

Short-Answer Questions [25 points]:

1. Investigating one search engine (Google or Bing), and figure out what tricks they are using. (15%)

I have investigated all the queries on Google search engine.

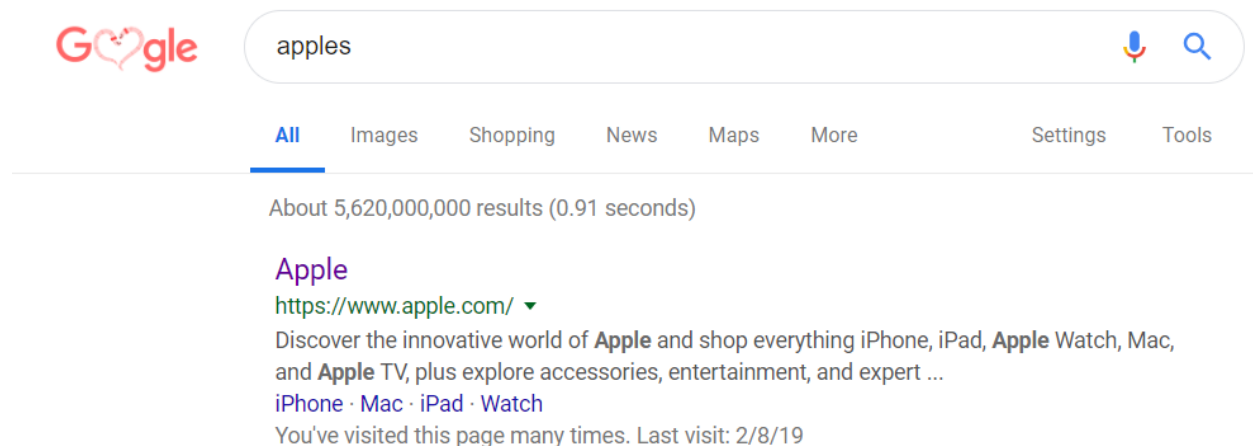
(a) Does it use stemming? How do you know? (Explain your testing method in all the following sub-questions as well)

i) Yes it uses stemming. Type for word **Apples** The first thing it returns is “Apple.com” here it stems the word “Apples” to its root word **Apple** and then returns the top results.

Testing mechanism: Entered the above mentioned word on Google Chrome and found the result as mentioned.

When entered “**Apples**” in double quotes it does not return the website “apple.com” this time.

Experimented with the word “**processed**” as well, when used normally it performs stemming and finds documents containing the word “**process**” and not “**processed**” as well, but used double quotes it looks only for files which contain the exact word **processed**.



(b) Does it filter stop words?

Yes, it filter stop words. An example can be seen below where stop words like is “a” “the” “are” are filtered and query returned is focused on other words (non-stop words) like grass, grain.

Google

There is a grain in the grass

All Images News Videos Shopping More Settings Tools

About 87,200,000 results (0.78 seconds)

The Difference Between **Grass**-Fed and **Grain**-Fed Cattle. ... They are rapidly fattened up with **grain**-based feeds, usually made from a base of soy or corn. Typically, **their** diet is also supplemented with small amounts of dried **grass**. May 7, 2018



[Grass-Fed vs. Grain-Fed Beef — What's the Difference? - Healthline](https://www.healthline.com/nutrition/grass-fed-vs-grain-fed-beef)
<https://www.healthline.com/nutrition/grass-fed-vs-grain-fed-beef>

About this result Feedback

Google

There is a dog in the bush

All Videos Images News Maps More Settings Tools

About 154,000,000 results (0.75 seconds)

[Sully H.W. Bush is a short-term service dog, not a lifelong companion.](https://slate.com/human.../sully-hw-bush-service-dog-george-hw-bush-funeral.html)
<https://slate.com/human.../sully-hw-bush-service-dog-george-hw-bush-funeral.html> ▼

Dec 3, 2018 - Don't spend your emotional energy on mourning **their** relationship. ... He's a service **dog** who had been with the president for six months, not his ...

(c) Does it use spell correction?

Yes it uses spell correction

Typed in word: **chekoslovakia**, it returns the right intended word to be searched

Actual: **Czechoslovakia** it did perform spell correction and returned the top results for the word.

Testing mechanism: Entered the above mentioned word on Google Chrome and found the result as mentioned.

When entered "**chekoslovakia**" in double quotes it does not perform any spell check but returns results for the original query word entered.

Google chekoslovakia

About 33,700,000 results (1.04 seconds)

Showing results for **czechoslovakia**
Search instead for **chekoslovakia**

Czechoslovakia - Wikipedia
<https://en.wikipedia.org/wiki/Czechoslovakia>
Czechoslovakia, or Czecho-Slovakia was a sovereign state in Central Europe that existed from October 1918, when it declared its independence from the ...
 Calling code: +42 Historical era: 20th century
 Common languages: Czech · Slovak · German · ... Capital: Prague (Praha)

Dissolution of Czechoslovakia
The Dissolution of Czechoslovakia which took effect on 1 January ...
[More results from wikipedia.org »](#)

History of Czechoslovakia
With the collapse of the Habsburg monarchy at the end of World ...

Czechoslovakia
Sovereign state

Czechoslovakia, or Czecho-Slovakia, was a sovereign state in Central Europe that existed from October 1918, when it declared its independence from the Austro-Hungarian Empire, until its peaceful dissolution into the Czech Republic and Slovakia on 1 January 1993.
[Wikipedia](#)

Google deitician

About 11,100,000 results (0.56 seconds)

Showing results for **dietician**
Search instead for **deitician**

Dictionary

Search for a word

di·e·ti·cian
 /ˌdiːˈtiʃ(ə)n/ ⓘ
 noun
 noun: dietician
 an expert on diet and nutrition.

Dietitian

A dietitian is an expert in dietetics; that is, human nutrition and the regulation of diet. A dietitian alters their patient's nutrition based upon their medical condition and individual needs. Dietitians are regulated healthcare professionals licensed to assess, diagnose, and treat nutritional problems. [Wikipedia](#)

Specialist: Registered dietitian (RD)
Significant diseases: [Malnutrition](#)
Focus: Diet, [human nutrition](#)
People also search for: [Nutritionist](#), [Physician](#), [Physiotherapist](#), [MORE](#)

2. For a particular search query, your IR system returns 14 relevant documents and 16 irrelevant documents. There are a total of 80 relevant documents in the collection. (10%)

(a) What is the precision of the system on this search?

$$14/30 = 0.466$$

(b) What is the recall of the system on this search?

$$14/80 = 0.175$$