

The Basics of Google Searching

(The examples use brackets to represent Google's search box. Don't type the brackets.)

Introduction

There's no doubting Google's power and popularity. Google currently dominates the search-engine market partly because of its enormous databases, and partly because of its clean, uncluttered look. Visit Google's home page by entering the following Web address into your browser: www.google.com.

Although Google is easy to use, few of us use it effectively. Most of us know, basically, that to begin a search on Google, you type a word or words—search term(s)—into the search box and click on the Google Search button (or hit the Enter key).



In response, Google produces a results page—a list of the first 10 Web pages related to your search terms—with what it thinks is the most relevant link appearing first, then the next, and so on. There may be millions of links, as Google returns results with all the words in your query.

At this point the challenge is to narrow down these overwhelming numbers to a manageable array of sites that may actually provide the information you want. Refining or narrowing your search can be as simple as adding more words to the search term(s) you have already entered. Your new query will then return a smaller subset of the pages Google found for your original too-broad query. Clicking on any underlined item will take you to the associated Web page.

Searching the Internet is a valuable skill. So the more you know about how Google works—its features, its capabilities, and how it displays results—the better it can serve your needs by helping you focus your search more narrowly.

Choosing Search Terms

First, let's review some basic tips. It's important to choose your keywords wisely. If you've chosen your words or phrases well, what you are searching for should appear among Google's first choices. Keep these guidelines in mind:

Be specific. Define your topic as narrowly as possible. Typing **[dromedary]** gets more relevant results than typing the more generic term **[camel]**, which returns results for both dromedaries and Bactrian camels.

Use keywords likely to appear on a site with the information you want. Avoid using words that *you* might associate with your topic, but you wouldn't expect to find on a

Web page. For example, queries that include “articles about,” “discussion of,” “documentation on,” and “pages about” are likely to return fewer results since information on the Web rarely appears with such terms. Instead, for example, try *favorite* movies, or *best* nonfiction books, or Cole Porter song *list*.

Use additional search terms to narrow your results. Consider, for example, the search term **[java]**. What do you suppose Google includes in the first page of results? An island in Indonesia? A beverage? A computer programming language developed by Sun Microsystems? Aim for three to five relevant terms that can distinguish your subject, e.g., **[java indonesia reclining buddha]**. In one study of experienced researchers, their average was 5 terms.

Effective keywords are always a guess, but with practice you get better at guessing.

How Google Treats Your Search Terms

Understanding how Google treats your search terms will help you devise effective queries and revise ineffective ones. Google limits a query to 32 words, and the order of your terms is significant in the order of the query results. Google gives higher priority to pages that have search terms in the same order as the query; and Google gives higher priority to pages that have search terms adjacent or near to each other.

Let’s look at Table 1, below, which specifies how Google treats your search terms.

Search Behaviors	Descriptions
1. Implicit AND	Google returns pages that match <i>all</i> your search terms. (You don’t need to include the logical operator AND between your terms.)
2. Exact Matching	Google returns pages that match your search terms exactly; e.g., automobile won’t find and return car, equipment won’t find gear.
3. Word Variation (Automatic Stemming)	Google returns pages that match variants of your search terms, e.g., bicycle(s), bicycle’s, bike(s), bike’s, bicycling, bicyclist(s).
4. Common-word Exclusion	Google ignores some common words it calls “stop words,” e.g., the, who, on, in, what, where, how, where, how, to, be, of, or (lower case), plus some single digits and some single letters.
5. Case Insensitivity	Google is case-insensitive; it assumes all terms are lowercase: George Washington, george washington, gEoRgE wAsHiNgToN.
6. Punctuation Is Ignored	Google ignores most punctuation and special characters: period, comma, semicolon, question mark, brackets, parentheses, the @ sign, forward slash, and pound sign.

Search Behaviors	Descriptions
7. Variations on Hyphenation	Google searches for variations on any hyphenated terms, e.g., lower-case, lowercase, lower case.
8. Term Proximity	Google gives higher priority to pages that have search terms in proximity to each other.
9. Term Order	Google gives higher priority to pages that have search terms in the same order as your query.
10. Query Word Limit	Google limits queries to 32 words.

Table 1. *How Google Treats Your Search Terms*

Let’s look at Table 1, specifically, Items 1 and 2. Google returns pages that match all your search terms, and it matches your search terms exactly. If you search for **[inexpensive doodad]**, Google won’t find “cheap”; if you enter **[laptop]**, it won’t find “computer”; **[automobile]** generally won’t also return “car,” although the sponsored links probably will search for synonyms because of the advertising advantage to them to do so.

On the other hand, Google does return pages that match different forms of your search terms. (That’s Item 3 in the table.) Google calls this feature “stemming.” Stemming is a technique that searches on the root of a word that can have multiple endings. In Google’s keyword searching, word endings are dropped, and searches are performed on the stem.

Item 4: Google automatically excludes some frequently used words it calls *stop words*. There are about 40 of these, including, for example, *the, who, on, in, to, be, where, how, or* (lower case), as well as certain single digits and single letters. Google says these common “stop words” tend to slow down your search without improving the results.

Item 5: Google is *not* case sensitive. It assumes all search terms are lowercase. If you want to type capitals Google is OK with that. It just ignores them.

Item 6: Google ignores most punctuation—and most special characters, too. But, there are a few that Google doesn’t ignore, as we’ll see later in Table 2.

Item 7: A term with a hyphen returns any variation of the term. Google searches for variations on any hyphenated terms; for example, a search for the term “lower-case,” hyphenated, will also find lowercase as one word and as two words.

Item 8: When Google responds to your search with its list of Web pages, it has used a complex ranking algorithm so that the *most relevant link* appears first, then the next, and so on. In doing so, it takes into account those pages that have your search terms *near* to each other.

Item 9: Because Google searches for phrases first, the order of your keywords matters. For example **[global bird flu epidemic]** returns different results from **[bird flu global epidemic]**. Having taken into account those pages that have your search terms in

proximity to each other, it looks for pages that have the same order as you typed them into the search box. If you've used a group of terms without success, you might try altering the order.

Item 10: Lastly, Google limits your search string to 32 terms.

Using Special Operators and Non-alphanumeric Characters

Now that you've seen how Google handles your search terms, let's see how you can make Google pay attention to words you don't want it to ignore, like **[the who]** (a popular English rock band). Both "the" and "who" are on Google's common-word exclusion list. And how to tell it to ignore irrelevant pages when you want to use a search term (like **[java]**) that has multiple possibilities for response.

You can show Google who's boss by using a number of special characters and operators—the plus, minus, tilde, 2 periods together, OR (in capitals), straight slash or bar, as well as the asterisk and double quotation marks. With these you can tweak your search query and increase the accuracy of its results. Let's look at Table 2.

Notation	Query Page Result	Example
1. term1 term2 term3 etc. (AND is implied)	with term1 and term2 and term 3	[child's bike helmet] [global bird flu epidemic]
2. term1 OR term2 term1 term2	with either term1 or term2 or both	[libya OR tunisia roman tours] [libya tunisia roman tours]
3. "phrase"	with the exact phrase	["the who" tour 1989] ["best non-fiction books"]
4. +term	with term (typically in front of stop words)	[+who +whom] [favorite +book]
5. -term	without term	[dolphin -football] [bass -fishing -shoes -ale]
6. ~term	with term or one of its synonyms	[~inexpensive laptop] [spanish ~tutorial]
7. "term1 *term2"	with the phrase enclosed in quotes and the * replaced by any single word	["google *my life"] ["habits ***cables"]
8. number 1..number2	with a number in the specified range	["digital camera" \$300..800] ["cms newsletter" 2003..2005]

Table 2. Using Special Operators and Nonalphanumeric Characters

Besides the implied AND operator (Item 1), Google supports the logical OR operator (Item 2). To retrieve pages that include either search *term1* or *term2*, use an uppercase OR between the terms. Alternatively, using the straight slash takes several fewer strokes to type.

Item 3: A phrase enclosed within quotes is the most widely used type of special search syntax. To search for a phrase, a proper name, or a set of words in a specific order, put them in double quotes. A query with terms in quotes finds pages containing the exact quoted phrase. For example, **["peter roll"]** in quotes finds pages containing exactly the

phrase “Peter Roll.” So this query would find pages mentioning our Computer Club’s founder Peter Roll, but not pages about **Peter** Townshend, the rock-and-roll star, or a page containing a recipe by **Peter** Bojanic for yummy lasagna **roll**-ups. The query **[peter roll]** (without quotes) may find all these pages and many more.

So—to sum up the usage of quotation marks:

- a) Use quotes to enter a proper name: **["mayo clinic"]**.
- b) Use quotes to find set of words, or perhaps to relocate a search. For example, who wrote “Habits are first cobwebs, then cables”? Type **["habits are first cobwebs"]** to find out.
- c) Find recommendations by searching for pages containing lists, as I’ve mentioned: **["favorite movies"]**; **["best non-fiction books"]**; **["cole porter song list"]**.
- d) Use quotes to force Google to search for common words, which it would otherwise ignore, e.g., **["the who"]**, both of which are “stop words.”

You can also use quotes to find answers to commonly asked questions. **["how does a computer virus work"]** **["how many square feet are in an acre"]** **["why is the sky blue"]** Chances are a Web-page author has already phrased the question just as you have.

Item 4: To force Google to search for a particular term, put a + sign operator in front of the word in the query, e.g., **[+who +whom]** Make sure you include a space before the second plus sign but not after the plus sign.)

The other example in Item 4, “+book,” shows how to disable Google’s automatic stemming. Remember that Google searches on the root of a word, which may result in several variants of your search term. In this case, if you want to see only pages mentioning one favorite book rather than lists of favorite books (plural) as well, precede the word “book” by a + sign. Putting the phrase in quotes would produce still different search results. Are you beginning to see why? (Try it all three ways and see.)

Item 5: Precede each term you do *not* want to appear in any result with a – (minus) sign. The – sign operator indicates that you want to subtract or exclude pages that contain a specific term. For example, take the search term, dolphin. Want Flipper, not the football team? Enter **[dolphin –football]**. This works when refining or narrowing a current search as well.

Item 6: Remember that we said Google matches your search terms *exactly*? That if we search for “inexpensive” Google won’t find “cheap”? Google will *if* you use its synonym operator. The tilde operator takes the word immediately following it and searches both for that specific word and for the word’s synonyms. It also searches for alternative endings of the term (remember stemming?). The tilde works best when applied to general terms and terms with many synonyms. As with the + and – operators, put the ~ (tilde) in front of the word, with no spaces between the ~ and its associated word.

Item 7: Use an * (asterisk) as a wildcard to match any whole word in a phrase that is enclosed in quotes. Google treats the asterisk as a placeholder for just one word. Likewise, use two asterisks for two unknown words in a phrase—or even three or more.

Item 8: To search for results containing numbers in a given range, just add two numbers, separated by two periods, with no spaces, into the search box along with your search terms. You can set ranges for everything from dates—[**“willie mays” 1956..1964**] to sizes [**xxl..xxxl size shirt**] to weapons calibers [**38..45 caliber revolver**]. But be sure to specify a unit of measurement or some other indicator of what the number range represents.

For maximum effectiveness you can combine several of these operators at any time during your search to fine-tune your search results.

Search Results Pages

Now that you can construct well-thought out, effective searches, next you should take a tour through a Google search results page. When you understand what all appears on the page, you'll be better able to determine if a page includes the information you're after—or at least links to that information.

You can do this on your own by consulting Google's Web Search Help pages: Google→About Google→Help→Web Search→Search Results Page. Also while you're here, do explore Google's other search-related Help sites.

Other Google Features

And finally, a word about some of Google's other features. In addition to providing easy access to billions of Web pages, Google has many special features to help you find exactly what you're looking for—that's a whole other topic. But—to whet your appetite—Google can translate your Web search results, look up stock quotes, supply local movie schedules, and do local business searches. It can look up phone numbers and addresses in its national phone book—both residential and US business. Google supplies information on your UPS, FedEx, and USPS tracking numbers, as well as universal product codes. It also supplies street maps and flight, travel, and weather information.

Google is expanding its support constantly with new services such as Google Maps, Google Earth, Google Groups, Desktop, and Gmail. There's Book Search, Finance, Image Search, News, Toolbar, and YouTube. Also look at Calendar, Docs & Spreadsheets, and Picasa, which I recommend. You'll be astonished what a little surfing around in Google is capable of producing.

I hope what we've covered in these notes will help make your Web searches more productive AND more fun.

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