

HOW **GOOGLE** WORKS?

Summary in points and explain

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2016

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Definitions

- **Google Inc.**

Google is a multinational, publicly-traded organization built around the company's hugely popular search engine. Google's other enterprises include Internet analytics, cloud computing, advertising technologies, and Web app, browser and operating system development.

- **Google Search engine In dictionary:**

A computer program that searches documents, especially on the Www, for a specified word or words and provides a list of documents in which they are found.

- **In computer field**

Is an information retrieval system designed to help find information stored on a computer system. The search results are usually presented in a list and are commonly called hits. Search engines help to minimize the time required to find information and the amount of information which must be consulted

An overview of the history of Google search engine

Google is one of the most well known brand name in the world. It is so popular, even people who don't use the internet still know the name of Google. It is a search engine website which locate, rank and display other websites.

It is the most used search engine, billions of people use their search box daily to get different types of information on the internet. There are many other types of search engines present who provide this service, but Google is the one which gives the best result of user keywords and queries.

Two college students **Sergey Brin** and **Larry Page** invent Google. The initial name of search engine that they created is Black Rub. It was a college project run at the Stanford university, the main purpose of this project is to locate, rank, and display other websites according to the popularity. During that time the popularity would be determined by how many times other websites refer a website.

After some time both Larry and Sergey noticed that their search engine was taking too much internet bandwidth. In 1997 they relocate it to another server and renamed the search engine as Google. This name is actually coming from word Google. Actually, Googol is a mathematical term used for 1 plus hundred zeros i.e (1,000,00..... 0). The reason to choose the Googol word is only because they have the mission to collect an infinite amount of information regarding organizations and websites on the internet.

At that time they were not the first who is working on a search engine, there were already some search engines out there. Larry and Sergey's initial efforts were fine but their objective was to create much better search which returns more accurate results.

An investor, **Andy Bechtolsheim** which is the co-creator of Sun Micro-systems see the potential value what they had created. He gave surprised and wrote a check of \$100,000 for them. After that they never looked back, the success continued to follow and began hiring employees under the name Google.

In 1998, PC Magazine the highly respected industry puts Google on the map with their review. The magazine declares Google as one of the Top 100 websites of 1998.

In 2000, Google started selling advertisements. Lots of people start using Google which is going to be ideal for using their ads.

People would only pay or get when someone clicked to view their ad. This is called as **Google AdSense** for publishers and **Google AdWords** for advertisers. It generates millions in revenue for Google and still growing.

In 2003, they relocate their company to a large area in Mountain view, California that they named as Google Plex. They are still there today. This year they also launch their free web based email service and successfully compete with the email services like Yahoo and Hotmail. They attract people by offering 1 GB of email storage, which is much more than competitors.

In 2004, **Google Earth** launched. Unique and attractive free service which is never ever used and provided this before. Map of Earth is created by using satellite images, anyone can search for any place in the world. Google Earth maps allow the user to zoom to the street level and see any place in the world while sitting at a computer.

In 2006, Google adds video feature to their search option. Users can search any kinds of videos like music videos, movies, TV shows on other websites, this year they purchased **YouTube** for \$1.65 billion. Google is also added to the Dictionary as a word.

Now Google is much more than just a search engine. Approximately 70% of internet users use Google for their searches. Yahoo and Bing comes after that. Google receives billion of search requests per day. That is why people are interested to list and rank their website on Google.

How Google search works?

What happens when you do a web search , The first thing to understand is when you do a **Google** search you aren't actually search on the web, you search in **Google** index of the web or at least of much or at least in much we can find. We do this with software programs called spiders. Spiders start by fetch a few web pages then they follow the links on these pages and fetch that pages they point too and follow all the links of this pages and fetch the pages they link too and so on, until it is indexing a large amount of Web Billions of pages stored across thousands of devices.

Suppose I want to know about a subject, so I can type this subject key words in the Search interface for Google and then click on Display. The program searches the index to find all pages that contain this search terms In this case, there are thousands of possible outcomes.

How Google determines the few documents that I want them and not other?

By asking too many questions. For example:

How are repeated keywords in this page?

Are keywords appearing in the title?

Is this page including synonyms for this word?

Is this page of high quality web site or of low quality web site Or that its content is not desirable?

What site this page in Page Rank?

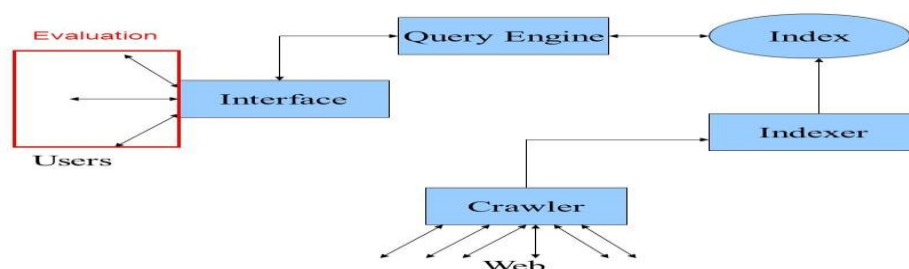
This equation was invented by the founders (Larry page and Sergey brin) It is to Assess the importance of web pages by looking at the number of external links pointing to it and how important these links, Finally, combine all these factors together to get rating total points for each page and display your search results after about half a second science you send your search.

Each search result includes a title, URL title and extract from the text, To help me to decide whether this page shows the content you are looking for. I also see links to similar pages and the latest version that stored of **Google** in these pages and related searches that might want to try it.

Google architecture

A basic search engine consists of three parts:

- **Crawler**
- **indexer**
- **Query Engine**

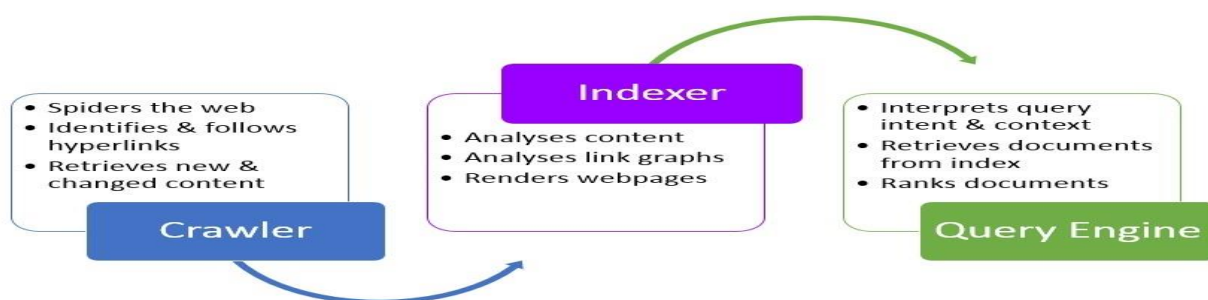


***The Crawler** also called the spider traverses the web collecting information and stores them into a huge repository after being compressed. It follows hyperlinks across the web collecting information from HTML web pages.

* Indexing module prepares the index of the local database. Every Web document has an associated ID number called document identifier (Doc ID), which is assigned whenever a new URL is parsed out of a web page.

***The indexer** takes the web pages collected by the crawlers and stores them into a highly efficient index.

***Query Engine** handles the user queries by searching the index. The core of search engine is an index module which enhances the speed of searching the required information with help of an efficient indexing technique.



***A basic architecture of search engine consists of two layers: Front-end and Back-end.**

Front-end

User Interface	Query Processor
User Interface is used to interact with the user. Then user interacts with search engine by giving a query which acts as an input to the query processor. Ex. Google search bar	The query processor searches the result to get the desired match results and rank them in some order and then give it to user interface to display it to the user.

Back-end

crawler	Indexer
Crawler starts working with list of seed URL as an initial input. It traverses the WWW to download the corresponding web page and stores them into temporary repository	Indexer fetches the downloaded documents from temporary repository, extract all the keywords, stop words are removed and stem the root word and stores it in an Inverted Index.

Indexing is the process of systematic arrangement of records

Google products

Google products for Web

- **Web Search**
Search billions of web pages
- **Google Chrome**
A browser built for speed, simplicity and security
- **Bookmarks**
Access your bookmarks and starred items

Google products for Mobile

- **Mobile**
Get Google products on your mobile phone
- **Maps for mobile**
View maps, your location and get directions on your phone
- **Search for mobile**
Search Google wherever you are

Google products for Business

- **Google Apps for Work**
Get email, docs, storage and more, customized for your business
- **AdSense**
Create online revenue today
- **AdMob**
Make money from your apps

Google products for Media

- **Books**
Search the full text of books
- **Image Search**
Search for images on the web
- **News**
Search thousands of news stories
- **Video Search**
Search for videos on the web
- **Google Photos**
All your photos on all your devices, organized and easy to share
- **Google Cardboard**
Experience virtual reality in a simple, fun, and affordable way

Google products for Geographic Information

- **Maps**
View maps and directions
- **Earth**
Explore the world from your computer

Specialized Search of Google

- **Custom Search**
Create a customized search experience for your community
- **Scholar**
Search scholarly papers
- **Trends**
Explore past and present search trends

Google products for Home & Office

- **Gmail**
Fast, searchable email with less spam
- **Drive**
Create, share and keep all your stuff in one place
a freemium cloud storage service that is integrated with the company's other services and systems -- including Google Docs, Gmail, Android, Chrome, YouTube, Picassa, Google Video, Google Analytics and Google+
- **Docs**
Open, edit, and create documents
- **Sheets**
Open, edit, and create spreadsheets
- **Slides**
Open, edit, and create presentations
- **Forms**
Build free surveys
- **Drawings**
Create diagrams and flow charts
- **Sites**
Create websites and secure group wikis
- **Calendar**
Organize your schedule and share events with friends
- **Translate**
Instantly translate text, web pages, and files between over 50 languages
- **Hangouts**

Conversations that come to life. Anytime, anywhere, for free

Google products for Social

- **Google+**
Discover things, created by passionate people
- **Blogger**
Publish your passions, your way
- **Groups**
Create mailing lists and discussion groups

The advantages of Google Sites

1. Free
2. Fast and easy to edit
3. No programming or database skills required
4. No software installation required
5. Integrated with Google apps
6. Creator can access tools anywhere
7. Creator has full control on page access and permission
8. Function as a basic project manager
9. Google Chrome has a very basic, simple design, making it easy to use.
10. Chrome automatically translates pages into a language you understand for your convenience.
11. Google Chrome offers many security advantages of its own.

The disadvantages of Google Sites

1. Not really good website for business - not enough customization
2. Apps only limited to Google apps only. Apps outside Google apps may be inapplicable
3. The site URL must begin with "sites.google.com/site/" which is too long for a website
4. Chrome uses up a lot of memory (RAM) when running it.
5. If you accidentally close the browser, Chrome will close all the tabs opened without warning.

References

URL

- <https://www.google.com/insidesearch/howsearchworks/crawling-indexing.html>
- <https://www.google.com/about/>
- <http://www.slideshare.net/AnikaRahmanOrin/google-company-profile>
- https://www.google.com.eg/url?sa=t&rct=j&q=&esrc=s&source=web&cd=4&cad=rja&uact=8&ved=0ahUKEwjJl5n90PrPAhXGCiwKHb3cCcsQFgg8MAM&url=https%3A%2F%2Fwww.google.com%2Fabout%2Fcompany%2Fhistory%2F&usq=AFQjCNEKiUGxYUqqOsn_aGoR9wq2rEVs8w
- <http://www.dictionary.com/browse/search--engine>
- [https://en.wikipedia.org/wiki/Search_engine_\(computing\)](https://en.wikipedia.org/wiki/Search_engine_(computing))
- <https://sites.google.com/site/2102493/the-advantages-and-disadvantages-of-google-sites>
- <http://www.computer-geek.net/what-are-the-advantages-a-va-49.html>
- <http://www.online-sciences.com/technology/what-are-the-advantages-and-disadvantages-of-google-chrome/>
- https://gsuite.google.com/intl/en_global/products/gmail/
- <https://www.google.com/intl/en/about/products/>
- https://en.wikipedia.org/wiki/G_Suite#Gmail
- <http://www.webhosting1231.ga/2016/07/10-months-services-and-applications.html>
- <http://www.seobacklinksites.com/overview-history-google-search-engine/>