

COM5961 DATA DRIVEN PRODUCTS & SERVICES DESIGN: LESSON 6 - PYTHON WEB PROGRAMMING IN FLASK I

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Today's agenda.

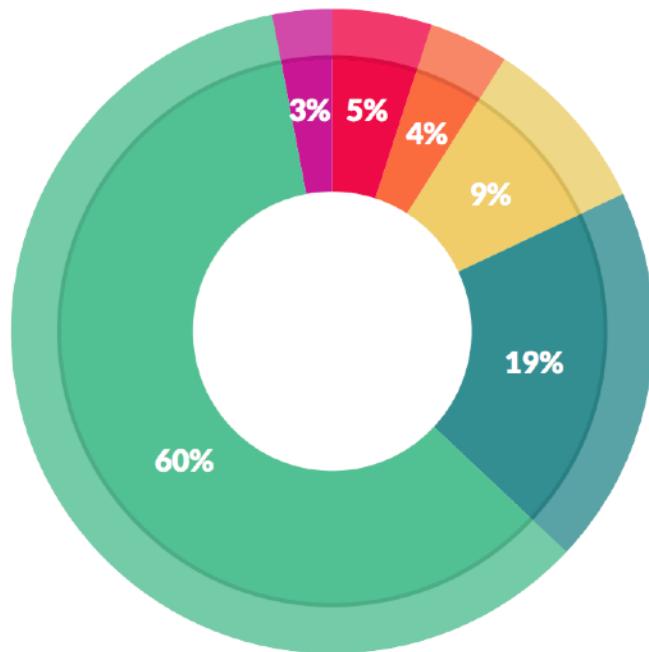
1. What is a Content Management System (**CMS**)? How do people use it to implement Information Architecture (**IA**) on the web to improve ‘user’ experience?
2. What is Search Engine Optimisation (**SEO**)?
3. How can people use IA, CMS, and SEO to improve web performance?
4. CMS Based Websites vs. Custom Coded Websites
5. Create CMS and custom coded websites in **Python Flask**.

Quick recap of legal IP issues of scraping.

- 1. Fair use principle** (<https://www.bl.uk/business-and-ip-centre/articles/fair-use-copyright-explained>)
- 2. Fair use checklist** (<https://copyright.columbia.edu/content/dam/copyright/Precedent%20Docs/fairusechecklist.pdf>)
- 3. Fair use in text and data mining** (<https://www.arl.org/wp-content/uploads/2015/06/TDM-5JUNE2015.pdf>)
- 4. Business use cases for web scraping** (<https://www.webscrapingapi.com/web-scraping-business-use-cases/>)

How a Data Scientist Spends Their Day

Here's where the popular view of data scientists diverges pretty significantly from reality. Generally, we think of data scientists building algorithms, exploring data, and doing predictive analysis. That's actually not what they spend most of their time doing, however.



What data scientists spend the most time doing

- *Building training sets:* 3%
- *Cleaning and organizing data:* 60%
- *Collecting data sets;* 19%
- *Mining data for patterns:* 9%
- *Refining algorithms:* 4%
- *Other:* 5%

Source: Data Science 2016 Report by CrowdFlower

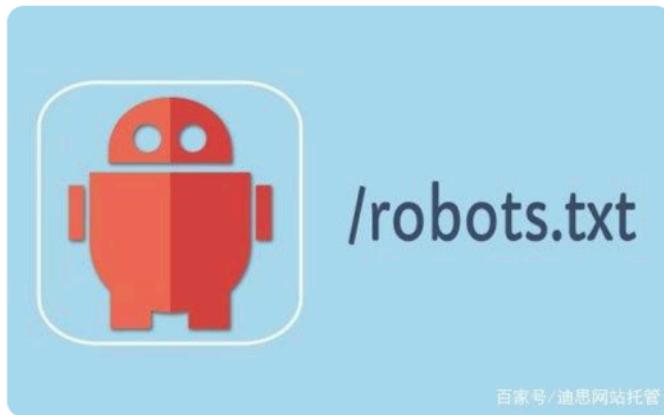
robots.txt文件的作用及写法



迪思网站托管

发布时间: 18-11-06 15:46 |

Robots协议（也称为爬虫协议、机器人协议等）的全称是“网络爬虫排除标准”（Robots Exclusion Protocol），网站通过Robots协议告诉搜索引擎哪些页面可以抓取，哪些页面不能抓取。



Source: <https://baijiahao.baidu.com/s?id=1616368344109675728&wfr=spider&for=pc>

I Robots.txt文件的重要性

robots.txt是搜索引擎蜘蛛访问网站时要查看的第一个文件，并且会根据robots.txt文件的内容来爬行网站。在某种意义上说，它的一个任务就是指导蜘蛛爬行，减少搜索引擎蜘蛛的工作量。

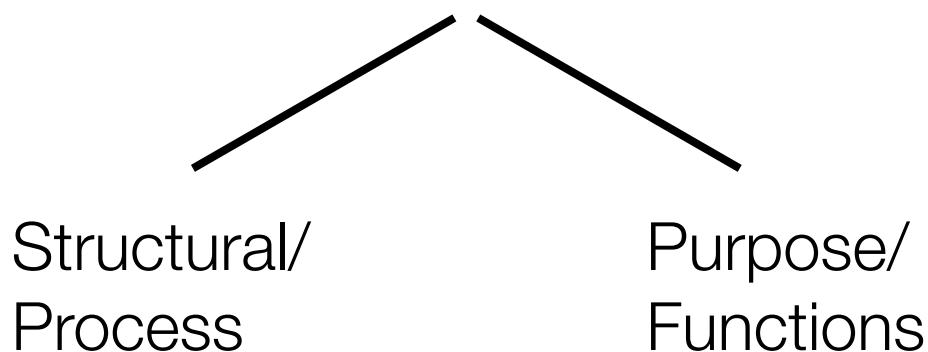
Overcoming robots.txt block.

- 1. Rotate IP address**
- 2. Use a proxy service (paid/free services)**
- 3. Use 3rd party scraping API (paid/free services)**
- 4. Pretend to be a search engine crawler agent**

What is a content management system (CMS)?

A web-based system for managing the production, storage, maintenance, presentation, consumption, sharing, and tracking of information.

Why do we need a CMS?

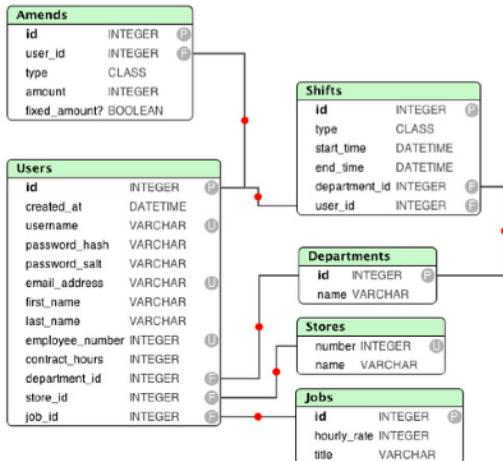


**Understand content management
structure and process through the
MVC components.**

Source: commons.wikimedia.org



Source: [Caius Durling \(Flickr\)](https://flic.kr)



M(odel)
(e.g. database, table, relationships)

V(iew)
(e.g. theme and templates)

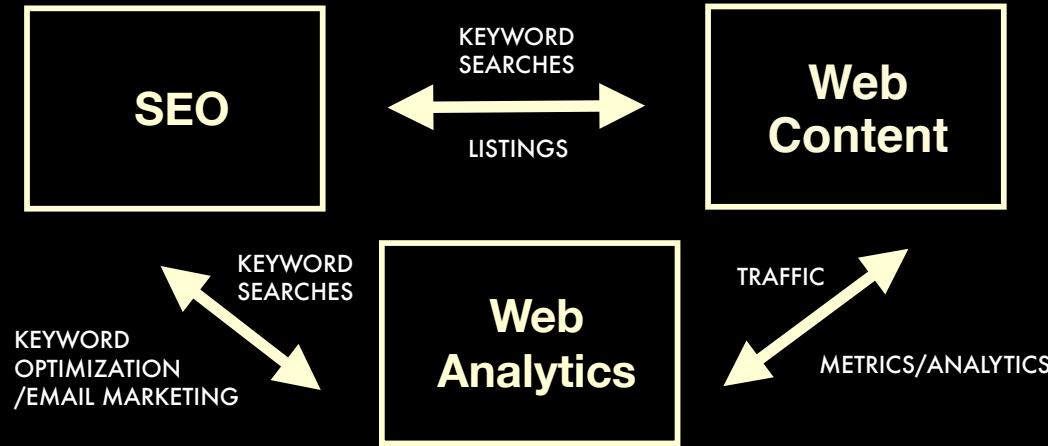
Source: pexels.com



C(ontroller)
(e.g. sitemap, navbar, routes)

**Understand content management
purpose and functions through
Web Content, SEO and Analytics
Integration.**

SEO and Web Analytics



- Web analytics tell you whether your web pages attract traffic (eye balls) or not.
- With feedbacks provided by web analytics, you make changes to your web pages, site structure, title, meta-tag, key word, and link strategies.

Popular **PHP** and **Python** Based CMS Software



WORDPRESS



Joomla!™

PHP Based



Python Based

Learning by Doing: Introducing WordPress.

Browser

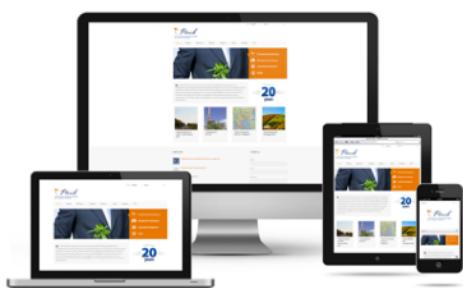
Screen Display



Web Server

HTML/CSS/JS

Static Website



```
1  <!DOCTYPE html>
2  <html lang="en">
3  <head>
4  <meta charset="utf-8">
5  <title> A Tiny HTML Document </title>
6  <link href = "styles.css" rel="stylesheet">
7  <script src="scripts.js"></script>
8  </head>
9
10 <body>
11 <p>Let's rock the browser, HTML5 style.</p>
12 </body>
13 </html>
```

CSS Demonstration:

https://www.w3schools.com/css/css_intro.asp

CSS Demo - One HTML Page - Multiple Styles!

Here we will show one HTML page displayed with four different stylesheets. Click on the "Stylesheet 1", "Stylesheet 2", "Stylesheet 3", "Stylesheet 4" links below to see the different styles:

The screenshot shows a web page with the following structure:

- Header:** A green header bar containing the text "Welcome to My Homepage" in white and "Use the menu to select different Stylesheets" in a smaller font.
- Sidebar:** A vertical sidebar on the left side with a light gray background. It contains a list of links:
 - Stylesheet 1** (highlighted in green)
 - Stylesheet 2
 - Stylesheet 3
 - Stylesheet 4
 - No Stylesheet
- Main Content:** The main content area has a white background. It features large, bold, black text that reads "Same Page Different Stylesheets". Below this, there is explanatory text in black:

This is a demonstration of how different stylesheets can change the layout of your HTML page. You can change the layout of this page by selecting different stylesheets in the menu, or by selecting one of the following links:

[Stylesheet1](#), [Stylesheet2](#), [Stylesheet3](#),

Where would the data shown on the pages stored, in web pages or a database?

CMS stores data in a database.

Browser

Screen Display



Web Server

HTML/CSS/JS

Dynamic Website (CMS)



Database Server

Data



```
1 <!DOCTYPE html>
2 <html lang="en">
3 <head>
4 <meta charset="utf-8">
5 <title> A Tiny HTML Document </title>
6 <link href = "styles.css" rel="stylesheet">
7 <script src="scripts.js"></script>
8 </head>
9
10 <body>
11 <p>Let's rock the browser, HTML5 style.</p>
12 </body>
13 </html>
```

ID	PHONE	POPULARNAME	PREFERREDNAME	LATITUDE	LONGITUDE
1194620	00994614	popular_name_00994614	preferred_name_00994614	23.789875	88.897985
1194621	00994615	popular_name_00994615	preferred_name_00994615	23.789875	88.897985
1194622	00994616	popular_name_00994616	preferred_name_00994616	23.789875	88.897985
1194623	00994617	popular_name_00994617	preferred_name_00994617	23.789875	88.897985
1194624	00994618	popular_name_00994618	preferred_name_00994618	23.789875	88.897985
1194625	00994619	popular_name_00994619	preferred_name_00994619	23.789875	88.897985
1194626	00994620	popular_name_00994620	preferred_name_00994620	23.789875	88.897985
1194627	00994621	popular_name_00994621	preferred_name_00994621	23.789875	88.897985
1194628	00994622	popular_name_00994622	preferred_name_00994622	23.789875	88.897985
1194629	00994623	popular_name_00994623	preferred_name_00994623	23.789875	88.897985
1194630	00994624	popular_name_00994624	preferred_name_00994624	23.789875	88.897985
1194631	00994625	popular_name_00994625	preferred_name_00994625	23.789875	88.897985

Source: [CMS Web Design: A Guide to Dynamic Content Applications](#)

Why WordPress?

WordPress Usage Statistics

The following WordPress statistics focus on WordPress' market share and other usage statistics.

WordPress now powers 40.0% of websites, with a 40.0% share in the CMS market.

Besides being the most widely-used CMS, WordPress is also the fastest growing. Of the top 10 million websites online, more than 500 sites built each day are powered by WordPress (versus 60-80/day that are built on managed platforms such as [Shopify](#) or [Squarespace](#)).

Adding to that, WordPress powers [14.7% of the world's top websites](#).

Source: <https://kinsta.com/blog/wordpress-statistics/>

These top websites include The New York Times, Spotify, TechCrunch, The White House website, BBC America, and even the [Facebook](#) Newsroom! The fact that WordPress can work well for all of these different entities is a testament to how flexible it is. WordPress can effectively act as the backend for many different types of websites, including personal blogs, news websites, [portfolios](#), and ecommerce websites.

There are some 17 blog posts published on WordPress *per second*, and if you ever doubt the popularity of WordPress, know that there are 37 million global searches made for the term "WordPress" on a monthly basis. Furthermore, [real-time WordPress activity data](#) shows that each month, there are over 409 million people viewing over 20 billion WordPress pages, with over 70 million new posts, and 77 million new comments.

Setup WordPress on patheon.io

Solutions

Products

Services

Plans



PANTHEON®

Resources

LOG IN

Get Started



Superpower Your Team With WebOps

Embrace Agility, Iterate Faster, & Drive Results

[Watch the Demo](#)

[Start a Free Trial](#)

Performing a TLS handshake to dev.visualwebsiteoptimizer.com...

<https://pantheon.io>

Login

[Log in with Google](#)

or



bsysin@gmail.com



.....

[Don't remember your password?](#)[Log In](#)

 **Bernard Suen** Sites Organizations Support Account

Welcome to Pantheon

This is your User Dashboard, where you'll see your Pantheon sites. Create a free site to start from scratch or migrate an existing site.

 + Create New Site Migrate Existing Site

Create Your Pantheon Site

Name Your Pantheon Site

Your Pantheon Development Site URL

<https://dev-demo5961.pantheon.io>

Continue

Choose Your CMS

Start with a vanilla CMS installation.



WordPress

Level up your WordPress workflow with version control and our Dev/Test/Live environments, so you can develop without fear of breaking your live site.

[Deploy](#)

Drupal 8

Use our professional workflow hooks for modern web development with the #1 enterprise open-source CMS.

[Deploy](#)

Drupal 7

Maintaining Drupal 7 sites can be a pain - our 1-click core updates and multiple development environments make it safe and easy.

[Deploy](#)

Deploying WordPress

Deploying CMS



Deploying WordPress

Complete!

[Visit your Pantheon Site Dashboard](#)

 demo5961[Upgrade](#) Multidev ▾ Dev Test Live

Workflows ▾

 Team Settings Support[Visit Development Site](#)[Site Admin](#)[Public](#)[Connection Info](#)[Clear Caches](#) Code Status Database / Files Errors Domains / HTTPS Backups Security New Relic

Dev



Test



Live

Use the isolated Development environment to safely work on your project without fear of breaking the live site.

Install the CMS and then use the Dev environment to develop your site. Or skip this and [install later](#).

[Install WordPress](#)



English (United States)

Afrikaans
العربية
العربية المغربية
অসমীয়া
Azerbaycan dili
گۈزى ئۇرپاجان
Беларуская мова
Български
বাংলা
ଶ୍ରଦ୍ଧାରୀ
Bosanski
Català
Cebuano
Čeština
Cymraeg
Dansk
Deutsch
Deutsch (Schweiz, Du)
Deutsch (Schweiz)
Deutsch (Sie)
ՀՀ
Ελληνικά

Continue



Welcome

Welcome to the famous five-minute WordPress installation process! Just fill in the information below and you'll be on your way to using the most extendable and powerful personal publishing platform in the world.

Information needed

Please provide the following information. Don't worry, you can always change these settings later.

Site Title

Demo 5961

Username

admin

Usernames can have only alphanumeric characters, spaces, underscores, hyphens, periods, and the @ symbol.

Password

Strong

 Show

Important: You will need this password to log in. Please store it in a secure location.

Your Email

bsysin@gmail.com

Double-check your email address before continuing.

Search Engine Visibility Discourage search engines from indexing this site

It is up to search engines to honor this request.

 Install WordPress



Success!

WordPress has been installed. Thank you, and enjoy!

Username admin

Password *Your chosen password.*

[Log In](#)



Login to your WordPress Site

[Return to Pantheon](#)

Username or Email Address

Password

Remember Me

[Log In](#)

[Lost your password?](#)

[← Back to Demo 5940](#)

The WordPress Admin Menu

demo5961 10 0 + New

Visit Site

Dashboard

Screen Options ▾ Help ▾

Welcome to WordPress!

We've assembled some links to get you started:

Get Started

Customize Your Site

or, change your theme completely

Next Steps

- Write your first blog post
- Add an About page
- View your site

More Actions

- Manage widgets or menus
- Turn comments on or off
- Learn more about getting started

Dismiss

At a Glance

1 Post 1 Page

1 Comment

WordPress 5.0.2 running [Twenty Nineteen](#) theme.

[Search Engines Discouraged](#)

Activity

Recently Published

Today, 7:07 am Hello world!

Recent Comments

 From A WordPress Commenter on Hello world!
Hi, this is a comment. To get started with moderating, editing, and deleting comments, please visit the Comments screen in...

All (1) | Pending (0) | Approved (1) | Spam (0) | Trash (0)

Quick Draft

Title

What's on your mind?

Save Draft

WordPress Events and News

Attend an upcoming event near you.

 [WordPress Meetup #26: 升級 WordPress 前的準備 及 如何加強保護你的 WordPress 網站 \(廣東話 Cantonese\)](#) Thursday, Jan 10, 2019 7:00 pm Hong Kong, Hong Kong

WordPress 5.0.2 Maintenance Release

[WP Tavern: Beaver Builder Doubles Down on Serving Power Users in Response to Gutenberg](#)

Drag boxes here

- **Dashboard**
 - **Posts**
 - **Pages**
 - **Media**
 - **Appearance**
 - **Plugins**
 - **Users**
 - **Tools**
 - **Settings**
- | Status Updates
- | Content
- | Types -
- | Data
- | Model
- | View/Menu
- | Add-on features
- | Control Access
- | Data import/export
- | System Defaults



**Key
WordPress
Operations**

The WordPress Appearance

W demo5961 12 0 + New

Howdy, bsuen SL

Themes 10 Add New Search installed themes...

Dashboard Posts Media Pages Comments Appearance Themes Customize Widgets Menus Background Theme Editor Plugins 2 Users Tools Settings Collapse menu

New version available. [Update now](#)

Welcome to the Swedish Museum of Modern Art

ADDRESS 123 Storgatan, Umeå OPEN TODAY 9:00 AM - 5:00 PM PRICE 129 kr

Active: Twenty Twenty [Customize](#)

New version available. [Update now](#)

This TWENTY ELEVEN theme...
This is the demo site for the 'Twenty Eleven' theme, built by Automattic for WordPress 3.2 in 2011. Here's a look around and make yourself at home.

FEATURED Posts in Twenty Eleven
Twenty Eleven uses Sticky Posts to power the Featured Post area on the Showcase Page Template. And it's pretty easy to use. Just publish a Sticky Post and it'll show up here.

Twenty Eleven

New version available. [Update now](#)

Name Twenty Fifteen
Description Twenty Fifteen is a clean, modern, and flexible theme for your website.
Blog
Blog settings

AIMED
Our 2013 design choice to check blog-themed and designed the new Twenty Fifteen theme. It's straightforward typography is readable on a wide variety of screen sizes and available the mobile design.

The Myth of the Pier

After all, the fashion of the mid-19th century was that men dressed in top hats and topcoats, and women in hats and dresses. But there was one exception: the pier. That's where the long wooden vehicles were fastened to their boats, and the men who made them. These rows were made of barrels, and were five, six, and even ten feet long, some straight, others curved, some ribbed, and some having notches every two feet.

Twenty Fifteen

New version available. [Update now](#)

HOME NEWS VIDEOS MEMORIES

WEEKEND AWAY IN THE COUNTRYSIDE BEFORE THE WEDDING DAY THIS IS IT FOR NOW! SEE YOU ALL NEXT SUMMER! MEMORIES FROM THE LAST SUMMER

FEATURED IMAGES REALLY

Twenty Fourteen

New version available. [Update now](#)

Welcome

Digital strategy for unique small businesses

6 7 8 9 10
13 14 15 16 17
20 21 22 23 24
27 28

Twenty Nineteen

New version available. [Update now](#)

TWENTY SEVENTEEN
Bringing your business site to life

Twenty Seventeen



Search

UNCATEGORIZED

Hello world!

 By bsuen

 September 23, 2020

 1 Comment

Welcome to WordPress. This is your first post. Edit or delete it, then start writing!

The WordPress Plugins

demo5961 12 0 + New Howdy, bsuen

Dashboard Posts Media Pages Comments Appearance Plugins 2

Plugins Add New All (2) | Inactive (2) | Update Available (2) | Must-Use (1) | Auto-updates Disabled (2) Screen Options Help

Search installed plugins...

Bulk actions Apply 2 items

<input type="checkbox"/>	Plugin	Description	Automatic Updates
<input type="checkbox"/>	Akismet	Used by millions, Akismet is quite possibly the best way in the world to protect your blog from spam. It keeps your site protected even while you sleep. To get started: 1) Click the "Activate" link to the left of this description, 2) Sign up for an Akismet plan to get an API key, and 3) Go to your Akismet configuration page, and save your API key. Version 3.1.5 By Automattic View details	Enable auto-updates
<div style="background-color: #ffffcc; padding: 5px;"><p>⟳ There is a new version of Akismet available. View version 4.1.6 details or update now.</p></div>			
<input type="checkbox"/>	Hello Dolly	This is not just a plugin, it symbolizes the hope and enthusiasm of an entire generation summed up in two words sung most famously by Louis Armstrong: Hello, Dolly. When activated you will randomly see a lyric from Hello, Dolly in the upper right of your admin screen on every page. Version 1.6 By Matt Mullenweg View details	Enable auto-updates
<div style="background-color: #ffffcc; padding: 5px;"><p>⟳ There is a new version of Hello Dolly available. View version 1.7.2 details or update now.</p></div>			
<input type="checkbox"/>	Plugin	Description	Automatic Updates

Bulk actions Apply 2 items

Howdy, master

Add Plugins [Upload Plugin](#)

Search Results Featured Popular Recommended Favorites

Keyword

297 items << < > >> 1 of 9

Classic Editor
Enables the previous "classic" editor and the old-style Edit Post screen with TinyMCE, Meta Boxes, etc. Supports all plugins that extend this screen.
By WordPress Contributors

Activate More Details

Slim SEO – Fast & Automated WordPress SEO Plugin
A full-featured SEO plugin for WordPress that's lightweight, blazing fast with minimum configuration. No bloats...
By eLightUp

Activate More Details

Autoptimize
Autoptimize speeds up your website by optimizing JS, CSS, images (incl. lazy-load), HTML and Google...
By Frank Goossens (futta)

Activate More Details

Pods – Custom Content Types and Fields
Pods is a framework for creating, managing, and deploying customized content types and fields.
By Pods Framework Team

Install Now More Details

FakerPress
FakerPress is a clean way to generate fake and dummy content to your WordPress, great for developers who need testing.
By Gustavo Bordoni

Active More Details

5+ Million Active Installations Last Updated: 3 months ago ✓ Compatible with your version of WordPress

10,000+ Active Installations Last Updated: 2 weeks ago ✓ Compatible with your version of WordPress

2,000+ Active Installations Last Updated: 1 month ago ✓ Compatible with your version of WordPress

100,000+ Active Installations Last Updated: 2 weeks ago ✓ Compatible with your version of WordPress

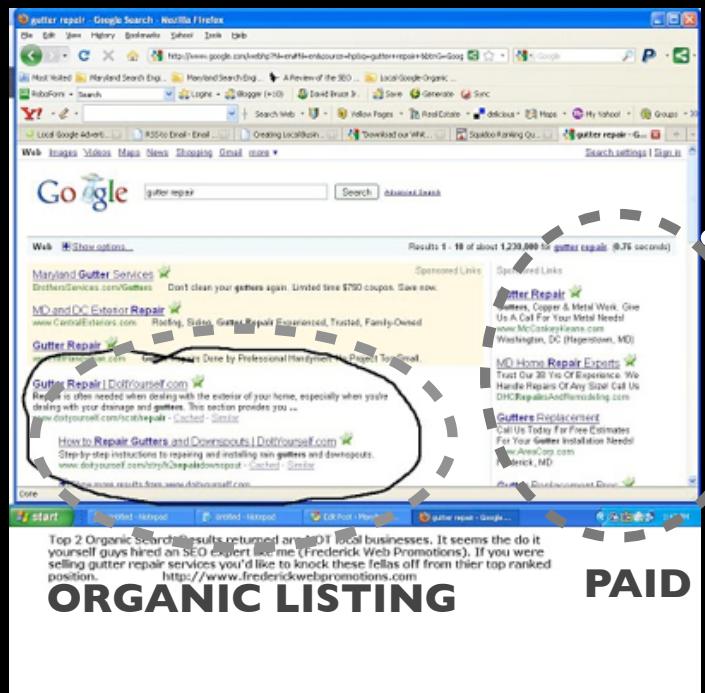
20,000+ Active Installations Last Updated: 9 months ago Untested with your version of WordPress

**Implement Information Architecture
through Menus, Widgets, Permalinks
and RESTful API**

How Search Works?

4

SEARCH INTERFACE



CRAWLER/SPIDER/WEB BOT

1



QUERY
ENGINE
SEARCH
INDEX

5

Meta-Data Defined



2

CRAWL
THE WEB

RESULT
LISTINGS

6

INDEXER
BUILD UP
WEB PAGE
INDEX
DATABASE



PAID LISTING

What is Web Analytics?

Web-based Tool Used for Analyzing Traffic to Your Site:

- What pages have been visited? How many times?
- Where your site visitors come from? Who are they?
- When do they visit? How frequent?
- How long do they stay? What do they buy?
- Where do they stop ? How frequent ?

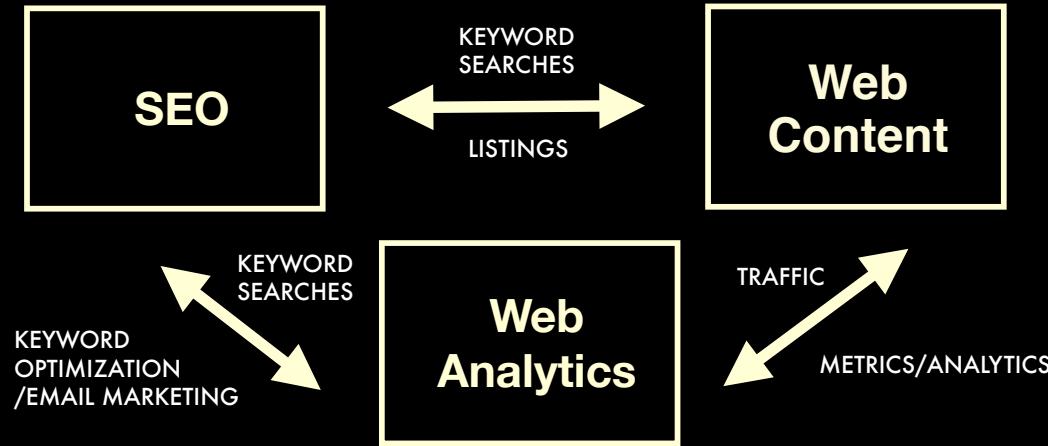
Organic Search (SEO) vs. Paid Search (SEM)

- Organic (Natural) Listing (Content Driven - Page Rank Algorithm)
 - Tags (Meta, Title)
 - Body content
 - Links to you (negotiate partnership, build numerous websites, blogs linking to yourself)
- Paid Listing (Pay Per Click:view-->click-->transaction)
 - Sponsored ads
 - Conversion rates (browser->member->customer)

Why Web Analytics?

- Feedback to improve web design
- Know whether the content is enticing
- Has the user experience been captured?
- Who are the real users?
- What do they really care?
- How to make them come back for more?
 - conversion ratio (visitor-->member-->customer)

SEO and Web Analytics



- Web analytics tell you whether your web pages attract traffic (eye balls) or not.
- With feedbacks provided by web analytics, you make changes to your web pages, site structure, title, meta-tag, key word, and link strategies.

Integration of Web Analytics into CMS

Analytics

Tag Manager

Optimize

Data Studio

Surveys

Attribution

Audience Center

Analytics 360 Suite

Overview

Capabilities

Features

Compare

Mobile Access

Success Stories

Resources



Improve the
customer
experience with
digital analytics.

Google Analytics gives you the digital analytics tools you need to analyze data from all touchpoints in one place, for a deeper understanding of the customer experience. You can then share the insights that matter with your whole organization.

SIGN UP FOR FREE

Try searching “Any anomalies in sessions this month?”

ADMIN

USER

Property Create Property
GA4 WP Test 2 (UA-182072472-2)

Upgrade to GA4

Property Settings

Property User Management

Tracking Info

Tracking Code

Data Collection
Data Retention
User-ID
Session Settings
Organic Search Sources
Referral Exclusion List
Search Term Exclusion List

Property Change History

Data Deletion Requests

PRODUCT LINKING

Google Ads Linking

AdSense Linking

Tracking ID
UA-182072472-2

Status

No data received in past 48 hours. [Learn more](#)

Send test traffic

Website Tracking

Global Site Tag (gtag.js)

This is the Global Site Tag (gtag.js) tracking code for this property. Copy and paste this code as the first item into the <HEAD> of every webpage you want to track. If you already have a Global Site Tag on your page, simply add the `config` line from the snippet below to your existing Global Site Tag.

```
<!-- Global site tag (gtag.js) - Google Analytics -->
<script async src="https://www.googletagmanager.com/gtag/js?id=UA-182072472-2"></script>
<script>
  window.dataLayer = window.dataLayer || [];
  function gtag(){dataLayer.push(arguments);}
  gtag('js', new Date());

  gtag('config', 'UA-182072472-2');
</script>
```

The Global Site Tag provides streamlined tagging across Google's site measurement, conversion tracking, and remarketing products – giving you better control while making implementation easier. By using gtag.js, you will be able to benefit from the latest dynamic features and integrations as they become available. [Learn more](#)

Connected Site Tags

Load tags for additional properties or products using this property's on-page global site tag. [Learn more](#)

0 connected



Google Tag Manager

Our free tool Google Tag Manager can help you add tags to your site if you have many analytics and tracking tags. Consider using Google Tag Manager if:

Coding Everywhere 1 0 + New Performance Toggle Airpress Debugger Howdy, bsuen

Dashboard Posts Media Pages Comments Appearance A/B Testing Plugins Snippets Users Tools Settings

A new WordPress version is available! Please update from [your Pantheon dashboard](#).
For details on applying updates, see the [Applying Upstream Updates](#) documentation.
If you need help, open a support chat on Pantheon.

Edit Themes

Generic: Theme Header (header.php)

Select theme to edit: Generic Select

Selected file content:

```
<?php wp_head(); ?>
<head>
<meta charset="?php bloginfo( 'charset' ); ?>" />
<meta name="viewport" content="width=device-width" />
<!-- Global site tag (gtag.js) - Google Analytics --&gt;
&lt;script async src="https://www.googletagmanager.com/gtag/js?id=UA-182072472-2"&gt;&lt;/script&gt;
&lt;script&gt;
window.dataLayer = window.dataLayer || [];
function gtag(){dataLayer.push(arguments);}
gtag('js', new Date());
gtag('config', 'UA-182072472-2');
&lt;/script&gt;</pre>

Theme Files



- entry-content.php
- entry-footer.php
- entry-meta.php
- entry-summary.php
- entry.php
- Theme Footer (footer.php)
- Theme Header (header.php)
- Main Index Template (index.php)
- nav-below-single.php
- nav-below.php
- Single Page (page.php)



Search Results


```

Coding Everywhere 1 0 + New Performance Toggle Airpress Debugger Howdy, bsuen

Pages Comments

Appearance

Themes Customize Widgets Menus

Theme Editor

A/B Testing Plugins Snippets Users Tools Settings

Shortcodes Airpress Performance

Collapse menu

Generic: Theme Header (header.php)

Select theme to edit: Generic Select

Selected file content:

```
17 </head>
18 <body ><?php body_class(); ?>
19 <?php wp_body_open(); ?>
20 <div id="wrapper" class="hfeed">
21 <header id="header" role="banner">
22 <div id="branding">
23 <div id="site-title">
24 <?php if ( is_front_page() || is_home() || is_front_page() && is_home() ) { echo '<h1>'; } ?>
25 <a href=<?php echo esc_url( home_url( '/' ) ); ?>" title=<?php echo esc_html( get_bloginfo( 'name' ) ); ?>" rel="home"><?php echo esc_html( get_bloginfo( 'name' ) ); ?></a>
26 <?php if ( is_front_page() || is_home() || is_front_page() && is_home() ) { echo '</h1>'; } ?>
27 </div>
28 <div id="site-description"><?php bloginfo( 'description' ); ?></div>
29 </div>
30 <nav id="menu" role="navigation">
31 <button type="button" class="menu-toggle"><span class="menu-icon">#9776;</span><span class="menu-text screen-reader-text"><?php esc_html_e( ' Menu', 'generic' ); ?></span></button>
32 <?php wp_nav_menu( array( 'theme_location' => 'main-menu' ) ); ?>
33 <div id="search"><?php get_search_form(); ?></div>
34 </nav>
35 </header>
36 <div id="container">
```

Documentation: Function Name... Look Up

Update File

Theme Files

- entry-content.php
- entry-footer.php
- entry-meta.php
- entry-summary.php
- entry.php
- Theme Footer (footer.php)
- Theme Header (header.php)**
- Main Index Template (index.php)
- nav-below-single.php
- nav-below.php
- Single Page (page.php)
- Search Results (search.php)

Thank you for creating with [WordPress](#). Get Version 5.5.3

Coding Everywhere

21st Century Skills for Hire

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Welcome to our website, which is designed for 21st century digital talents. We now live in an age filled with all sorts of digital products and services. Let's learn to become wise consumers of such offerings to keep our environment more sustainable and our lives more meaningful.

Visit the web site to generate some traffic for testing!

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A WordPress Commenter on

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Overview

Create Shortcut BETA

Right now

1

active users on site

DESKTOP

100%

Pageviews

Per minute

Real-time traffic shown.
Congratulation, your
connection is active!



Top Referrals:

Source	Active Users
There is no data for this view.	

Top Social Traffic:

Source	Active Users
There is no data for this view.	

Top Keywords:

Keyword	Active Users
There is no data for this view.	

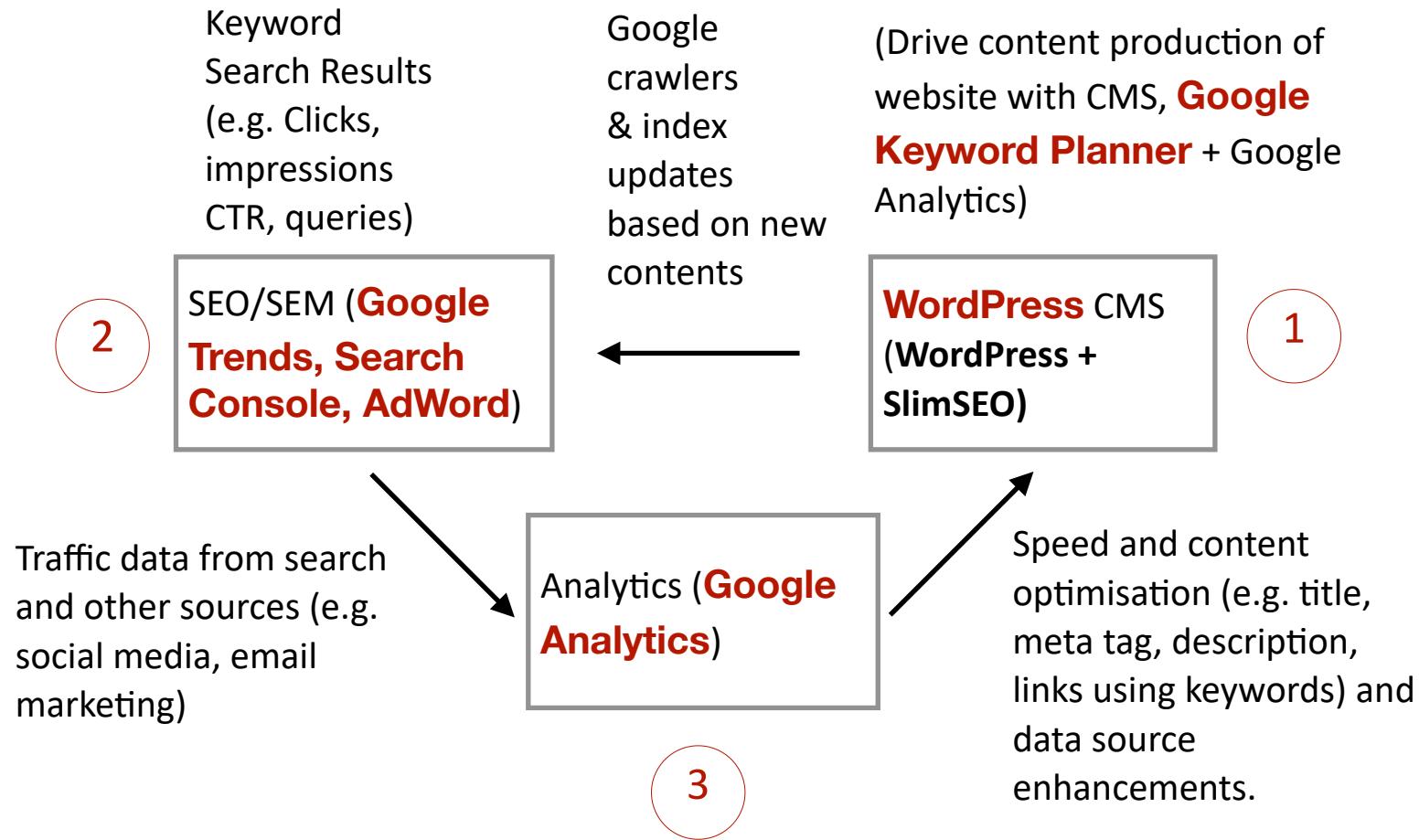
Top Active Pages:

Active Page	Active Users
1. /2020/10/09/embed-airtable/	1 100.00%

Top Locations:



Popular Google tools for SEO:
Keyword Planner, Search Console,
Adword, and Google Analytics





SEO Case Studies



CREATIVITY LAB

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COMMUNITY

IDEA

ACTION

EVENT

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攝影文化與日常生活息息相關，專業的數碼單鏡反光相機(DSLR)逐漸普及，人人也可充當記者、攝影師，從記錄社會事件甚至把身邊一切由瞬間變成永恆。c!ab將帶你解構攝影的迷人之處，認識數碼相機的運作原理並一同於中大校園內進行風景拍攝，發掘及訓練自己的「攝影眼」。



攝影基礎及實戰技巧工作坊

c!ab is organizing a photography workshop for college students who are looking to better understand...

more

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Analytics

All accounts > Creativity Lab of WYS C...

All Web Site Data ▾



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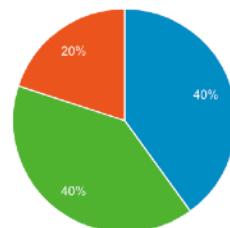
Behavior

Conversions

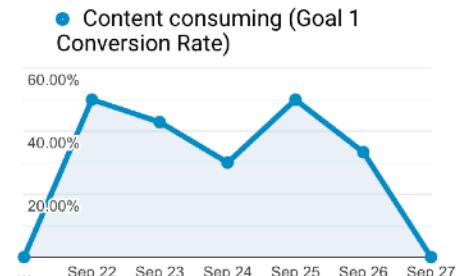
Attribution BETA

Discover

Admin



Direct
Organic Search
Social



Acquisition

Behavior

Conversions

	Users	New Users	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	Goal 1 Conversion Rate	Goal 1 Completion	Goal 1 Value
1 ■ Direct	30	26	36	41.67%	6.78	00:02:24	38.89%	14	\$0.00
2 ■ Organic Search	12	12	12	28.57%	6.78	00:02:24	50.00%	26	
3 ■ Social	6	6	6	73.33%	6.78	00:02:24	13.33%	2	
				0.00%			71.43%		

To see all 3 Channels click [here](#).

This report was generated on 9/28/20 at 1:50:59 AM - Refresh Report



Try searching “Top countries by users”



- [Home](#)
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- REPORTS**
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 - [Devices](#)
 - [Queries](#)
- [Social](#)
- [Campaigns](#)
- Behavior**
- [Attribution BETA](#)

Landing Page <small>?</small>	Acquisition					Behavior		Conversions		Goal 1: Content consuming <small>?</small>
	Impressions <small>?</small>	Clicks <small>?</small>	CTR <small>?</small>	Average Position <small>?</small>	Sessions <small>?</small>	Bounce Rate <small>?</small>	Pages / Session <small>?</small>	Content consuming (Goal 1 Completions) <small>?</small>	Content consuming (Goal 1 Value) <small>?</small>	
	118 % of Total: 100.00% (118)	8 % of Total: 100.00% (8)	6.78% Avg for View: 6.78% (0.00%)	9.8 Avg for View: 9.8 (0.00%)	15 % of Total: 41.67% (36)	73.33% Avg for View: 41.67% (76.00%) (-22.30%)	5.27 Avg for View: 6.78 (-22.30%)	2 % of Total: 14.29% (14)	\$0.00 % of Total: 0.00% (\$0.00)	13.33% Avg for View: 38.89% (-65.71%)
1. /	21 (17.80%)	2 (25.00%)	9.52%	4.4	3 (20.00%)	33.33%	22.00	2 (100.00%)	\$0.00 (0.00%)	66.67%
2. /idea/yue-jiang-yue-yan-key	11 (9.32%)	1 (12.50%)	9.09%	3.7	1 (6.67%)	100.00%	1.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
3. /idea/cu-bus-see-your-busyi-ge-neng-kan-dao-xiao-ba-de-app	7 (5.93%)	1 (12.50%)	14.29%	4.6	1 (6.67%)	100.00%	1.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
4. /photo/ted-x-cuhk	6 (5.08%)	0 (0.00%)	0.00%	8.5	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
5. /idea/organising-messy-wires	5 (4.24%)	0 (0.00%)	0.00%	2.0	1 (6.67%)	100.00%	1.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
6. /idea/weleap-she-hui-chuang-ye-ji-ao-liu	5 (4.24%)	1 (12.50%)	20.00%	14	1 (6.67%)	0.00%	2.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
7. /action/3d-paper-and-digital-mode-l-workshop	4 (3.39%)	0 (0.00%)	0.00%	6.5	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
8. /action/dian-ying-xin-shang-hui-trainspotting-12	4 (3.39%)	0 (0.00%)	0.00%	25	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
9. /idea/wellness-hub-you-xue-sheng-zhu-dao-de-qing-nian-xin-li-fa-zhan-wang-luo	4 (3.39%)	2 (25.00%)	50.00%	2.0	4 (26.67%)	75.00%	1.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
10. /idea-list-cat/83	3 (2.54%)	1 (12.50%)	33.33%	11	1 (6.67%)	100.00%	1.00	0 (0.00%)	\$0.00 (0.00%)	0.00%



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Attribution BETA

Primary Dimension: Country

Secondary dimension ▾

advanced

Country ?	Acquisition					Behavior		Conversions		
	Impressions ?	Clicks ?	CTR ?	Average Position ?	Sessions ?	Bounce Rate ?	Pages / Session ?	Content consuming (Goal 1 Completions) ?	Content consuming (Goal 1 Value) ?	Content consuming (Goal 1 Conversion Rate) ?
	118 % of Total: 100.00% (118)	8 % of Total: 100.00% (8)	6.78% Avg for View: 6.78% (0.00%)	9.8 Avg for View: 9.8 (0.00%)	15 % of Total: 41.67% (36)	73.33% Avg for View: 41.67% (76.00%) (-22.30%)	5.27 Avg for View: 6.78 (-22.30%)	2 % of Total: 14.29% (14)	\$0.00 % of Total: 0.00% (\$0.00)	13.33% Avg for View: 38.89% (-65.71%)
1. Hong Kong	83 (70.34%)	8 (100.00%)	9.64%	6.0	12 (80.00%)	66.67%	6.33	2 (100.00%)	\$0.00 (0.00%)	16.67%
2. United States	4 (3.39%)	0 (0.00%)	0.00%	21	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
3. China	3 (2.54%)	0 (0.00%)	0.00%	4.3	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
4. Spain	3 (2.54%)	0 (0.00%)	0.00%	53	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
5. United Kingdom	3 (2.54%)	0 (0.00%)	0.00%	2.7	1 (6.67%)	100.00%	1.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
6. India	2 (1.69%)	0 (0.00%)	0.00%	8.0	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
7. Malaysia	2 (1.69%)	0 (0.00%)	0.00%	8.0	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
8. Philippines	2 (1.69%)	0 (0.00%)	0.00%	11	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
9. Taiwan	2 (1.69%)	0 (0.00%)	0.00%	35	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%
10. Argentina	1 (0.85%)	0 (0.00%)	0.00%	32	0 (0.00%)	0.00%	0.00	0 (0.00%)	\$0.00 (0.00%)	0.00%

Show rows: 10 ▾ Go to: 1 1 - 10 of 24





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Primary Dimension: Device Category

Secondary dimension ▾



advanced

Device Category <small>?</small>	Acquisition					Behavior		Conversions			Goal 1: Content consuming <small>?</small>
	Impressions <small>?</small> <small>↓</small>	Clicks <small>?</small>	CTR <small>?</small>	Average Position <small>?</small>	Sessions <small>?</small>	Bounce Rate <small>?</small>	Pages / Session <small>?</small>	Content consuming (Goal 1 Completions) <small>?</small>	Content consuming (Goal 1 Value) <small>?</small>	Content consuming (Goal 1 Conversion Rate) <small>?</small>	
	118 % of Total: 100.00% (118)	8 % of Total: 100.00% (8)	6.78% Avg for View: 6.78% (0.00%)	9.8 Avg for View: 9.8 (0.00%)	15 % of Total: 41.67% (36)	73.33% Avg for View: 41.67% (76.00%)	5.27 Avg for View: 6.78 (-22.30%)	2 % of Total: 14.29% (14)	\$0.00 % of Total: 0.00% (\$0.00)	13.33% Avg for View: 38.89% (-65.71%)	
1. desktop	70 (59.32%)	5 (62.50%)	7.14%	13	10 (66.67%)	80.00%	7.30	2 (100.00%)	\$0.00 (0.00%)	20.00%	
2. mobile	48 (40.68%)	3 (37.50%)	6.25%	5.5	5 (33.33%)	60.00%	1.20	0 (0.00%)	\$0.00 (0.00%)	0.00%	

Show rows: 10 ▾ Go to: 1 1 - 2 of 2 < >

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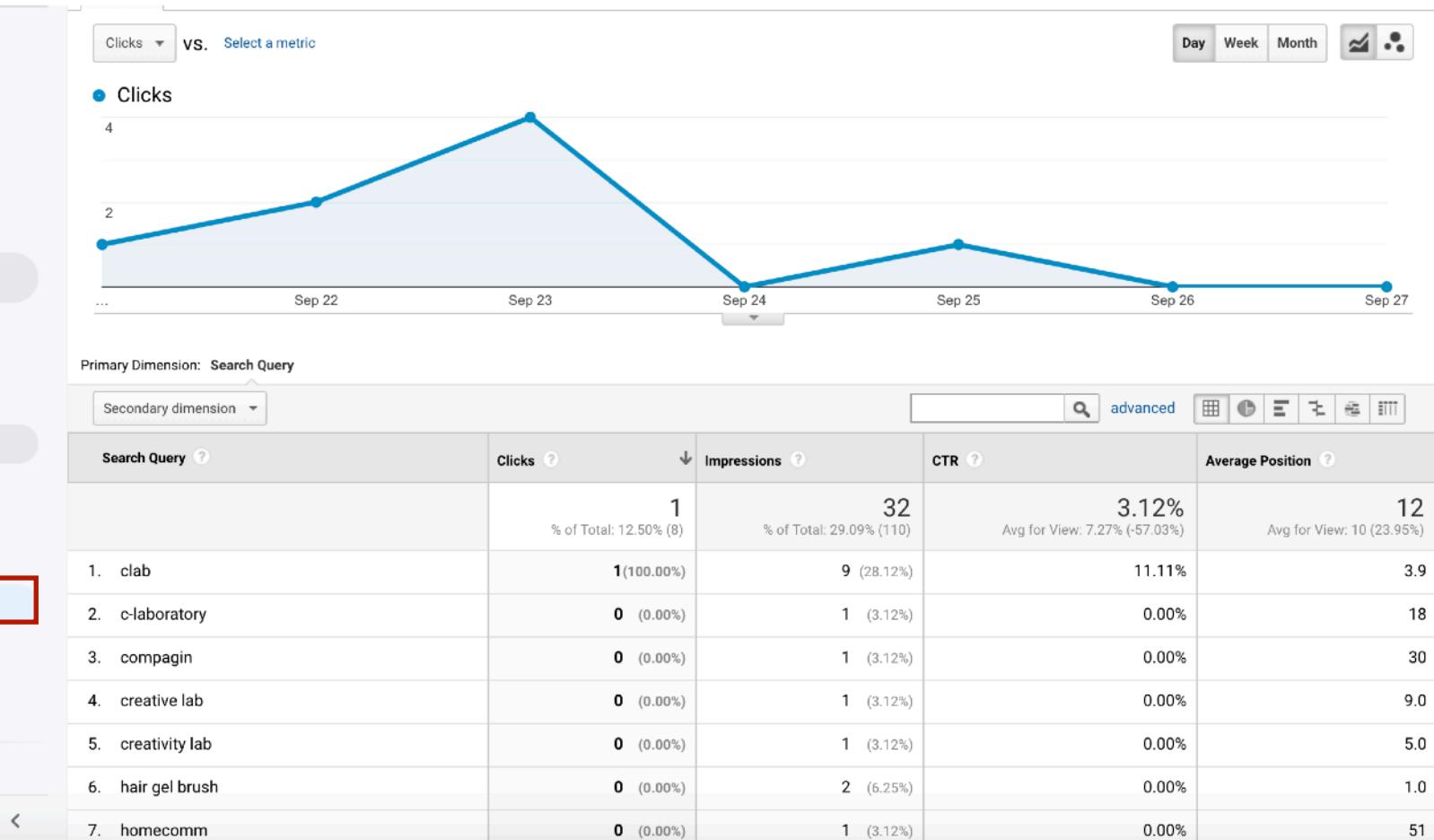
Acquisition

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Search Console

[Landing Pages](#)[Countries](#)[Devices](#)[Queries](#)[Social](#)[Campaigns](#)

Behavior

[Attribution BETA](#)

Google Search Console



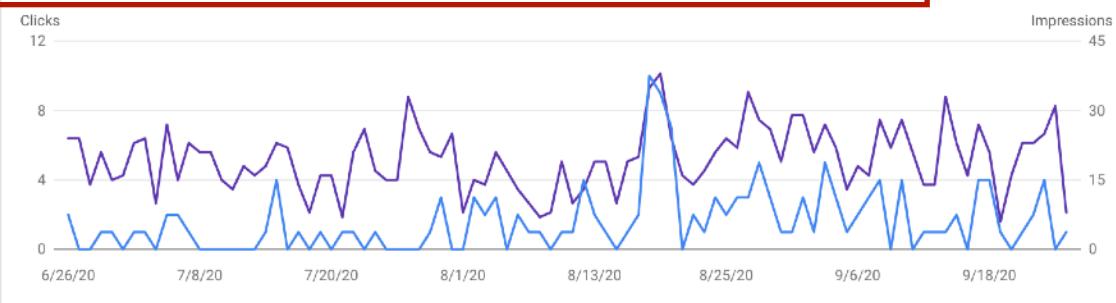
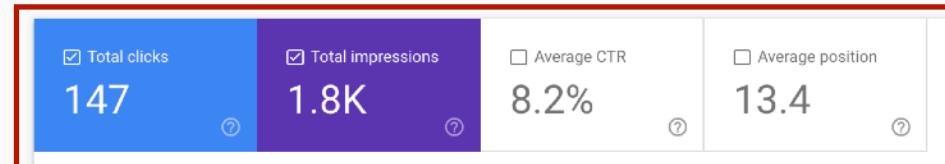
Inspect any URL in "https://clab.wys.cuhk.edu.hk/"

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Performance

[EXPORT](#)[Overview](#)[Search type: Web](#) [Date: Last 3 months](#) [+ NEW](#)

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Query

↓ Clicks

Impressions

喘key

4

75



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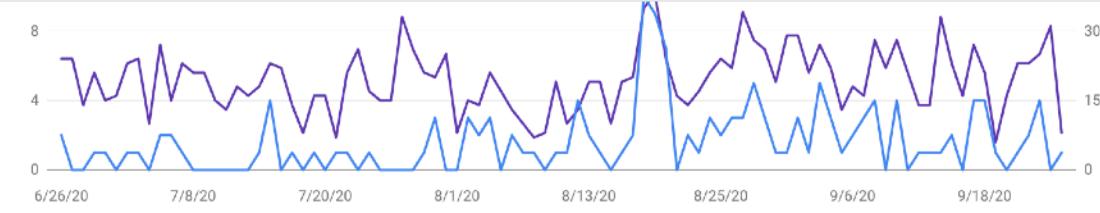
Submit feedback

Search type: Web

Date: Last 3 months

+ NEW

Last updated: 10 hours ago



QUERIES	PAGES	COUNTRIES	DEVICES	SEARCH APPEARANCE	DATES
		Country		↓ Clicks	Impressions
		Hong Kong		137	1,154
		Taiwan		5	94
		United States		2	71
		Japan		2	16
		Unknown Region		1	9

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Performance

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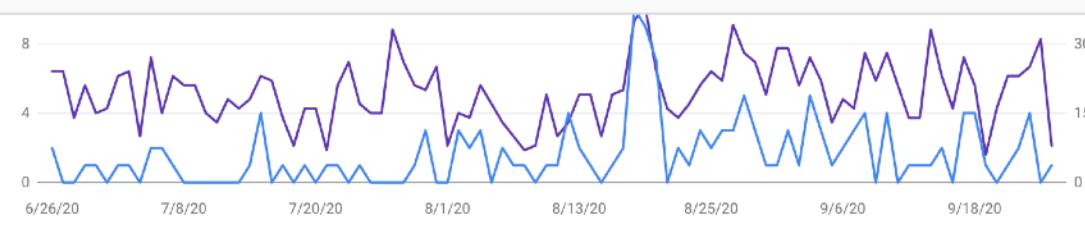
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[Links](#)[Settings](#)[Submit feedback](#)Search type: Web Date: Last 3 months [+ NEW](#)Last updated: 10 hours ago 

QUERIES	PAGES	COUNTRIES	DEVICES	SEARCH APPEARANCE	DATES
					
Device				↓ Clicks	Impressions
Desktop				96	1,080
Mobile				49	696
Tablet				2	21
Rows per page: 10 1-3 of 3 					



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Search type: Web

Date: Last 3 months

+ NEW

Last updated: 10 hours ago

Query	↓ Clicks	Impressions
咁key	4	75
clab	1	69
weleap	1	17
戴耳塞 開鐘	1	2
cu bus	0	22
hair gel brush	0	21
bokeh filter	0	19
nothiny	0	18
hair brush with hair remover	0	16
semhh0n19la -site:youtube.com	0	14

Performing SEO Research Using Keyword Planner

COVID-19: Resources to help your business manage through uncertainty. X

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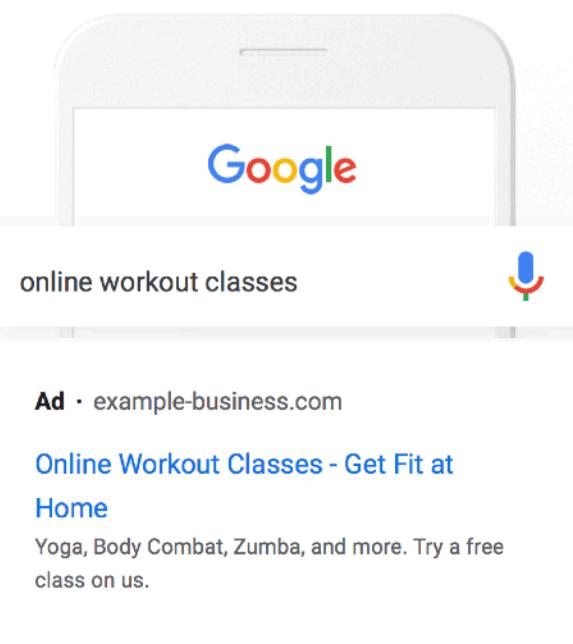
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Sales



Leads



Website traffic



Product and brand consideration



Brand awareness and reach



App promotion



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1-866-246-6453



 Campaign status: All; Ad group status: All ADD FILTER



Let's start by creating a new campaign and ad groups for your business.

A campaign is a set of related ad groups used to organise categories of products or services that you offer. [Learn more](#)



 NEW CAMPAIGN



Reporting is not carried out in real time. Time zone for all dates and times: (GMT+08:00) Hong Kong Standard Time. [Learn more](#)

Some inventory may be provided through third-party intermediaries.

You'll see Media Rating Council (MRC) accreditation noted in the column header's hover text for accredited metrics.

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All time 25 Sep 2020 ▾ < >

Campaign status: All; Ad group status: All ADD FILTER

Billing & payments

Access and security

Preferences

Switch to Expert Mode



Let's start by creating a new campaign and ad groups for your business.

A campaign is a set of related ad groups used to organise categories of products or services that you offer. [Learn more](#)

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https://ads.google.com/aw/overview?ocid=571853889&euid=300184019&_u=9660027131&uscid=571853889&_c=8558096761&authuser=1&sourceid=emp



All campaigns

SEARCH

REPORTS

SETTINGS &
BILLING580-518-4933
support@intchnigence.com

Overview



Campaigns



Settings

2

1

0

No data



Campaign status: All but removed

ADD FILTER



Campaign

Budget

Status

Campaign type

You don't have any enabled campaigns



Total: Account



HK\$0.00/day

Reporting is not carried out in real time. Time zone for all dates and times: (GMT+08:00) Hong Kong Standard Time. [Learn more](#)

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Change history

Performance targets

Campaign groups 

+ Campaign status: All but removed ADD FILTER

● Campaign

Total: Account  HK\$0.00/day

Reporting is not carried out in real time. Time zone for all dates and times: (GMT+08:00) Hong Kong Standard Time. [Learn more](#)
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Performance Planner

Keyword Planner 

Reach Planner

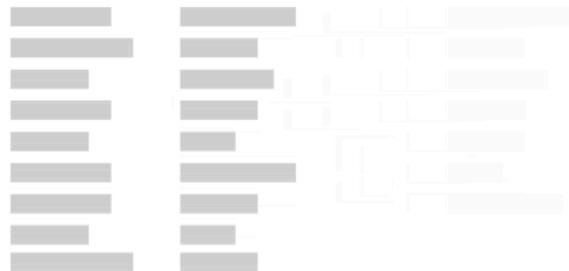
Ad Preview and Diagnosis

CH SEGMENT COLUMNS REPORTS DOWNLOAD EXPAND MORE

Status Campaign type

You don't have any enabled campaigns

+ NEW CAMPAIGN



Refine your Keywords

This guide shows you how to refine your keywords in just a few steps.

TRY IT NOW

PLANS CREATED



ADD FILTER



Plan



COLUMNS

How to use Keyword Planner

New feature announcements

**Discover new keywords**

Get keyword ideas that can help you reach people interested in your product or service

**Get search volume and forecasts**

Let's go

Click the **Discover new keywords** card to begin.

1/5 ▾

s for
ey

**PLANS CREATED BY YOU****PLANS SHARED WITH YOU**

ADD FILTER



COLUMNS



Plan

Status

Last modified ↓

Forecast period

Find new keyword ideas, get search volumes and create a plan

All accounts > Creativity Lab of WYS C...

All Web Site Data ▾

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- Conversions
- Attribution BETA
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?

⋮

Direct
Organic Search
Social

Users

Content consuming (Goal 1 Conversion Rate)

	Acquisition			Behavior			Conversions		
	Users	New Users	Sessions	Bounce Rate	Pages / Session	Avg. Session Duration	Goal 1 Conversion Rate	Goal 1 Completion	Goal 1 Value
1 Direct	30	26	36	41.67%	6.78	00:02:24	38.89%	14	\$0.00
2 Organic Search	12	12	12	28.57%	6.78	00:02:24	50.00%	26	
3 Social	6	6	6	0.00%	6.78	00:02:24	71.43%	14	\$0.00

To see all 3 Channels click [here](#).

This report was generated on 9/28/20 at 1:50:59 AM - Refresh Report

Google Search Console



Inspect any URL in "https://clab.wys.cuhk.edu.hk/"



https://clab.wys.cuhk.edu.hk/

Performance

EXPORT

Last updated: 10 hours ago

Overview

Performance

URL inspection

Index

Coverage

Sitemaps

Removals

Enhancements

Core Web Vitals

Mobile Usability

Security & Manual Actions

Legacy tools and reports

Links

Settings

Submit feedback

Search type: Web

Date: Last 3 months

+ NEW

Total clicks

147

Total impressions

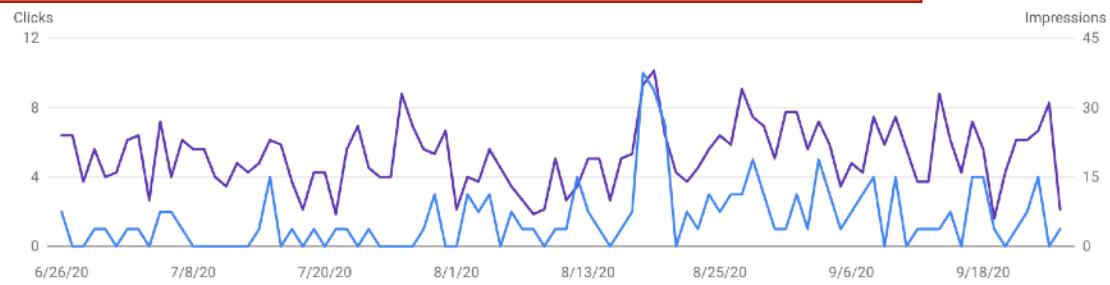
1.8K

Average CTR

8.2%

Average position

13.4



QUERIES

PAGES

COUNTRIES

DEVICES

SEARCH APPEARANCE

DATES

Query

↓ Clicks

Impressions

端key

4

75

Discover new keywords

Get keyword ideas that can help you reach people interested in your product or service



Get search volume and forecasts

Let's go

Click the **Discover new keywords** card to begin.

1/5 ▾

s for
ey



PLANS CREATED BY YOU

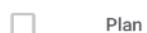
PLANS SHARED WITH YOU



ADD FILTER



COLUMNS



Plan

Status

Last modified ↓

Forecast period

Find new keyword ideas, get search volumes and create a plan

< 1 / 2 > ! None of your ads are running - Your campaigns and ad groups are paused or removed. Enable them to begin showing your ads.

[LEARN MORE](#)

:

Keyword ideas

Grouped ideas

Plan overview

Ad Groups

Keywords

Locations

Plan settings ⓘ Plan name: Plan from Sep 28, 2... Locations: Hong Kong Language: All languages Search networks: Google Next month 1 - 31 Oct 2020

FORECASTS

NEGATIVE KEYWORDS

HISTORICAL METRICS

Saved 1 minute ago

CREATE CAMPAIGN



Clicks

Impressions

Cost

CTR

Avg. CPC

Avg. Position

45

2.8K

HK\$680

1.6%

HK\$15

0.99

+ Add conversion metrics

Daily Budget: HK\$37



<input type="checkbox"/> Keyword ↑	Ad group	Max. CPC	Clicks	Impressions	Cost	CTR	Avg. CPC
<input type="checkbox"/> [code]	Ad group 1	HK\$79.50	1.61	29.00	HK\$13.26	5.6%	HK\$8.24
<input type="checkbox"/> [design]	Ad group 1	HK\$79.50	43.72	2,791.95	HK\$669.48	1.6%	HK\$15.31
<input type="checkbox"/> [design and code]	Ad group 1	HK\$79.50	0.00	0.00	HK\$0.00	—	—

1 - 3 of 3



SEO Site Checkup

Pricing Free Tools Articles Log in

Start Free Trial

Supercharged analysis & monitoring tools

Search Engine Optimization Made Easy

<https://dev-z9.pantheonsite.io/>



Checkup

✓ Check for all sections

Trusted by over 15,000 webmasters, small business owners & SEO agencies in over 120 countries.



1. **Conduct trend and keyword research using Google Trends and Keyword Planner.**
2. **Study the competition with SEMRush (to see what keywords they use)**
3. **Come up with keywords for experimentation.**
4. **Make sure title tag and meta description contain keywords.**
5. **Embed keywords into contents (e.g. posts)**
6. **Google Search Console to track search outcome (check search terms to pages, external links)**
7. **Impressions, Clicks, Click-through rate (CTR) to inform refinement of content.**

How to create Custom Coded Website in Python

Browser/ Mobile



Web Server

Apache/Nginx



App Server

Python
Custom Coded App



Database Server

SQL Database



```
<!DOCTYPE html>
<html lang="en">
<head>
<meta charset="utf-8">
<title> A Tiny HTML Document </title>
<link href = "styles.css" rel="stylesheet">
<script src="scripts.js"></script>
</head>

<body>
<p>Let's rock the browser, HTML5 style.</p>
</body>
</html>
```

```
# take powerx, y1
# return powerx,y1
'''Data given goes here'''

# take input from the user
print("Select operation:")
print("1.Add")
print("2.Subtract")
print("3.Multiply")
print("4.Divide")
print("5.Power")
choice = input("Enter choice(1/2/3/4/5):")

num1 = int(input("Enter first number:"))
num2 = int(input("Enter the second number:"))

if choice == '1':
    print(num1, "+", num2, "add", num1+num2)
    print(value, ..., sep=' ', end='\n', file=sys.stdout, flush=True)
```

Storage Configuration - Database Properties - Table: users						
	ID	PHONE	POPULARNAME	PREFERREDNAME	LATITUDE	LONGITUDE
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994614 popular_name_00994614 preferred_name_00994614 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994615 popular_name_00994615 preferred_name_00994615 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994616 popular_name_00994616 preferred_name_00994616 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994617 popular_name_00994617 preferred_name_00994617 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994618 popular_name_00994618 preferred_name_00994618 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994619 popular_name_00994619 preferred_name_00994619 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994620 popular_name_00994620 preferred_name_00994620 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994621 popular_name_00994621 preferred_name_00994621 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994622 popular_name_00994622 preferred_name_00994622 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994623 popular_name_00994623 preferred_name_00994623 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994624 popular_name_00994624 preferred_name_00994624 23.789875		
<input type="checkbox"/>	Edit	Copy	Delete	1194802 00994625 popular_name_00994625 preferred_name_00994625 23.789875		

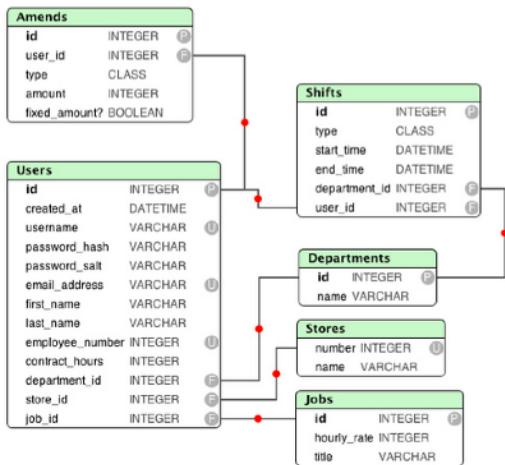
Frontend

Backend

Front-end vs. Back-end

The **MVC** Pattern for Structuring Application Development

Source: commons.wikimedia.org



Source: commons.wikimedia.org



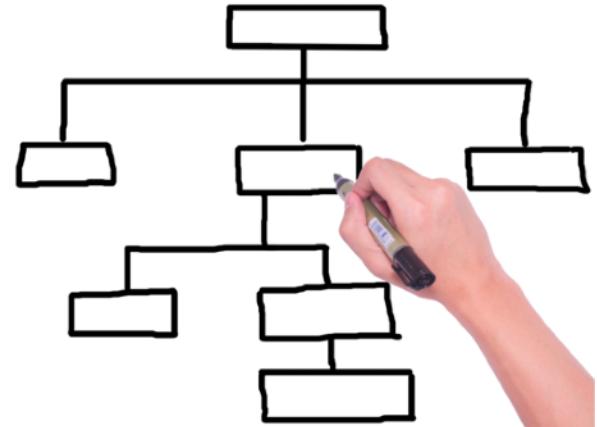
Source: pexels.com

V(iew) (Flask templates)

Routing control to
pre-defined data
and functions

M(o del)
(SQL/NoSQL data models and
processing functions)

C(ontroller)
(e.g. Routes, rights and authentication)



The **View** Component

Bootstrap

Build responsive, mobile-first projects on the web with the world's most popular front-end component library.

Bootstrap is an open source toolkit for developing with HTML, CSS, and JS. Quickly prototype your ideas or build your entire app with our Sass variables and mixins, responsive grid system, extensive prebuilt components, and powerful plugins built on jQuery.

[Get started](#)[Download](#)

Currently v4.3.1

2



<https://getbootstrap.com/>

Bootstrap Components for Responsive Web Page Layout and Composition.

Components

Over a dozen reusable components built to provide iconography, dropdowns, input groups, navigation, alerts, and much more.

Glyphicons

Available glyphs

Includes over 250 glyphs in font format from the Glyphicon Halflings set. [Glyphicons](#) Halflings are normally not available for free, but their creator has made them available for Bootstrap free of cost. As a thank you, we only ask that you include a link back to [Glyphicons](#) whenever possible.

 glyphicon glyphicon-asterisk	 glyphicon glyphicon-plus	 glyphicon glyphicon-euro	 glyphicon glyphicon-eur	 glyphicon glyphicon-minus	 glyphicon glyphicon-cloud	 glyphicon glyphicon-envelope	 glyphicon glyphicon-pencil
 glyphicon glyphicon-glass	 glyphicon glyphicon-music	 glyphicon glyphicon-search	 glyphicon glyphicon-heart	 glyphicon glyphicon-star	 glyphicon glyphicon-star-empty	 glyphicon glyphicon-user	 glyphicon glyphicon-film
 glyphicon glyphicon-th-large	 glyphicon glyphicon-th	 glyphicon glyphicon-th-list	 glyphicon glyphicon-ok	 glyphicon glyphicon-remove	 glyphicon glyphicon-zoom-in	 glyphicon glyphicon-zoom-out	 glyphicon glyphicon-off

Glyphicons
Dropdowns
Button groups
Button dropdowns
Input groups
Navs
Navbar
Breadcrumbs
Pagination
Labels
Badges
Jumbotron
Page header
Thumbnails
Alerts
Progress bars
Media object
List group
Panels
Responsive embed
Wells

<https://getbootstrap.com/docs/3.3/components/#nav>

[Getting started](#)[Layout](#)[Overview](#)[Grid](#)[Utilities for layout](#)[Content](#)[Components](#)[Utilities](#)[Extend](#)

Overview

Components and options for laying out your Bootstrap project, including wrapping containers, a powerful grid system, a flexible media object, and responsive utility classes.

Containers

Containers are the most basic layout element in Bootstrap and are **required when using our default grid system**. Choose from a responsive, fixed-width container (meaning its `max-width` changes at each breakpoint) or fluid-width (meaning it's `100%` wide all the time).

Components

[Alerts](#)[Badge](#)[Breadcrumb](#)[Buttons](#)[Button group](#)[Card](#)[Carousel](#)[Collapse](#)[Dropdowns](#)[Forms](#)

Alerts

Provide contextual feedback messages for typical user actions with the handful of available and flexible alert messages.

Examples

Alerts are available for any length of text, as well as an optional dismiss button. For proper styling, use one of the eight **required** contextual classes (e.g., `.alert-success`). For inline dismissal, use the [alerts jQuery plugin](#).

Search...

Input group

Jumbotron

List group

Media object

Modal

Navs

Navbar

Pagination

Popovers

Progress

Scrollspy

Alerts

Provide contextual feedback messages for typical user actions with the handful of available and flexible alert messages.

Examples

Alerts are available for any length of text, as well as an optional dismiss button. For proper styling, use one of the eight **required** contextual classes (e.g., `.alert-success`). For inline dismissal, use the [alerts jQuery plugin](#).

[Popovers](#)[Progress](#)[Scrollspy](#)[Spinners](#)[Toasts](#)[Tooltips](#)[Utilities](#)[Extend](#)[Migration](#)[About](#)

Bootstrap “spinners” can be used to show the loading state in your projects. They’re built only with HTML and CSS, meaning you don’t need any JavaScript to create them. You will, however, need some custom JavaScript to toggle their visibility. Their appearance, alignment, and sizing can be easily customized with our amazing utility classes.

For accessibility purposes, each loader here includes `role="status"` and a nested `Loading...`.

Border spinner

Use the border spinners for a lightweight loading indicator.



Popular Components

- a. Container
- b. Navbar
- c. Gliphicons
- d. Grid/Row/Column
- e. Thumbnail
- f. Button
- g. Form
- h. Panel/Wells/Jumbotron
- i. Carousel/Collapse
- j. Tabs
- k. Table
- l. Pagination
- m. Badges/List Group/Cards
- n. Modal/Tooltip/Popover

<https://www.w3schools.com/bootstrap4/default.asp>



Bootstrap themes, templates, and more to help you start your next project!

Start Bootstrap creates free, open source, MIT license, Bootstrap [themes](#), [templates](#), and [code snippets](#) for you to use on any project, [guides](#) to help you learn more about designing and developing with the Bootstrap framework, and premium Bootstrap products.



<https://startbootstrap.com/>

The **Database** Component

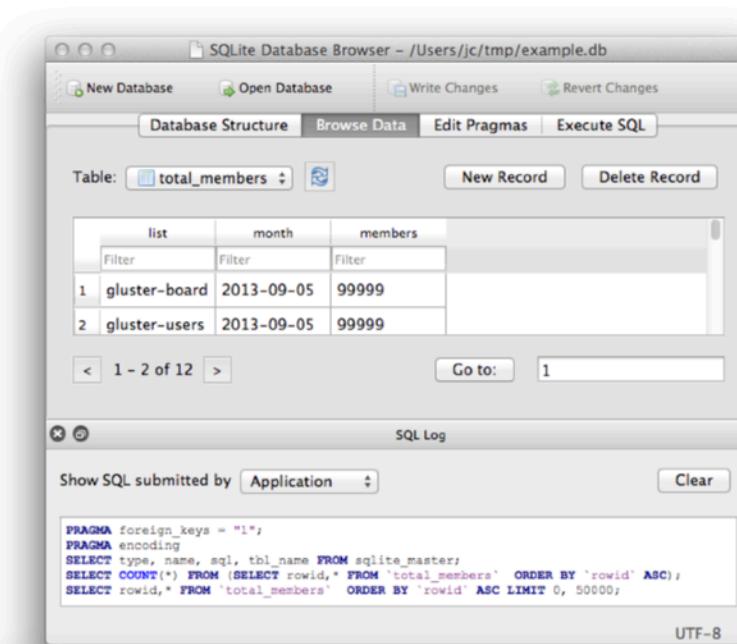
Setup SQLite for Quick Prototyping



DB Browser for SQLite

The Official home of the DB Browser for SQLite

Screenshot



DB Browser for SQLite - /Users/yssuen/flask_apps/Classes/Flask_Web_REST_API_Programming/**/ Flask Workshop/04 MVC Framework and Flask-SQLAlchemy/workshop.db

New Database Open Database Write Changes Revert Changes Open Project Save Project Attach Database Close Database

Database Structure Browse Data Edit Pragmas Execute SQL

Create Table Create Index Modify Table Delete Table Print

Name Type Schema

Tables (2)

- blogs
- users

CREATE TABLE blogs (id INTEGER NOT NULL,title VARCHAR(255),body TEXT NOT NULL)
CREATE TABLE users (id INTEGER NOT NULL,username VARCHAR(50),email VARCHAR(255))

Indices (0)

Views (0)

Triggers (0)

Mode: Text

Edit Database Cell

1

Type of data currently in cell

Size of data currently in table

Apply

DB Schema

Name Type Schema

Tables (2)

- blogs
- users

CREATE TABLE blogs (id INTEGER NOT NULL,title VARCHAR(255),body TEXT NOT NULL)
CREATE TABLE users (id INTEGER NOT NULL,username VARCHAR(50),email VARCHAR(255))

Indices (0)

Views (0)

Triggers (0)

SQL Log Plot DB Schema Remote

UTF-8

The **Controller** Component

Use Python Flask Framework for Controlling Access to Web Resources

Flask Development in Jupiter Notebook

```
from flask import Flask

app = Flask(__name__)
@app.route("/")
def hello():
    return "Hello World!"

if __name__ == '__main__':
    app.run('localhost', port=9000)
```

Flask Development via Pythonanywhere

yiusin.pythonanywhere.com

[+ Add a new web app](#)

Configuration for yiusin.pythonanywhere.com

Reload:

[!\[\]\(73c386776b75301911ff03a315e5d6d8_img.jpg\) Reload yiusin.pythonanywhere.com](#)

Best before date:

We're happy to host your free website – and keep it free – for as long as you want to keep it running, but you'll need to log in at least once every three months and click the "Run until 3 months from today" button below. We'll send you an email a week before the site is disabled so that you don't forget to do that. [See here for more details.](#)

This site will be disabled on **Saturday 07 April 2018**

[Run until 3 months from today](#)

Paying users' sites stay up forever without any need to log in to keep them running.



/home/ yiusin

Directories

Enter new directory name

New directory

.local/
.virtualenvs/
mysite/



Files

Enter new file name, eg hello.py

New file

.bash_history	2018-01-02 16:17 23 bytes
.bashrc	2017-12-17 15:47 559 bytes
.gitconfig	2017-12-17 15:47 266 bytes
.profile	2017-12-17 15:47 79 bytes
.python_history	2018-01-06 10:22 49 bytes
.pythonstartup.py	2017-12-17 15:47 77 bytes
.vimrc	2017-12-17 15:47 4.6 KB
README.txt	2017-12-17 15:47 235 bytes

Upload a file

Dashboard Consoles **Files** Web Tasks Databases

Open Bash console here

0% full – 148.0 KB of your 512.0 MB quota



/home/yiusin/ msite

Directories

Enter new directory name

New directory

static/
templates/



Dashboard Consoles **Files** Web Tasks Databases

Open Bash console here

0% full – 148.0 KB of your 512.0 MB quota

Files

Enter new file name, eg hello.py

New file

flask_app.py 2018-01-29 12:45 403 bytes
 flask_app.pyc 2018-01-29 12:45 784 bytes

Upload a file

```
from flask import Flask, render_template

app = Flask(__name__)
@app.route("/")
def hello():
    return "Hello World!"

if __name__ == '__main__':
    app.run(debug=True)
```

Hands-on Workshop

Clean Blog

A Blog Theme by Start Bootstrap

**Man must explore, and this is
exploration at its greatest**

Problems look mighty small from 150 miles up

Posted by Start Bootstrap on September 24, 2021

**I believe every human has a finite
number of heartbeats. I don't intend to
waste any of mine.**

Posted by Start Bootstrap on September 18, 2021

Dashboard

ID	Title	Author	Date	EDIT	DELETE
1	MAKING REMOTE WORKS COLLABORATIVE AND ACCOUNTABLE	info	2021-05-16 14:00:45.036667	EDIT	DELETE
2	LESSON FROM THE TIKTOK DEAL: NAVIGATING THE PARALLEL INTERNET	info	2021-05-16 14:01:18.393540	EDIT	DELETE
3	COVID-19: THE GREAT ACCELERATOR OF WORK AND LEARNING	info	2021-05-16 14:01:54.522165	EDIT	DELETE
4	THINK MVA WHILE DEVELOPING MVP	bernard	2021-05-16 16:32:42.238190	EDIT	DELETE
5	THE IOT TECHNOLOGY STACK MAY BE FALLING APART	bernard	2021-05-16 16:33:08.147485	EDIT	DELETE



Problem Set #5

Solution Space

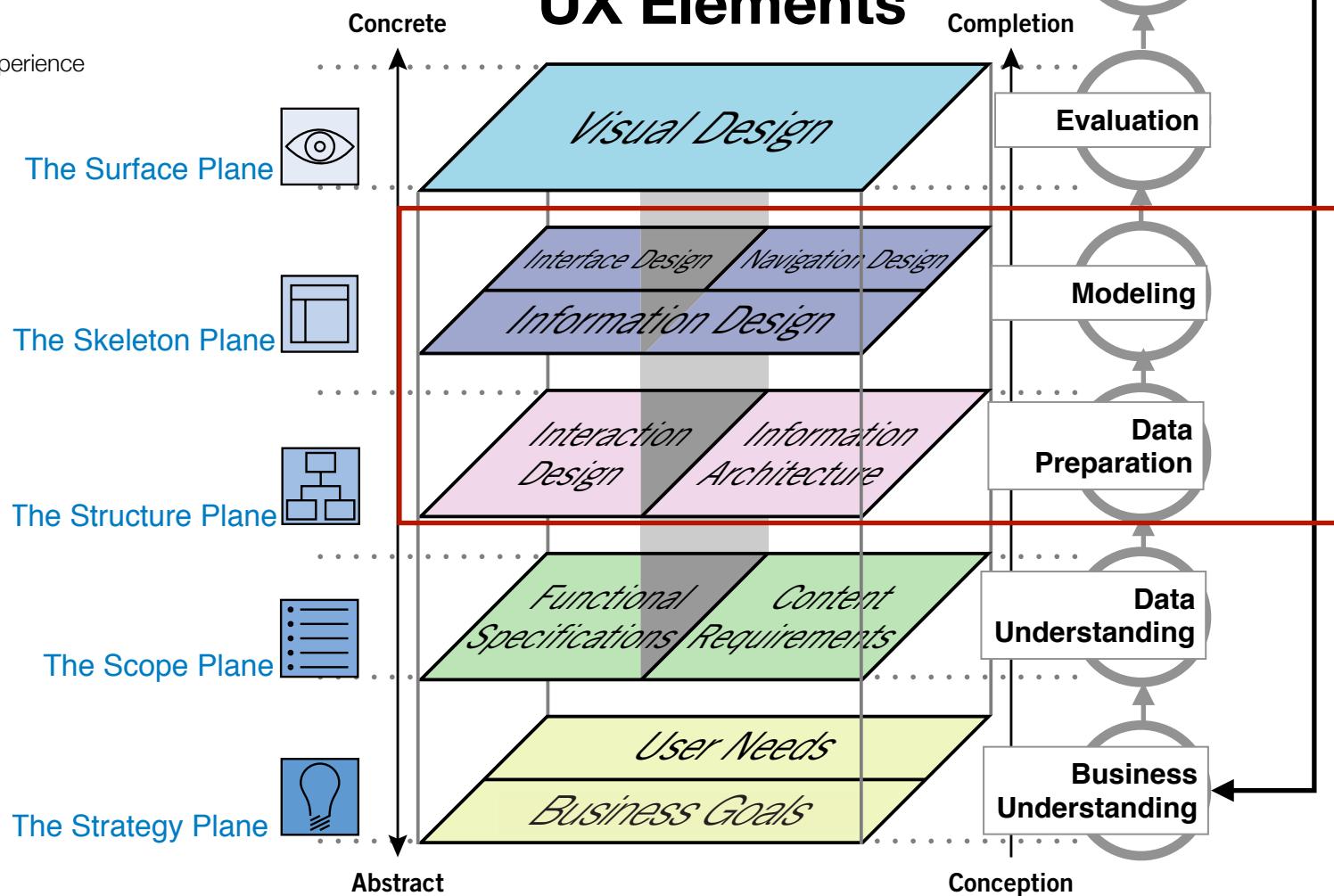
how and
how much

Problem Space

who, what,
and why

Source: Elements of User Experience
by Jesse James Garrett

UX Elements



Business Goals

- 1. Pretending that you have completed your design works on the structure and skeleton planes based on your requirements, you're now ready to implement your prototype with Python Flask.**
- 2. Choose a Bootstrap template that you like and download it into a Jupyter Notebook, which is organized according to the Flask directory structure.**
- 3. Modify the Bootstrap template and make it ready for displaying your contents.**
- 4. Retrieve data from a CSV file into a list of dictionary structure and pass it to the template for display.**

Thanks for joining me today!