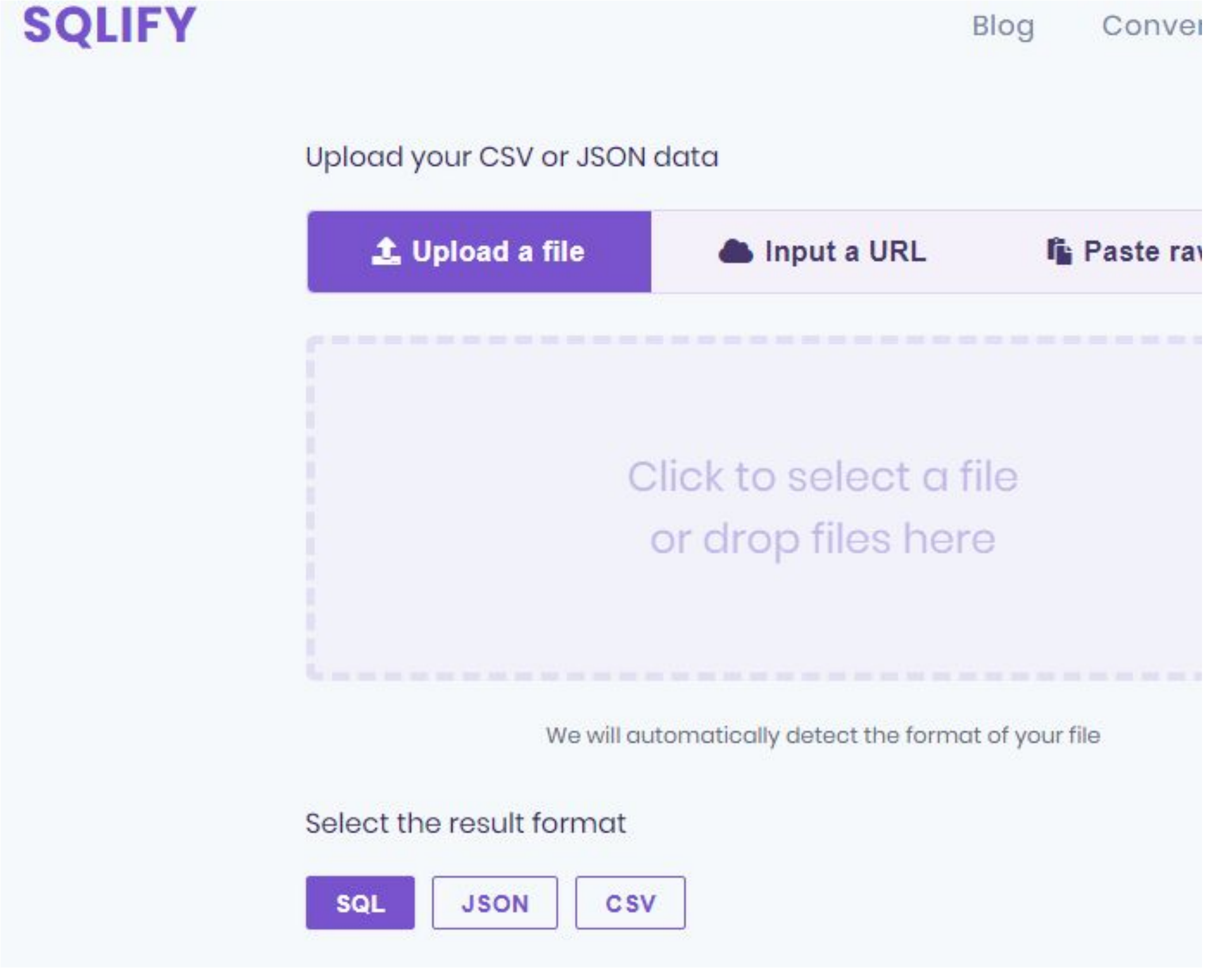
- We used these GET API calls from IEX to read and store our data into our databases
- https://iexcloud.io/docs/api/#historical-prices
- This was the going to be used for 5 year data pulls for Apple, Google, and RFEM. This contained stock info, such as open,close, etc.
- https://iexcloud.io/docs/api/#logo
- The above link shows and discusses the API call for getting company logos
- https://iexcloud.io/docs/api/#news
- This link, above, discusses getting news on respective companies.
- https://iexcloud.io/docs/api/#company
- The above link discusses using the IEX API to get basic info on a company.

Getting the JSON to SQL form

- Several ways were available to to convert our JSON to SQL.
- While our update script (for day to day updates) would have no issue making the conversion…..
- We ended up using a cool third party tool/website to assist with it.
- Once, the conversion was done, we took the SQL files, and made adjustments to them.
- Once the conversions were done, we imported them to our database using myPHPadmin.
- Database creation, as well as user privilege, was also handled on myPHPadmin.

The conversion tool

- https://sqlify.io/convert
- Strong tool
- Upload JSON
- Drop and add columns.
- Still needed to make some more adjustments in sublime text editor.



Upload your CSV or JSON data

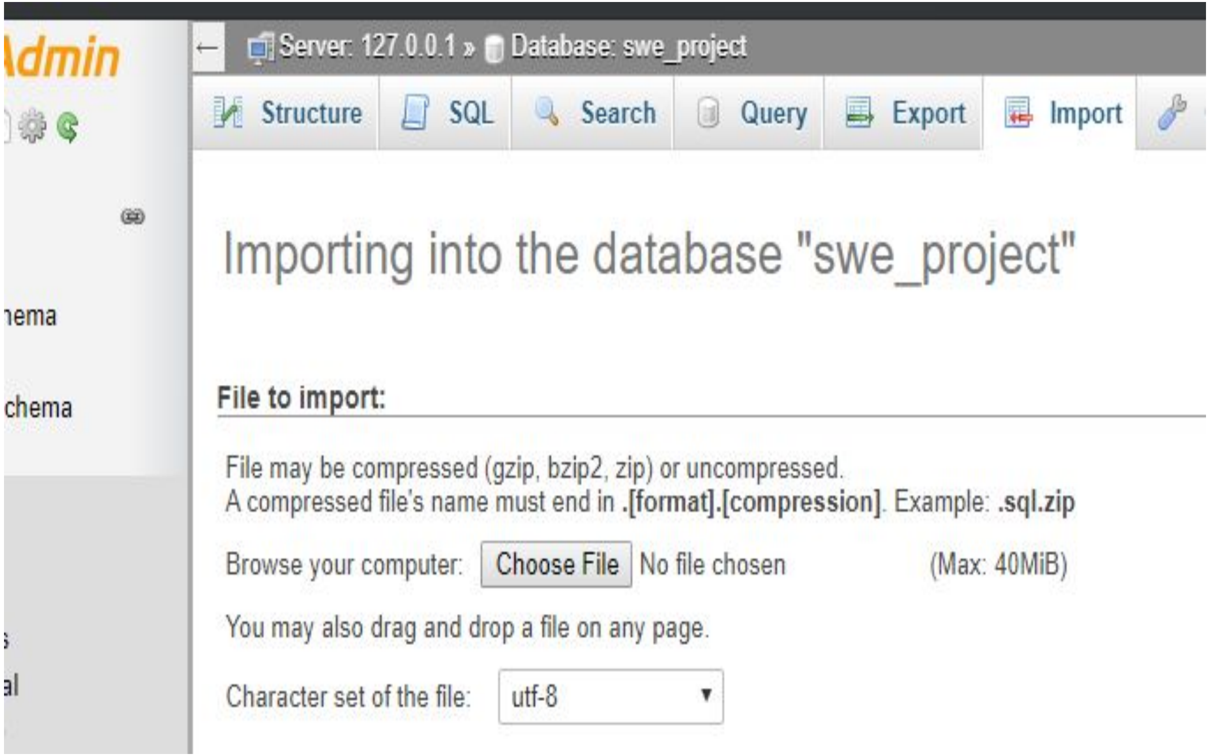
Click to select a file or drop files here

We will automatically detect the format of your file

Select the result format

Importing the SQL

- Once done, we imported to myPHPadmin.
- The conversion tool was for initial use.
- Any updates would be done being read,converted, and inserted with PHP and MySQL.



Importing into the database "swe_project"

File to import:

File may be compressed (gzip, bzip2, zip) or uncompressed.
A compressed file's name must end in **.[format].[compression]**. Example: **.sql.zip**

Browse your computer: Choose File No file chosen (Max: 40MiB)

You may also drag and drop a file on any page.

Character set of the file: utf-8

SQL files on GitHub

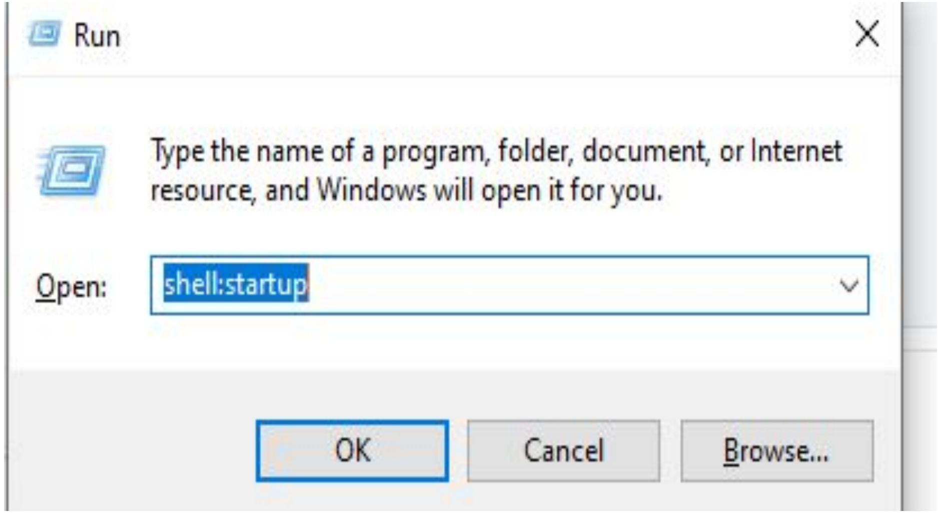
- The SQL files here, have 5 years of data for google and apple
- For RFEM, it goes back to June 15, 2016.
- The SQL files also feature multiple table creation.
- The files go up October 24, 2019. Because that is when I made the 5 year calls for each of the 3 companies.
- After October 24, 2019, The sql files were updated on MariaDB & myPHPadmin.
- This was done using two PHP files, acting as scripts.

Automation and daily updates

- We supported our daily update using Automation.
- We are developing in WIndows Environment, so we used Windows Task Scheduler.
- This would require a few things…
- Some useful links for all….
- https://www.youtube.com/watch?v=C4PdPqEOo6A
- https://code-examples.net/en/q/f81336
- https://www.computerhope.com/issues/ch001666.htm

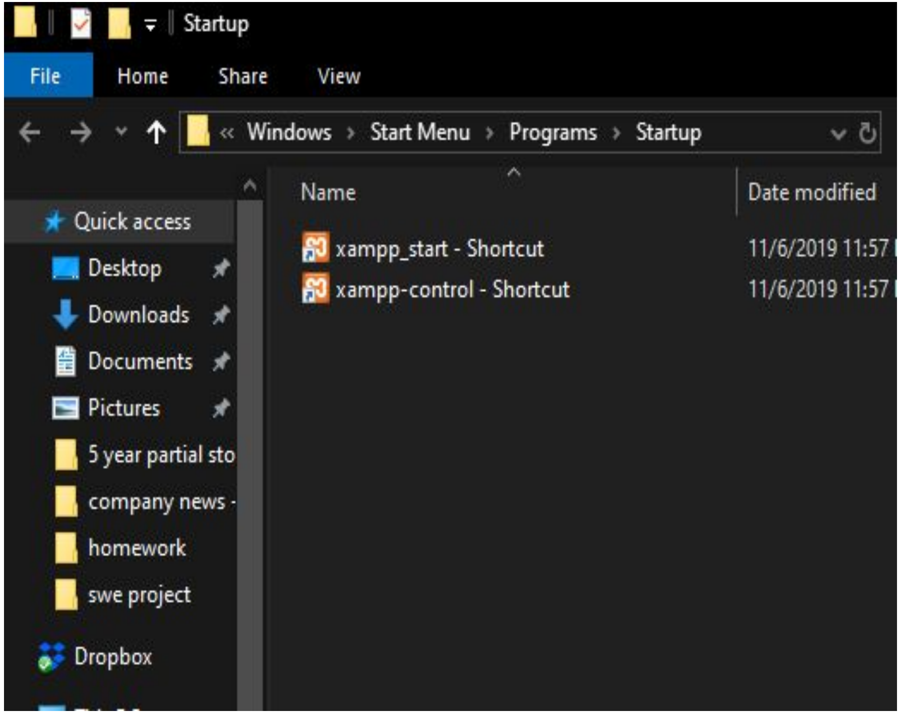
First things first

- Any update done to the database required having our Apache and MySQL on.
- Thus when we automated our computer to turn on, when off, we had to include those in the start procedure.
- When turned on, we used our task scheduler to run our created batch file.
- The batch file would have php commands to files located in the htdocs folder.
- The php update scripts would be needed in that folder, in order for it to work.
- We had this all run daily, and automatically. If any issues, it would rerun until success
- Inside the PHP files, it had the IEX API urls and token. It would create a connection, read the JSON, convert it and send to the SQL database.



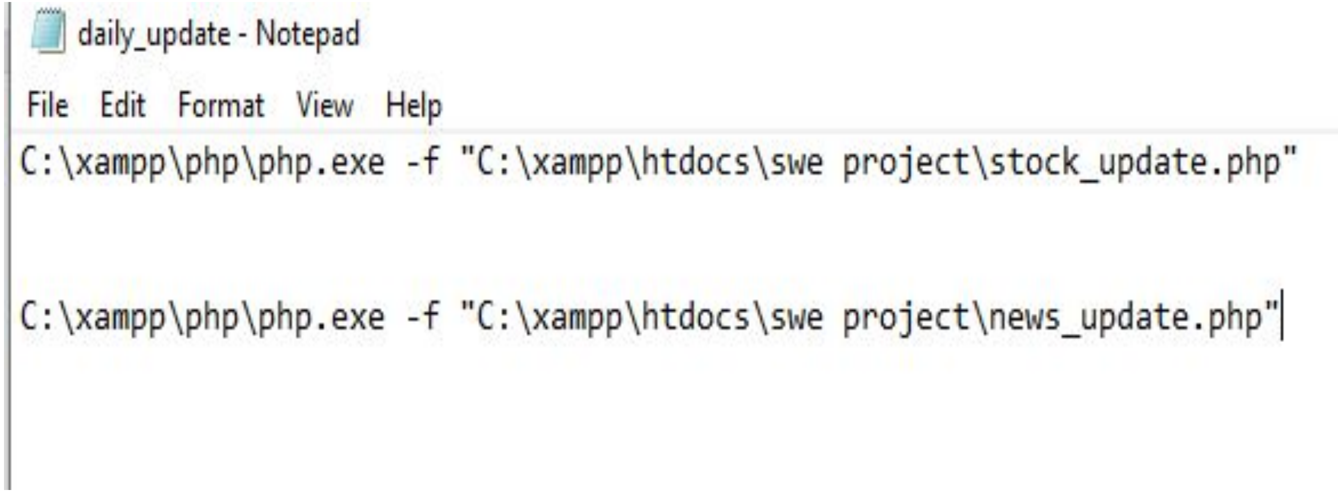
Type the name of a program, folder, document, or Internet resource, and Windows will open it for you.

Open: shell:startup



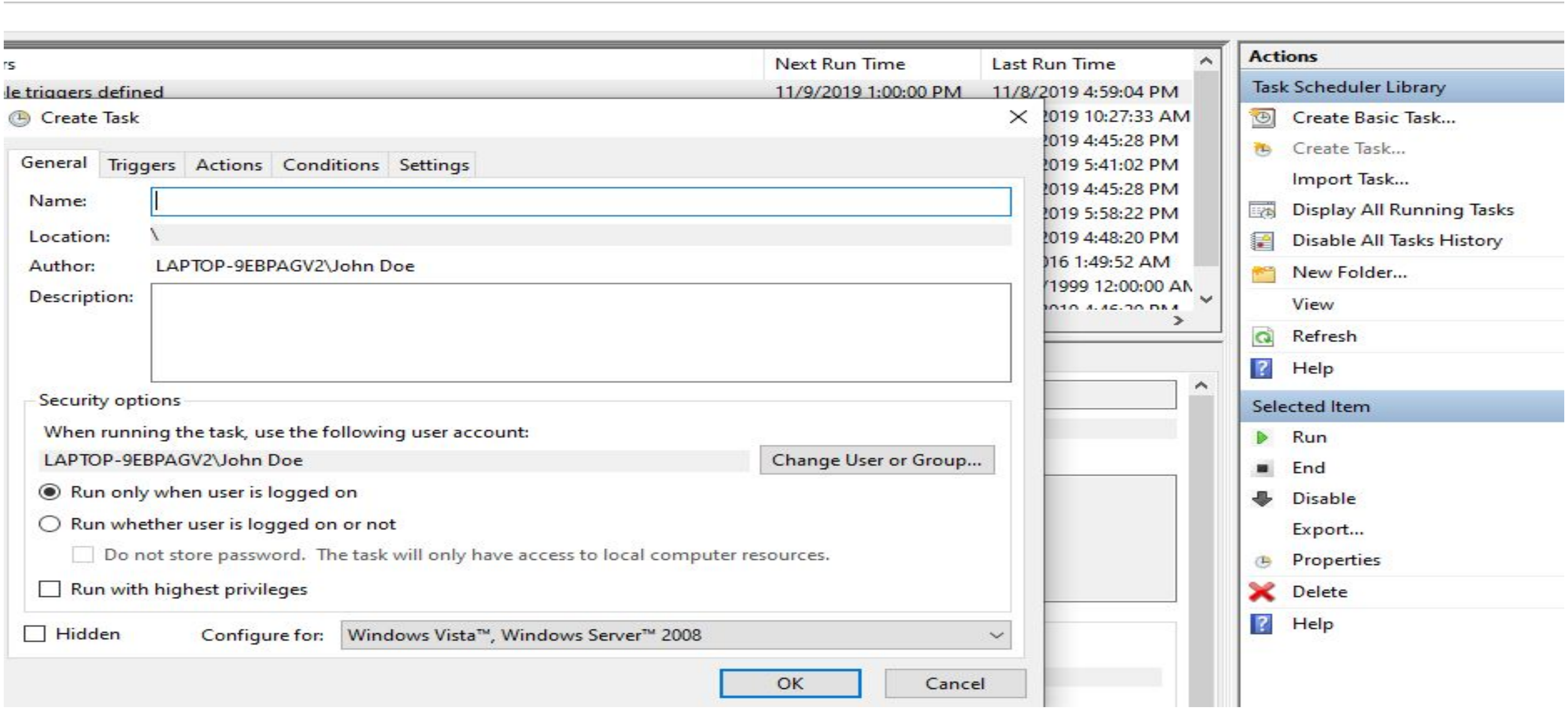
Name	Date modified
xampp_start - Shortcut	11/6/2019 11:57
xampp-control - Shortcut	11/6/2019 11:57

Getting XAMPP to start when the PC starts, so database and server connection is alive.



```
C:\xampp\php\php.exe -f "C:\xampp\htdocs\swe project\stock_update.php"


C:\xampp\php\php.exe -f "C:\xampp\htdocs\swe project\news_update.php"
```

Simple batch file made to make calls to PHP compiler and PHP files. These files hold instructions to read and update.



rs	Next Run Time	Last Run Time
le triggers defined	11/9/2019 1:00:00 PM	11/8/2019 4:59:04 PM
		2019 10:27:33 AM
		2019 4:45:28 PM
		2019 5:41:02 PM
		2019 4:45:28 PM
		2019 5:58:22 PM
		2019 4:48:20 PM
		16 1:49:52 AM
		/1999 12:00:00 AN

Create Task

General | Triggers | Actions | Conditions | Settings

Name:

Location: \

Author: LAPTOP-9EBPAGV2\John Doe

Description:

Security options

When running the task, use the following user account:

LAPTOP-9EBPAGV2\John Doe

● Run only when user is logged on

○ Run whether user is logged on or not

□ Do not store password. The task will only have access to local computer resources.

□ Run with highest privileges

□ Hidden

Configure for: Windows Vista™, Windows Server™ 2008

Windows Task Scheduler….where we set up the automated task of reading the batch daily, and starting up the PC, if necessary

To wrap it up……..

- Once we tested, and implemented our design, we had a working product.
- The product, as displayed in class, can work with postman, or work with our web front end.
- Our web front end had forms that connected to our PHP API.
- Our PHP API would read and calculate the SQL query and convert, finally to JSON output.

Fin

Questions? Comments?