

# Chapter 03: Web techniques and technologies

## 1. Introduction

This third chapter is an introduction to Web technology, we therefore present the basic concepts which are linked to the development of ICT techniques, namely the Internet and the Web.

To do this, we start by defining the notions of the Internet and the Web and we end with the presentation of some services offered by the Internet, in particular: e-mailing (electronic messaging) and Web search engine.

## 2. The Internet and Client/Server architecture

The Internet is a set of networks of all sizes composed of heterogeneous computers interconnected using a common language called TCP/IP, and a transmission protocol called the **client-server** protocol.

The **client-server** protocol or environment designates a mode of transmitting information (often across a network) between several programs or processes: one, called a client, sends requests; the other, called a server, waits for client requests and responds to them. The server here offers a **service** to the client. By extension, the client often refers to the computer on which the client software is executed, and the server, the computer on which the server software is executed.

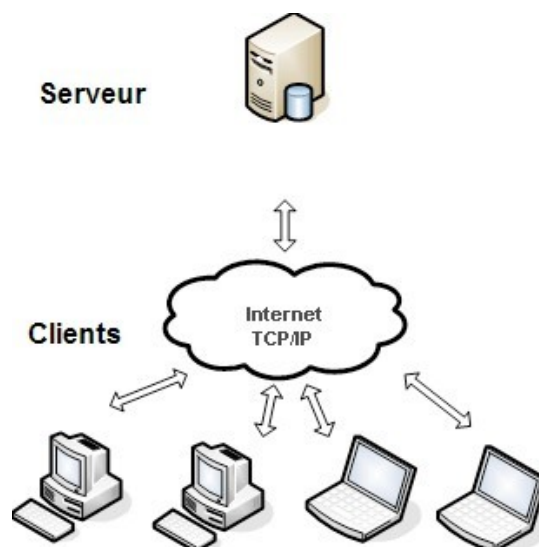


Figure 1: The architecture of the Internet network

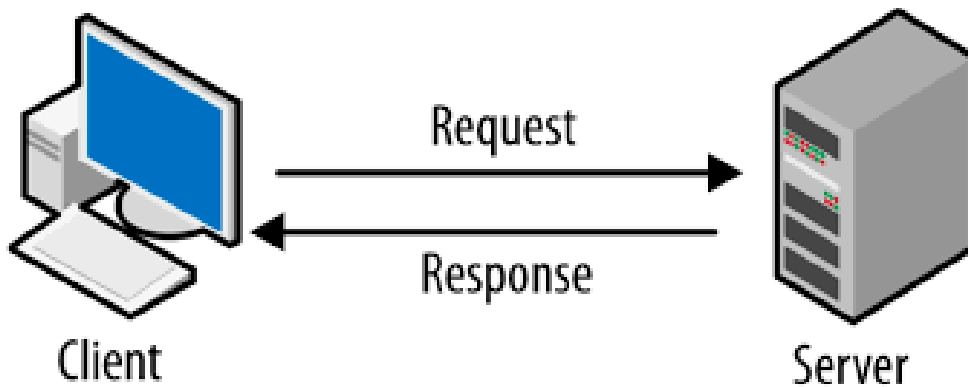


Figure 2: Le protocole Client / Serveur

### 3. The Web

The Web is a network of documents linked together by hypertext links. Each page is physically located on a node (server) of the global Internet network

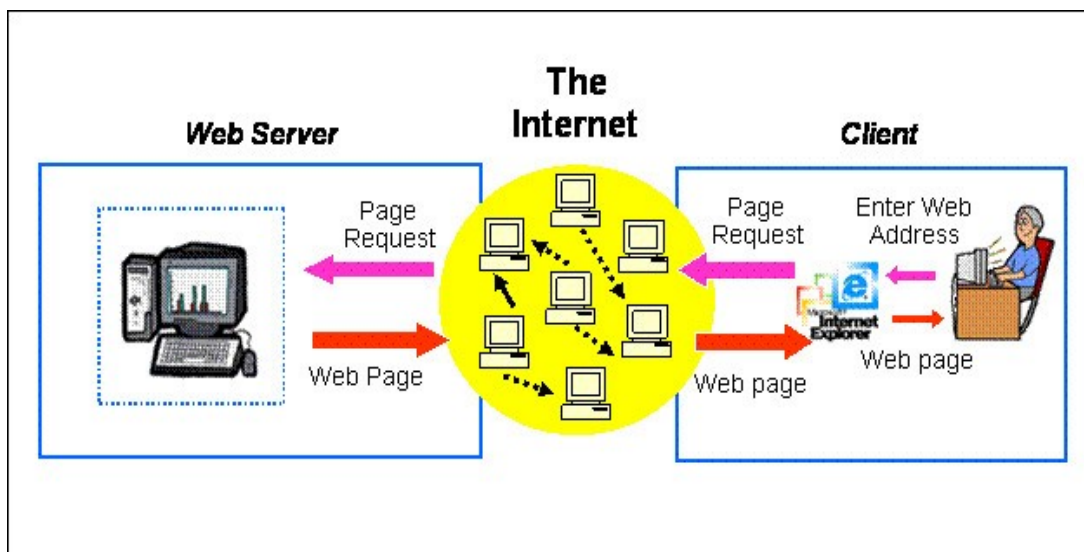
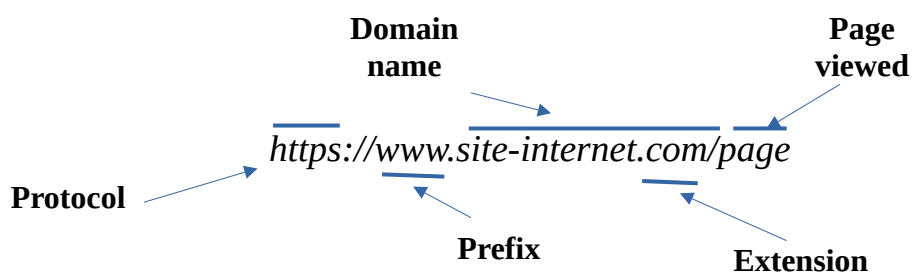


Figure 3: Web network architecture

#### → Query: Understanding the URL of a site

A URL (Uniform Resource Locator) address is composed of:



➔ **Example** : <https://cte.univ-setif2.dz/moodle/>

Protocol: https

Domain name: univ-setif2.dz

Sub-domain name: cte.univ-setif2.dz

Page viewed: moodle

➔ **What can we find on the Web?**

On the Web, you can find all types of documents:

- text,
- simple, animated or 3D images
- sound
- videos
- programs
- ...

➔ **Information characteristics**

The information on the Internet is:

- intended for humans
- heterogeneous (content and format)
- unstable and ephemeral (dead links, change of address, etc.)
- Multilingual
- continually renewed
- free or paid
- unstructured (not a uniform format)

➔ **Let's summarize the situation**

- We have machines linked together:
  - Each is only identifiable by a name (URL address)
  - Each hosts documents containing information intended to be public

## 4. Information searching

Today we have billions of pages, and **the problem** that arises is: How can we find what we are looking for in this growing mass of information in a **fast** way? And how can we find **reliable** and **relevant** information in the midst of this mass of information?

**The solution:** Find a way that organizes web content and automates the process of locating sites = search tools.

### 4.1. Search equation

The query executed by the Internet user or the search equation is a series of terms and operators (Boolean, truncation) formulated to translate a request for information.

#### Example :

- The equation: I'm looking for information on the flu vaccine
- The terms are: vaccine and flu.
- The equation: I am looking for the list of diabetic patients in Algeria or Tunisia.
- The terms are diabetic, Algeria and Tunisia. In this case, we must use Boolean operators and parentheses in our search equation: Diabetes AND (Algeria OR Tunisia)

### 4.2. Search tools

There are several search tools on the Web that allow us to search and find the Web page that meets our needs, we can cite: search engines, metasearch engines, directories and open archives.

#### ➔ Search engine :

A search engine is an information retrieval system designed to help find information stored on a computer system. It is information retrieval software that discovers, explores, transforms and stores information for retrieval and presentation in response to user queries. Search results are usually presented in list form.

A search engine generally consists of four components, as follows: a search interface, a crawler (also called a spider), an indexer, and a database. The robot searches a collection of documents, deconstructs the document text, and assigns substitutes for storage in the search engine index. Online search engines also store images, link data, and metadata for the document.

Google.com is the best-known and most used search engine on the web.



Figure 4: Examples of search engine

When an Internet user uses a search engine, he enters the keywords describing his query or the pages he is looking for. Then, the search engine queries its database which responds with a list containing links to the appropriate pages for each keyword. Finally, the engine displays the list of results to the Internet user.

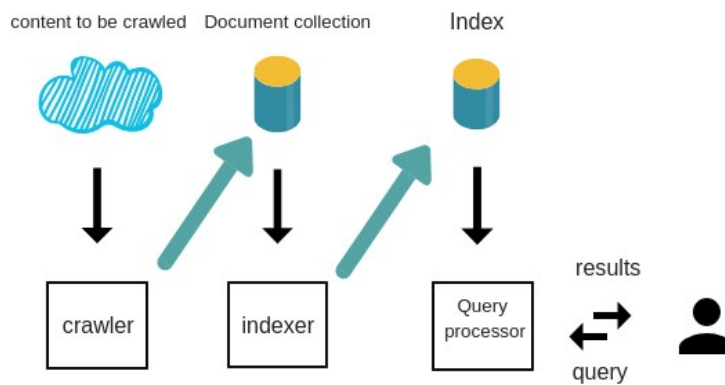


Figure 5: Search engine work approach

→ **Meta-search engine**

A meta-search engine or a meta-searcher is a search engine that draws its information from several general search engines. More precisely, the metasearch engine sends its queries to several search engines and returns the results from each of them. Metasearch allows users to enter their search topic only once while still accessing answers from several search engines.

→ **Directories:**

Directories are registers of classification of websites by categories and subcategories made by specialists. Navigation is done by browsing the site tree, or by searching in the index.

### 4.3. Electronic messaging (email)

E-mail, electronic mail, mail, or even electronic messaging are all names that we attribute to the service of transmission of written messages and documents sent electronically by a sender via the Internet network to the mailbox of one or several recipients chosen by the sender.

Using email requires:

- A computer with Internet access.
- An email account (an email address) with a service provider such as Yahoo Mail, Gmail, Hotmail, etc. The most common are Hotmail (Microsoft), Gmail (Google), Yahoo Mail (Yahoo).

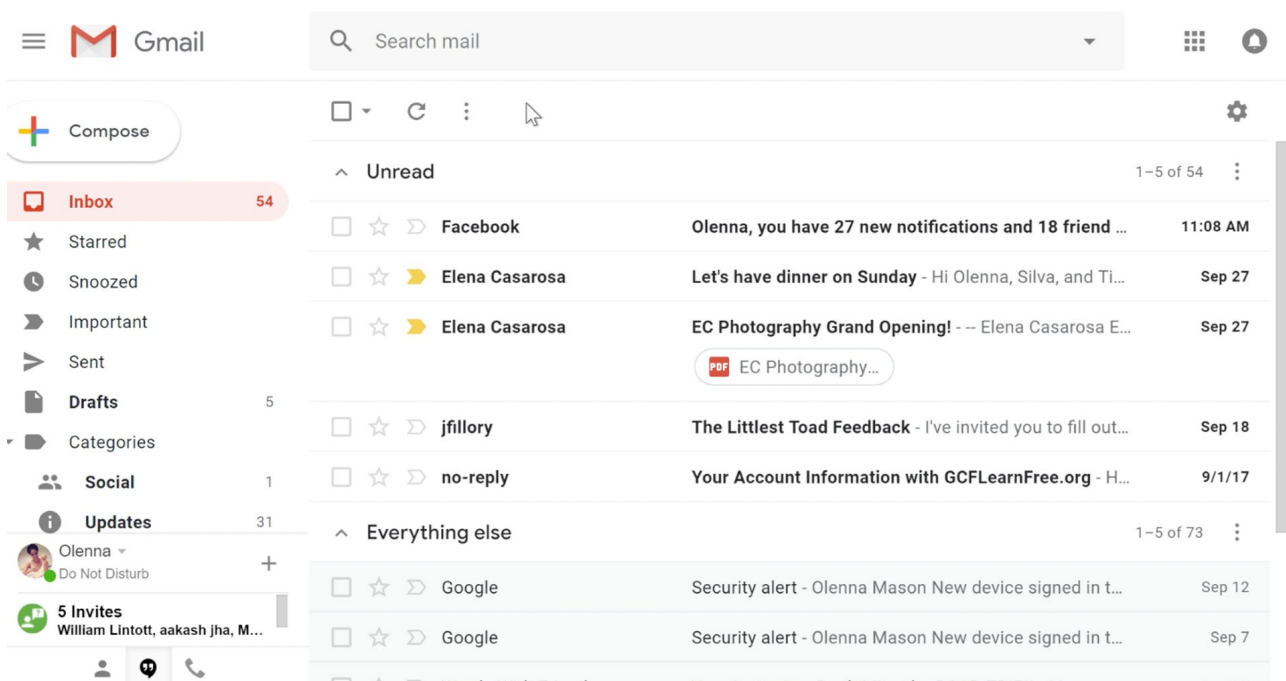


Figure 6: The Gmail interface

#### → Email address :

The email address allows email to be delivered. It is generally composed of the user name and the name of the email services provider separated by the symbol @. Example: zelaggoune@gmail.com

we can also have a professional email address, with the domain name of the company, association, university, etc. (example: z.elaggoune@univ-setif02.dz).

#### → E-mail :

Email messages are similar to letters and consist of two main parts.

- The header contains:

- The name and address of the recipient,
- All people placed in copy,
- The subject of the message.
- The body contains the message.

➔ **The buttons in the Gmail “new message” window:**

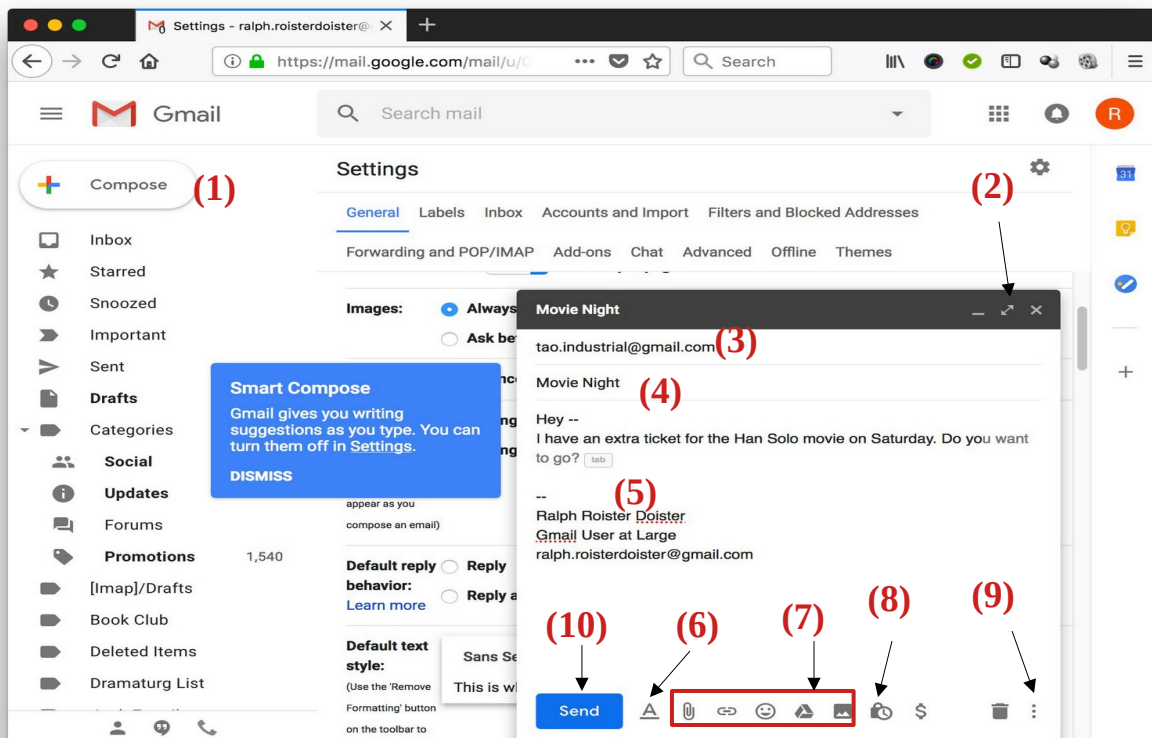


Figure 7: The buttons in the “new message” window

- 1- **New message button:** allows you to display a “new message” window
- 2- **Enlarge the “new message” window.** This opens the composing area in a new web browser window, which can then be moved to your primary or secondary screen.
- 3- **“Recipients” field:** enter the email addresses of the people to whom you want to send the email.
- 4- **The subject of the message**
- 5- **The body of the message:** this is where you write your message.

6- **Text formatting options for the body of the message:** font, text size, bold, italics, underline, text color, justification, lists, quotes, etc.

7- **Insert links, smileys or attachments:** from your computer (maximum size 25 MB) and/or from files stored on Google Drive.

8- **Confidential mode.** Confidential mode allows you to define an expiration time for the message after which the recipient will no longer be able to view it.

9- **Additional options:** spelling checker, printing, standardized responses, etc.

10- **Send the message**

➔ **Insert recipients and choose destination address**

When you click on the recipient field you will have several options to add and choose your email address (if you have several):

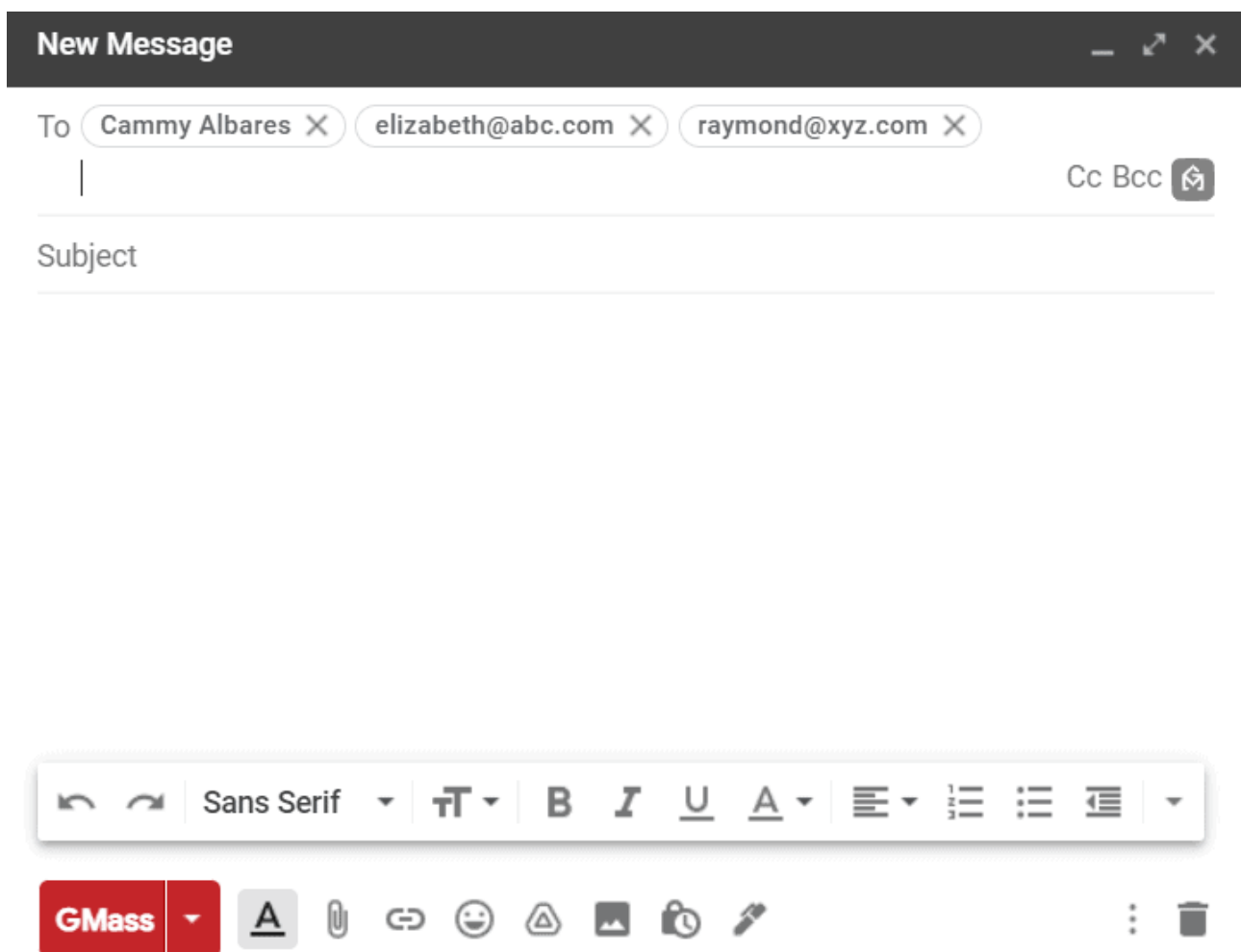


Figure 8: Gmail send new message



- **To** : Enter your recipient's exact email address. for several recipients, separate each address with a comma,
- **Cc** : carbon copy,
- **Bcc** : blind carbon copy.

**Note :**

1. To send the same message to several people simultaneously, you must write the addresses of the recipients in the To field (recipient) or the Cc field (carbon copy) or the Bcc field (blind carbon copy).
2. If you want to send a message to several people simultaneously, without one of the recipients seeing the addresses of the other people, you must use the Bcc field.

➔ **Reply vs. Reply to All:**



- When you click **Reply**, your message will automatically be sent to the person who sent you the email.

-When you click **Reply to All**, your message will automatically be sent to the person who sent you the email and everyone in the To and Cc filed in the header.

➔ **Forwarding an email :**



- When you click FORWARD, you can share the email you received by forwarding an email to others.

- You can add your own message before sending it.

➔ **Use confidential mode**

Confidential mode allows you to **define an expiration time for the message after which the recipient will no longer be able to view it** and/or to require a secret code for viewing it:

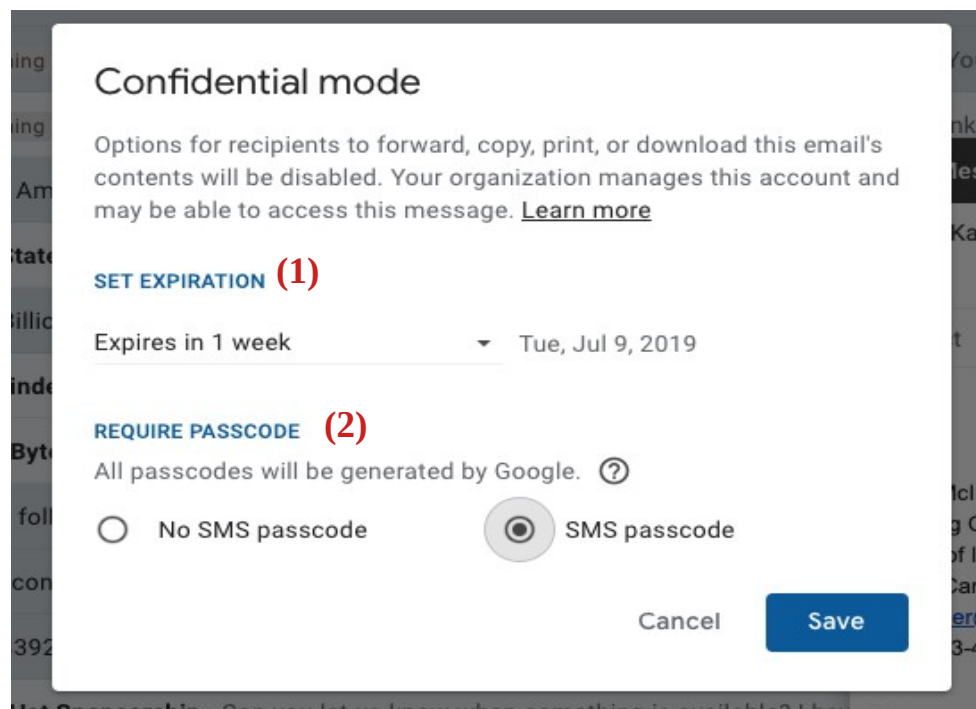


Figure 9: Confidential mode

- 1- Define an expiration time for the message after which the recipient will no longer be able to view it
- 2- Require a secret code received by SMS to authorize viewing of the message

→ **Use canned responses**

You can **automatically insert text that you prepare in advance so you don't have to retype each time.**

For example: 'Received. Good day'

To use canned responses, accessible via the additional options in the compose window, you must first activate them via the “advanced settings” tab of Gmail:

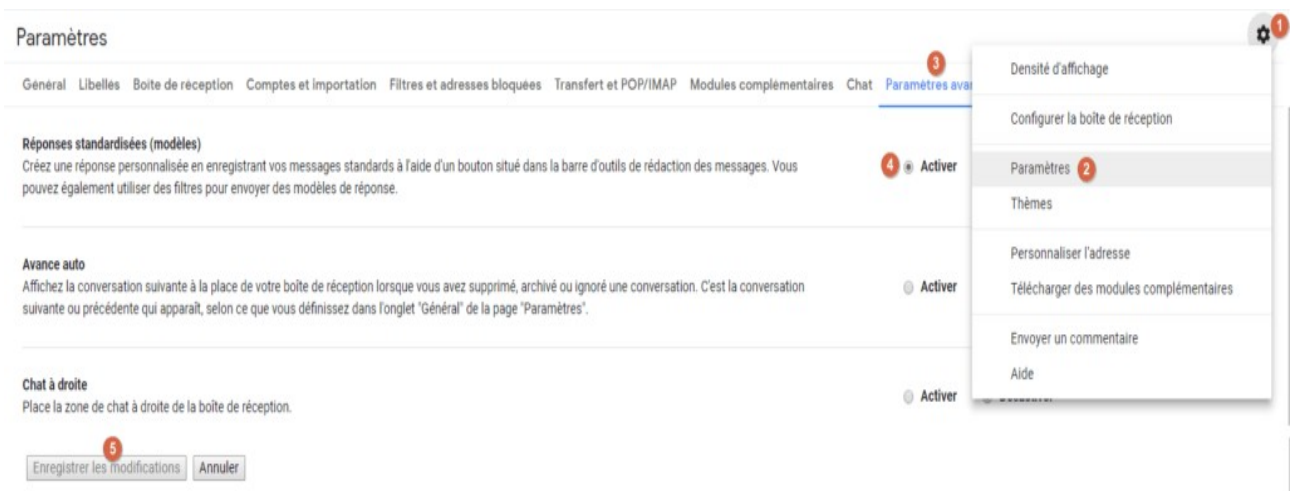


Figure 10: Using canned responses

- 1- Click on the gear wheel
- 2- Click on “Settings”
- 3- Go to the “Advanced settings” tab
- 4- Enable canned responses
- 5- Save the changes

➔ Now let's see **how to record a first standardized response:**

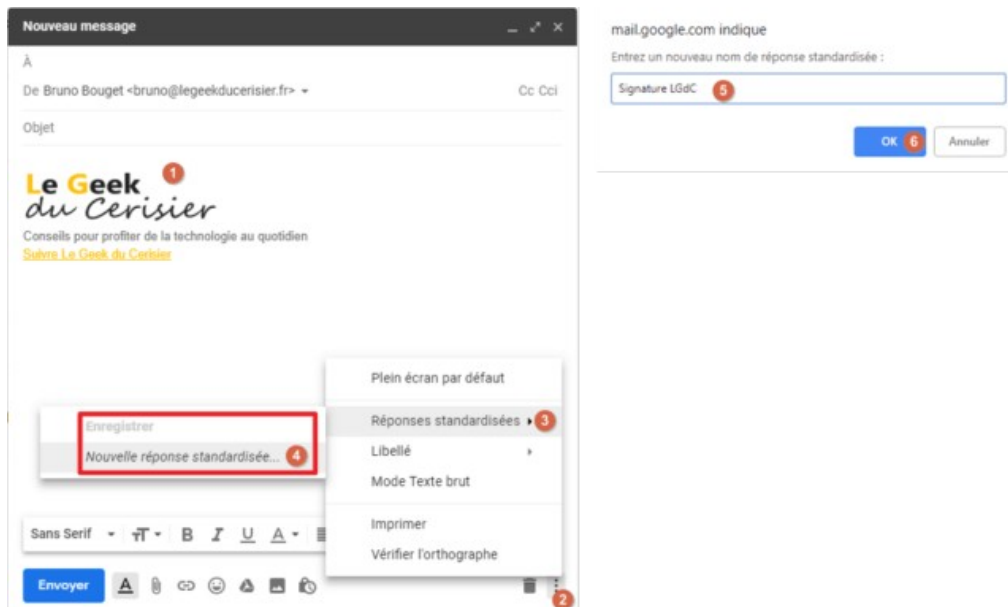


Figure 11: Record a canned response

- 1- Type the text and insert the content you want to save as a standardized response in the message writing field (you can insert images, create links, etc.)
- 2- Click this button to display additional options
- 3- Click on “Canned responses”
- 4- Click on “New canned response”
- 5- Name the canned response whatever you want (watch your screen closely to spot the small window that can be displayed at the top)
- 6- Click “OK”

Now that the canned response is saved, you can insert it into any new message.

Be careful to differentiate between the “insert”, “save” and “delete” actions from the standardized responses which are just separated with the grayed title:

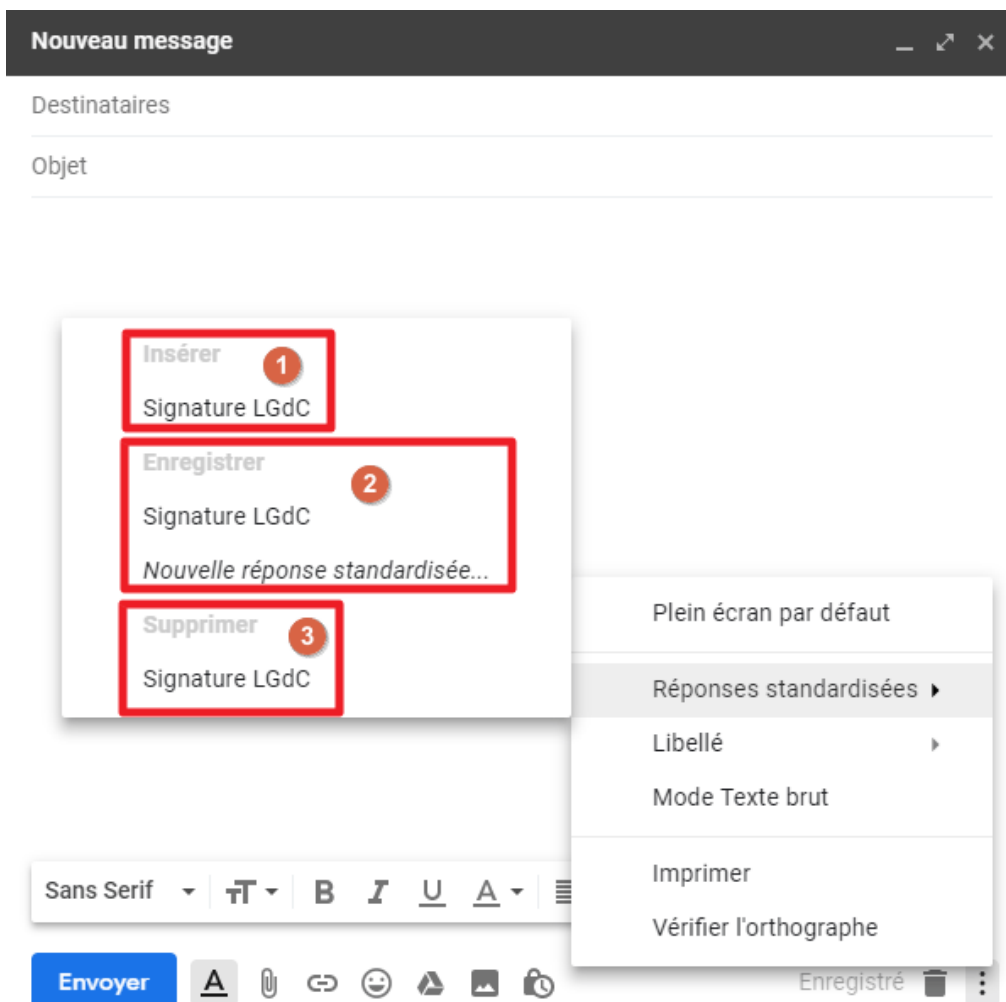


Figure 12: Using a canned response

- 1- “Insert” section: clicking on a canned response listed below will insert it into the message
- 2- “Save” section: clicking on an existing canned response listed below will overwrite it; otherwise you must click on “New canned response”
- 3- “Delete” section: clicking on a standardized response listed below will delete it

### → Insert a signature at the end of the message

It is possible to insert a signature at the end of the message in two ways:

- **Manually** using the “canned responses” parameter that we explained in the previous paragraph. It is then possible to create several signatures and choose which one to insert for each new message.
- **Automatically** at the end of each message via a parameter of the same name in the “general” tab. The signature will then always be the same but you can define one per email address:

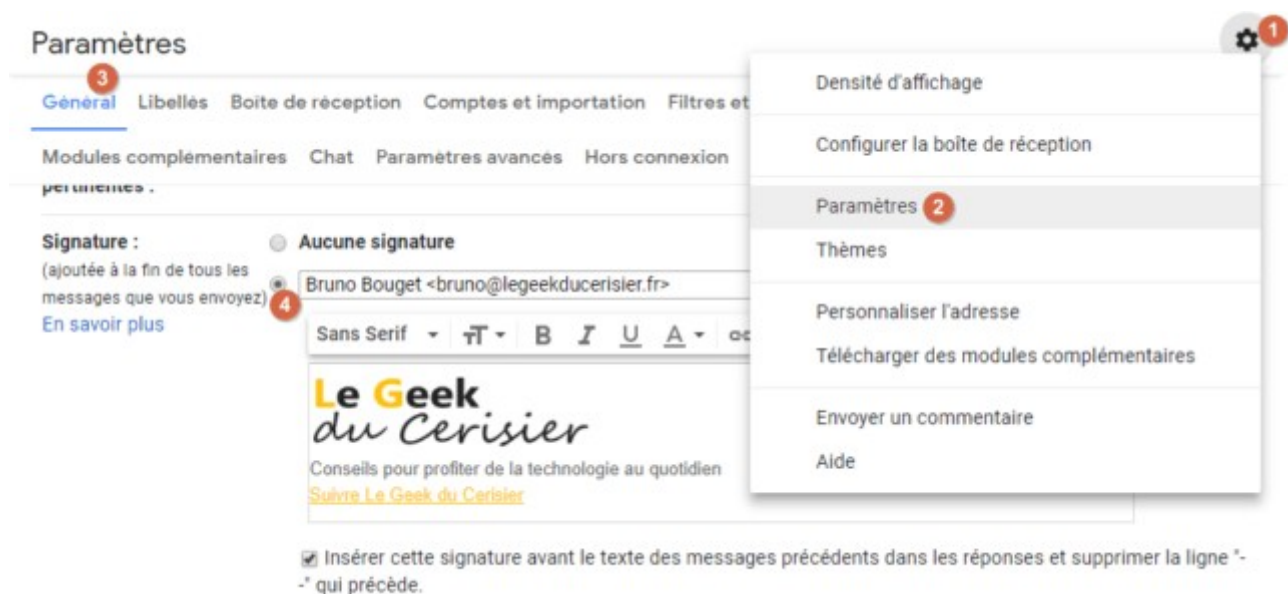


Figure 13: Insérer une signature en fin de message

- 1- Click on the gear wheel
- 2- Click on “Settings”
- 3- Go to the “General” tab
- 4- Check the box next to the desired destination address (if you have several; see “main settings” chapter)
- 5- Create your signature there; it can contain text, images, links, etc.

Don't forget to save your changes with the button at the bottom

→ **Cancel sending a message**

If you happen to send an email by mistake, there is a way to unsend that message for a period of time after you click "Send."

This function requires a specific setting in Gmail settings:

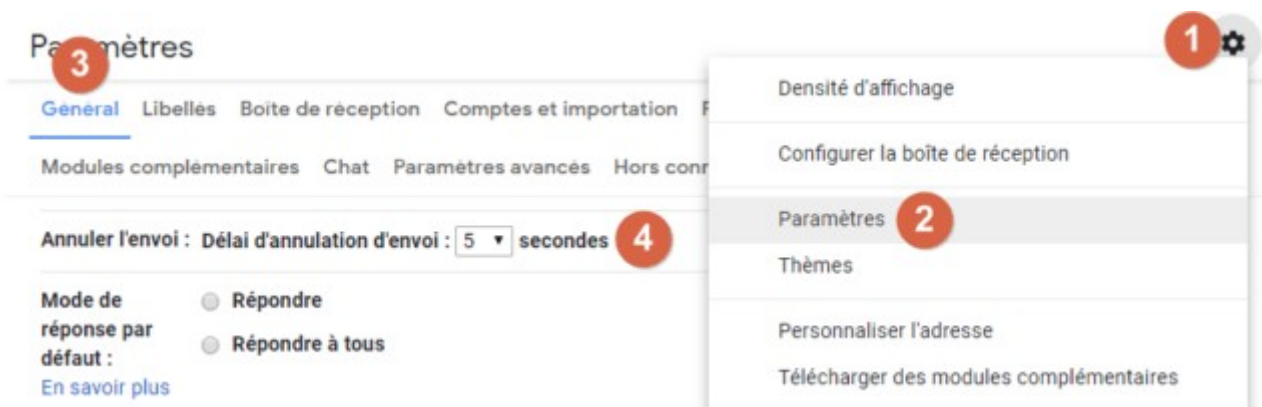
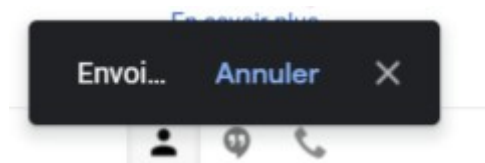


Figure 14: Cancel message sending

Here is the emergency button which will now appear just after sending a message:



#### 4.4. File transfer

File transfer is a computer operation, consisting of transferring a file available on a first machine to a second without the use of physical media such as DVD or USB key.

FTP File Transfer Protocol is a communications protocol intended for exchanging files. It allows access, downloading and transfer files from one computer to another computer on the same network or on another server.

We distinguish two directions of transfer:

- Download : consists of transferring files from a remote machine to a client machine,
- Upload : allows files to be transferred from a client machine to a remote machine.

➔ **File transfer software – Example: Google Drive**



You can import, open, share, and edit files with Google Drive. When you upload a file to Google Drive, it takes up space in your Drive, even if you upload it to a folder that belongs to someone else.

- **File types**
  - Documents
  - Pictures
  - Audio
  - Video

- **Import files and folders**

On your computer, you can import files from [drive.google.com](https://drive.google.com) or your desktop into private or shared folders.

1. On your computer, go to [drive.google.com](https://drive.google.com).
2. At the top left, click New then Import File or Import Folder.
3. Choose the file or folder you want to import.

- **Drag files into Google Drive**

1. On your computer, go to [drive.google.com](https://drive.google.com).
2. Open or create a folder.
3. To import files and folders, drag them into the Google Drive folder.

- **Share files via Google Drive**



You can share the files and folders you store in Google Drive with any user.

When you share a file from Google Drive, you can control whether users can edit it, comment on it, or only view it.

1. On a computer, navigate to Google Drive, Docs, Sheets, or Slides.
2. Click on the file you want to share.
3. Click on the Share icon

4. If you want to share with specific people, enter the email address you want to share content with.
5. Determine how users can use your file by assigning them one of the following roles:
  - **Reader**
  - **Commentator**
  - **Editor**

When you share a file, each email address receives an email (Optional: You can add a message to your notification email). If you don't want to notify users, uncheck the box.

6. Click **Send** or **Share**.
7. You can share files with Google groups rather than specific people. When you :
  - **add a member to a group**, this person is authorized to access the group's files and folders;
  - **remove a member from a group**, that person is no longer authorized to access the group's files and folders.To share a file with a Google group:
  - \* Create a Google group.
  - \* Add members to the group.
  - \* Share the file with your group.
8. If you want to share a file publicly, select the file you want to share and:
  - Click the **Share** button .
  - Under "**General Access**", click the **down arrow** .
  - Select **All users with the link**.
  - To choose which role users should have, select **Reader**, **Commenter**, or **Editor**.
  - Click **Copy Link**.
  - Click **OK**.
  - Paste the link into an email or wherever you want to share it.