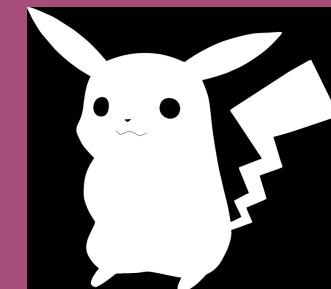
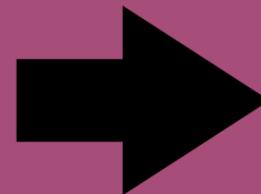
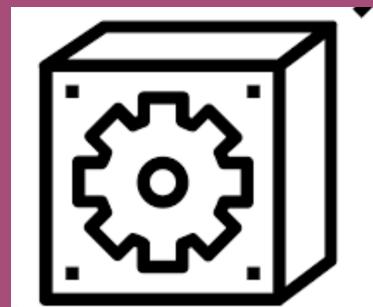
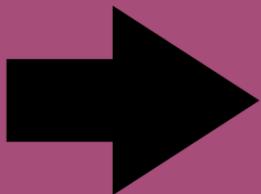
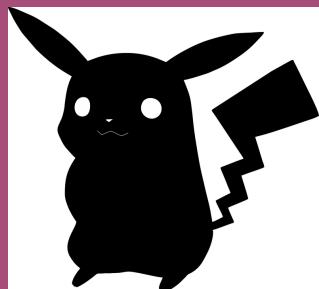


Comprendre le web

L'informatique et l'ordinateur

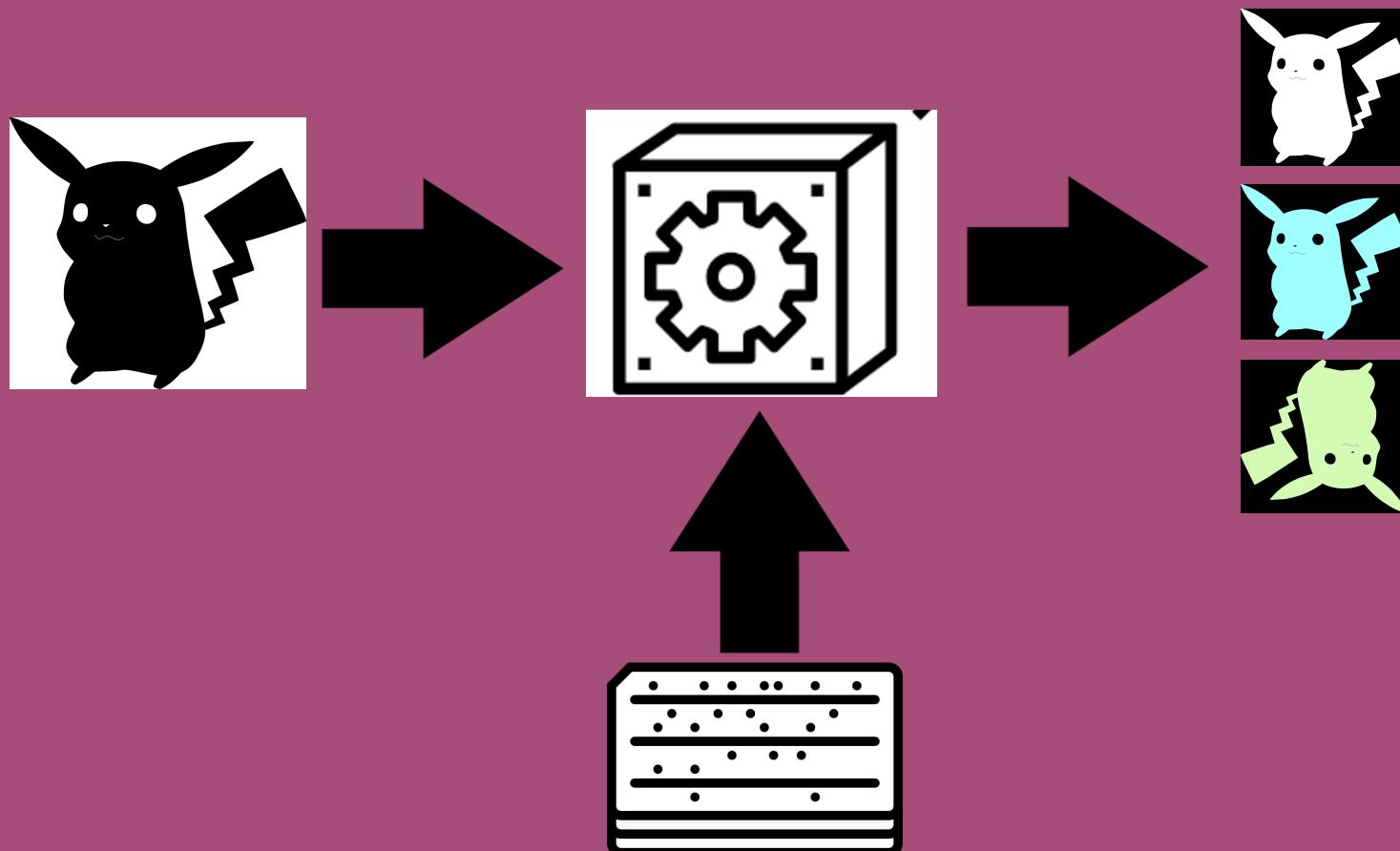
L'informatique et l'ordinateur

Infor•matique : Machine qui traite de l'information de manière automatique

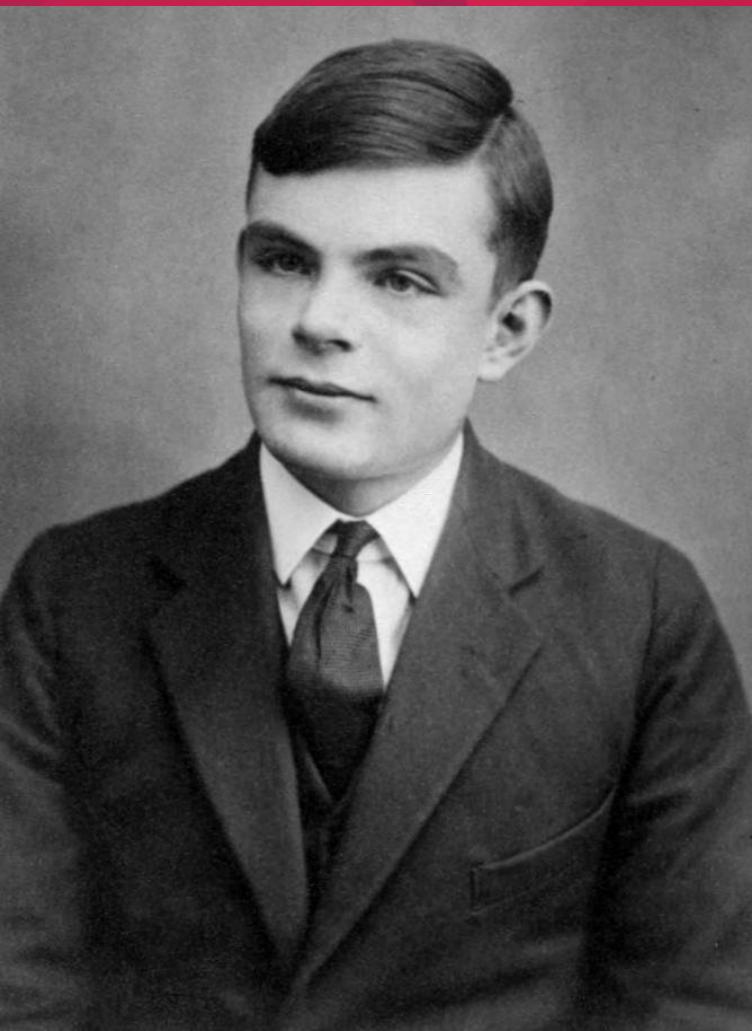


L'informatique et l'ordinateur

Ordinateur : Système informatique programmable



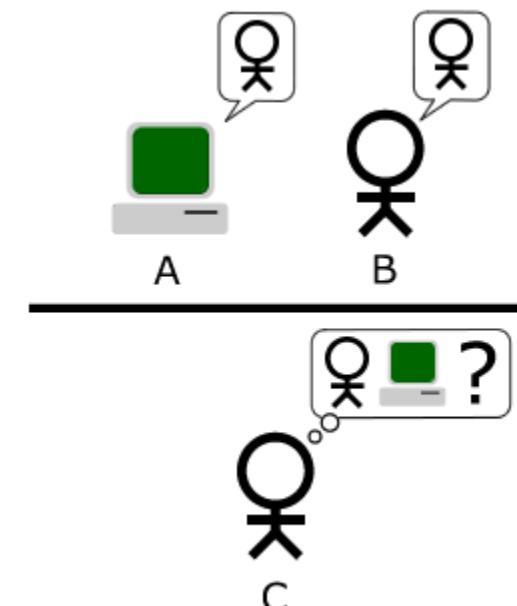
L'informatique et l'ordinateur



Alan Turing
1912-1954



Enigma



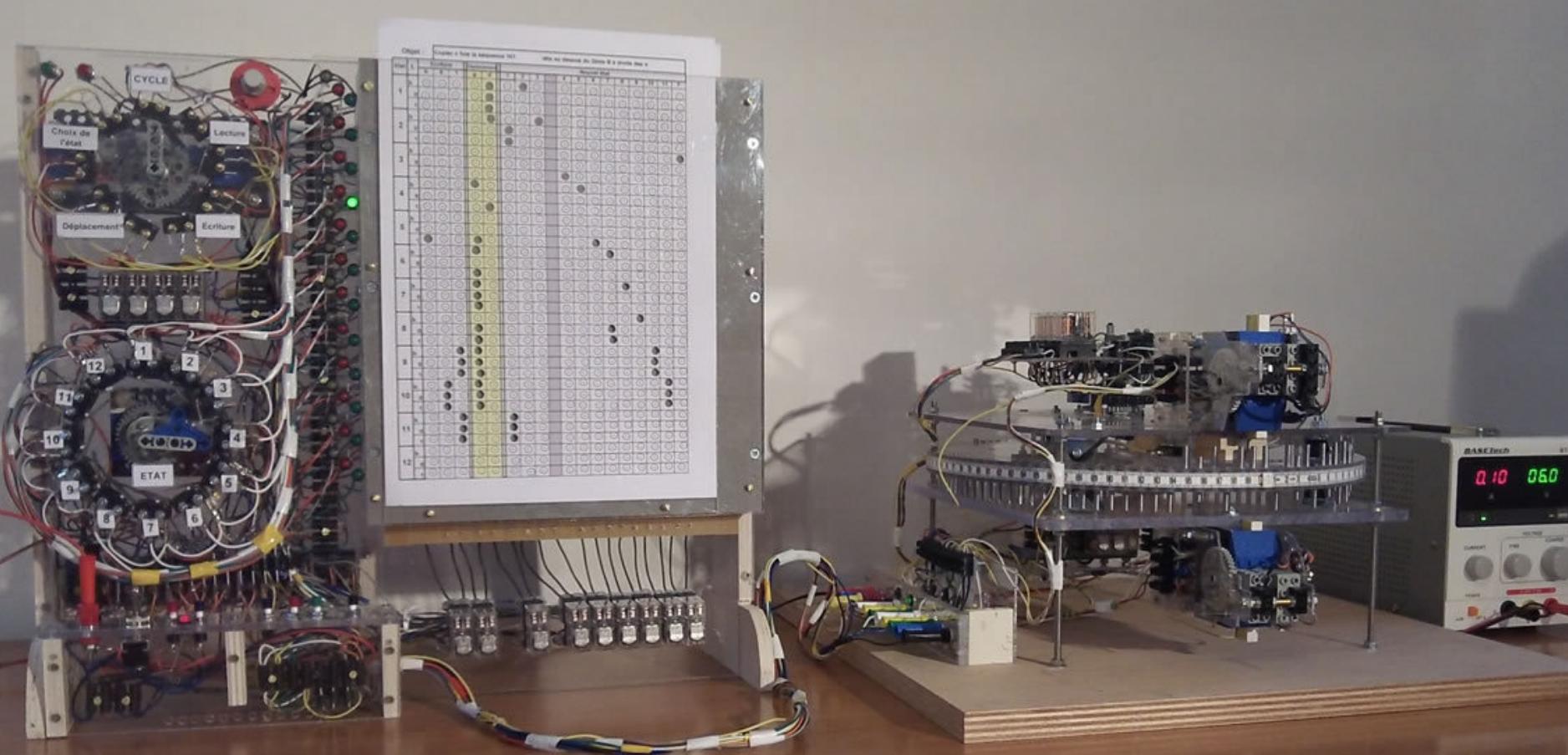
Test de turing

L'informatique et l'ordinateur

<https://www.youtube.com/embed/L5O04P2ASRc?enablejsapi=1>

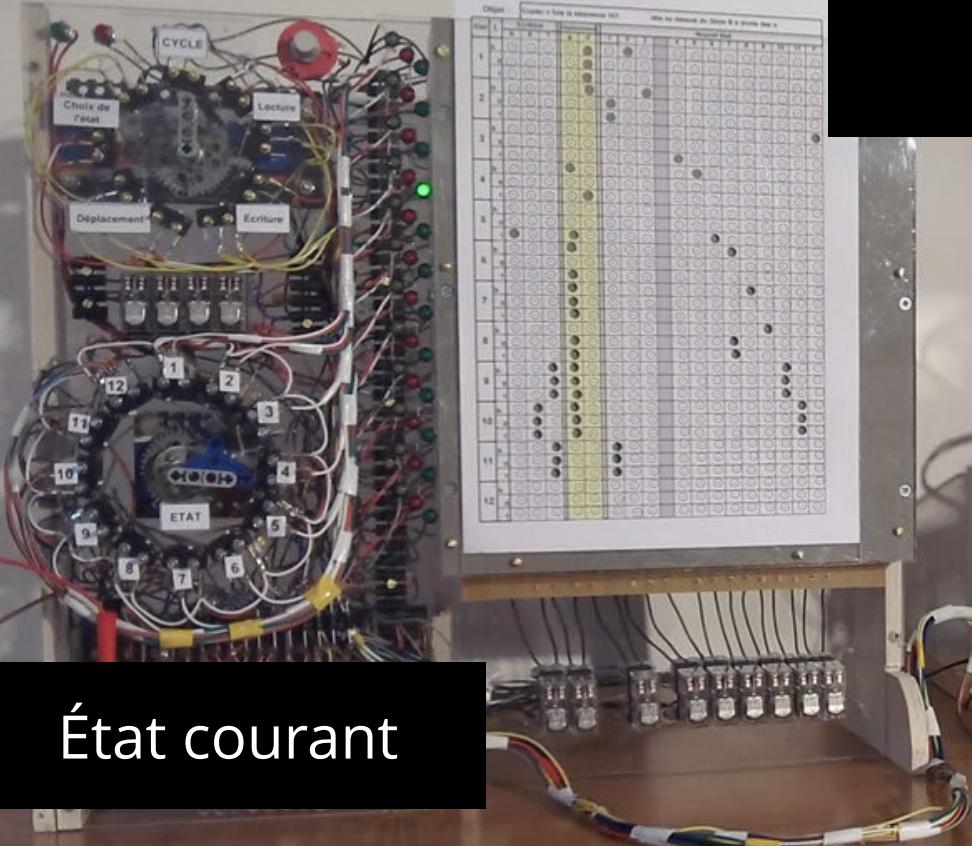
L'informatique et l'ordinateur

Qézako ?



L'informatique et l'ordinateur

Horloge du cycle

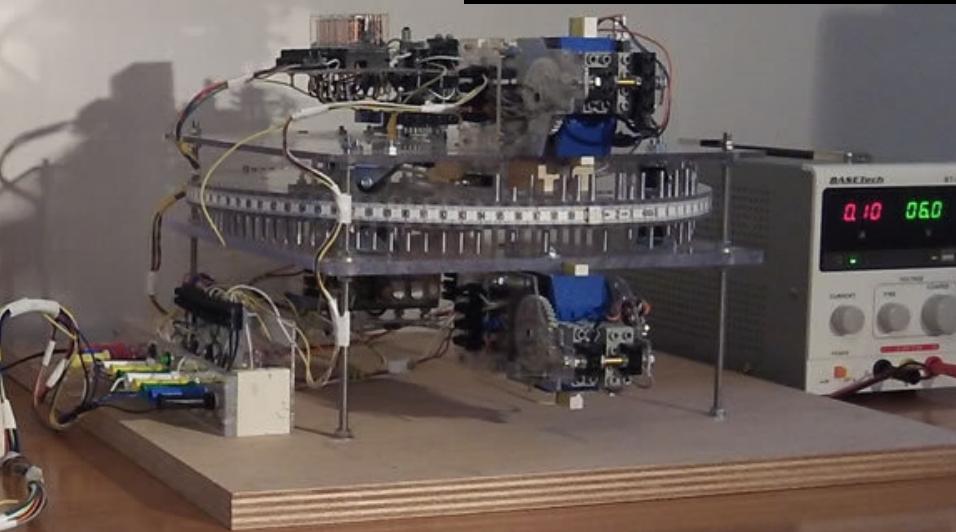


État courant

Algo

Tête de lecture/écriture

Ruban infini



L'informatique et l'ordinateur

Liens utiles

e-penser : https://youtu.be/7dpFeXV_hqs

science4all : <https://youtu.be/zIPWnNxBCUY>

Film : Imitation game

Langage de programmation

Langage de programmation

Langage de programmation :

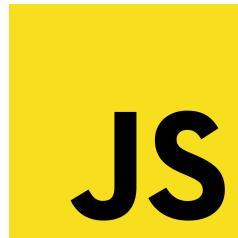
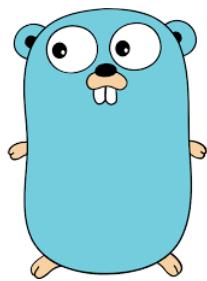
Outil qui va faciliter l'écriture d'algorithmes afin de créer un programme informatique.

| Etat | L | Ecriture | | Déplacement | | Nouvel état | | | | | | | | | | | | |
|------|---|----------|---|-------------|---|-------------|---|---|---|---|---|---|---|---|---|----|----|---|
| | | b | 0 | 1 | g | d | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | F |
| 1 | b | ● | ○ | ○ | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● |
| | 0 | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● |
| | 1 | ○ | ● | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ● |
| 2 | b | ○ | ● | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | 0 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | 1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3 | b | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | 0 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | 1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4 | b | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | 0 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | 1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

```
1 si bidul existe {  
2     si bidul vaut 0 {  
3         bidul devient 1  
4     } sinon {  
5         bidul devient 0  
6     }  
7 }  
8 }
```

Langage de programmation

Quelques langages...



Langage de programmation

Pourquoi autant de langages ?

Résoudre une problématique

- SQL pour le traitement de données
- Javascript pour le navigateur (côté client)
- PHP pour le serveur

...

Point de vue

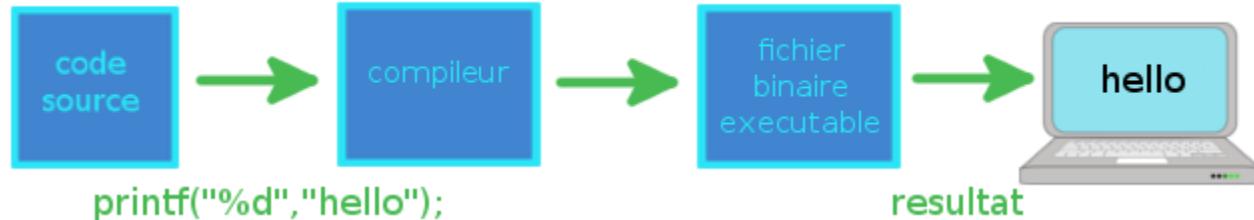
- Code en une autre langue que l'anglais

...

Langage de programmation



+ portabilité
- performances



- portabilité
+ performances

Internet et le web

Internet et le web

Internet(work) : Réseau informatique interconnecté décentralisé (ancêtre ARPANet)



Internet et le web

Internet est composé de multiples services



Email (SMTP)



Web (HTTP)



Chat (IRC)

Internet et le web

World Wild Web : Système de partage d'informations hypertexte relié par des hyperliens (1980 Tim Berners-Lee)

Évolutions du web

Web 1.0 : exemple

Pages **statiques**

Hypertexte avec des hyperliens

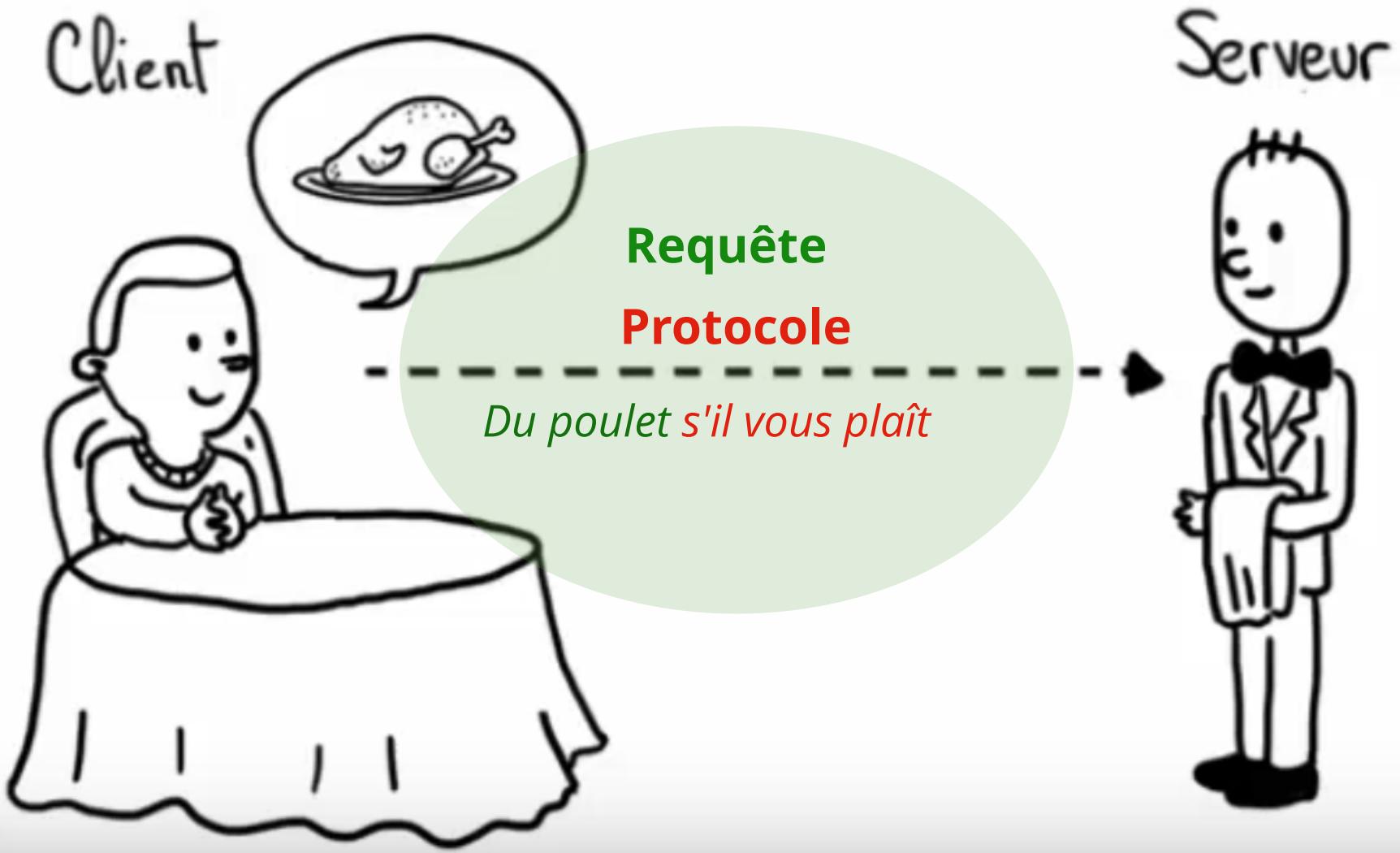
Web 2.0 (1999) :

Pages **dynamiques**

Personnalisation et intéraction

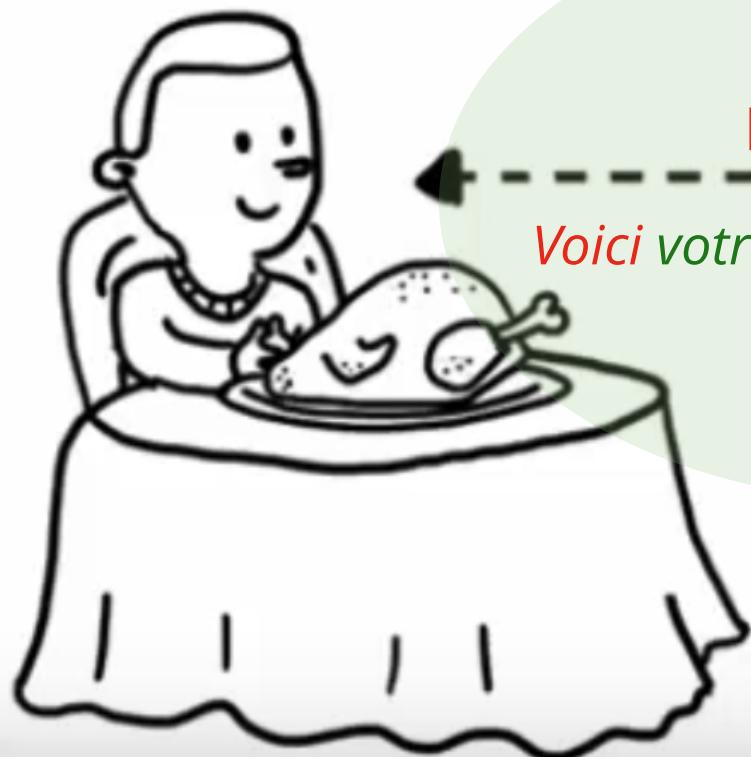
Client/Serveur

Client / Serveur



Client / Serveur

Client



Serveur

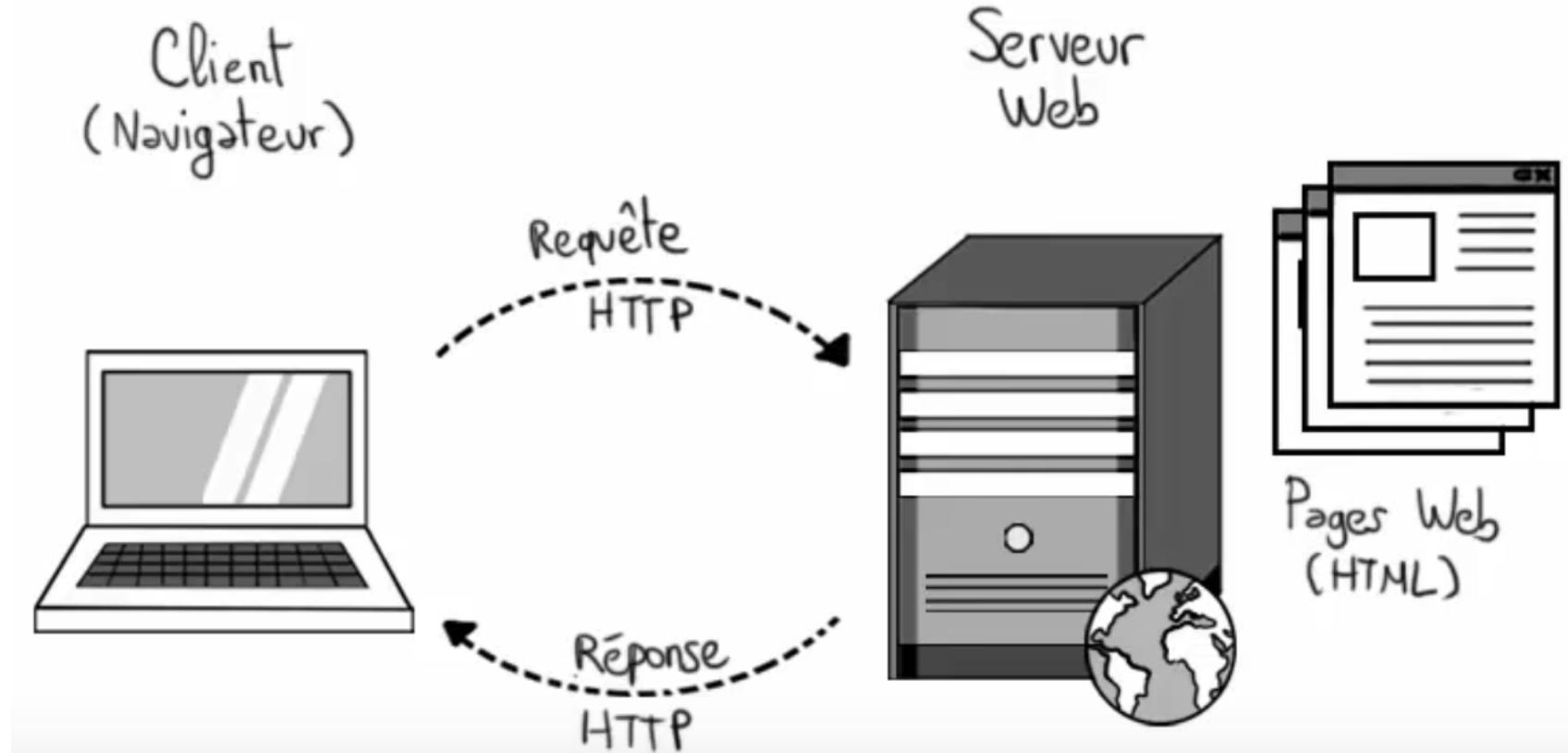


Réponse
Protocole

Voici votre poulet, bon appétit

Client / Serveur

Phase de production



- Le navigateur est un programme
- HTML / CSS / JS (demo)
- Manipulable par l'utilisateur

- Le serveur est accessible depuis internet
- Héberge un ou plusieurs sites
- Base de données

Client / Serveur

Phase de développement

Client
(Navigateur)

Serveur
Web



Client / Serveur

Demo modification de page côté client

<https://twitter.com/?lang=fr>

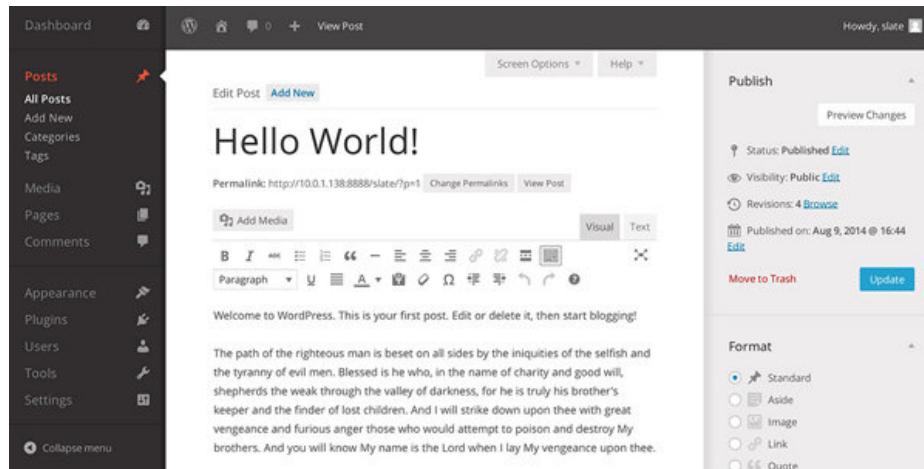
Source des images : [vidéo youtube](#)

The background features a repeating pattern of red triangles of varying sizes and shades, creating a low-poly effect. The triangles are set against a solid black background.

CMS

CMS

Content Management System



Interface WYSIWYG

Administration en place

Système de plugins

Scratch

```
<?php language_attributes();?>
<?php bloginfo( 'charset' );?>
<?php wp_head();?>
<?php wp_title( '|', true, 'right' );?>
<?php rel="profile" href="http://gmpg.org/xfn/11";?>
<?php rel="pingback" href="?php bloginfo( 'pingback_url' );?>
<?php if (IE 9)><script src="?php echo get_template_directory_uri();?"/>
<?php wp_head();?>
<?php body_class();?>
<?php id="page-header" class="need-site">
<?php $theme_options = fruitful_get_theme_options();?>
$logo_pos = $menu_pos = '';
if (isset($theme_options['logo_position'])) {
    $logo_pos = esc_attr($theme_options['logo_position']);
}
if (isset($theme_options['menu_position'])) {
    $menu_pos = esc_attr($theme_options['menu_position']);
}
$one_pos_class = fruitful_get_theme_option('one_pos_class');
$two_pos_class = fruitful_get_theme_option('two_pos_class');
```

Vous codez

À vous de mettre en place l'admin

Code existant pour vous aider (packages)

CMS



CMS

Pour

Facile et rapide à mettre en place

Espace d'administration en place

Contre

Moins flexible

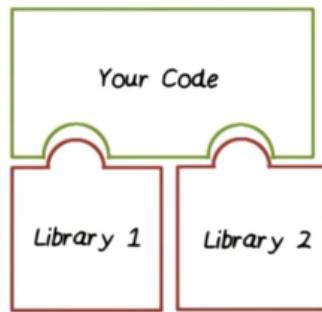
Veille de sécurité importante



Attention, être un bon dev cms demande du temps !

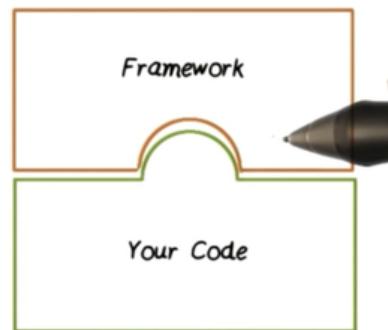
Library et Framework

Library et Framework



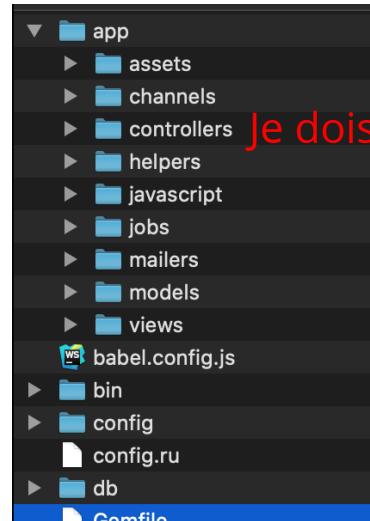
Morceaux de code réutilisables
Votre code utilise des librairies

```
1 // Mon super code
2 import truc from library;
3 import bidulle from otherLib;
4
5 if(a == b) {
6   truc.doSomething();
7 } else {
8   bidulle.doSomethingElse();
9 }
```



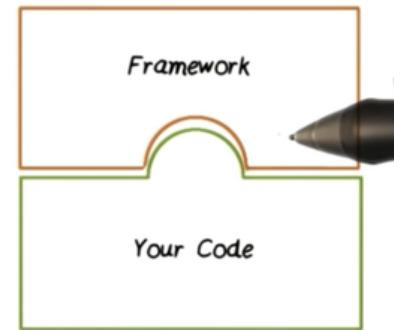
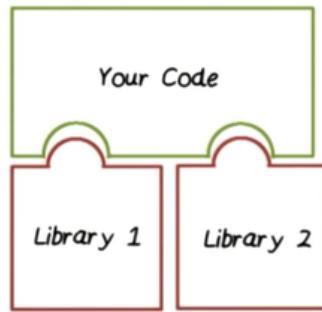
Architecture qui contraint votre application
Vous codez à l'intérieur d'un framework

Un framework utilise des librairies

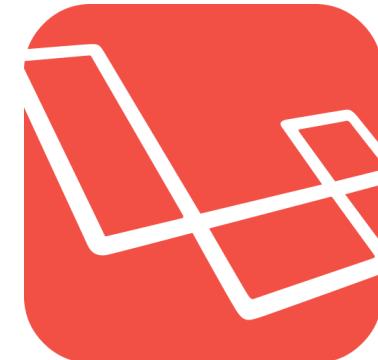


Je dois coder mes controllers ici

Library et Framework



Symfony



Un peu plus loin...

Un peu plus loin !

- Télécharger et installer Postman 
- Faire une requête **GET** vers **google.com**

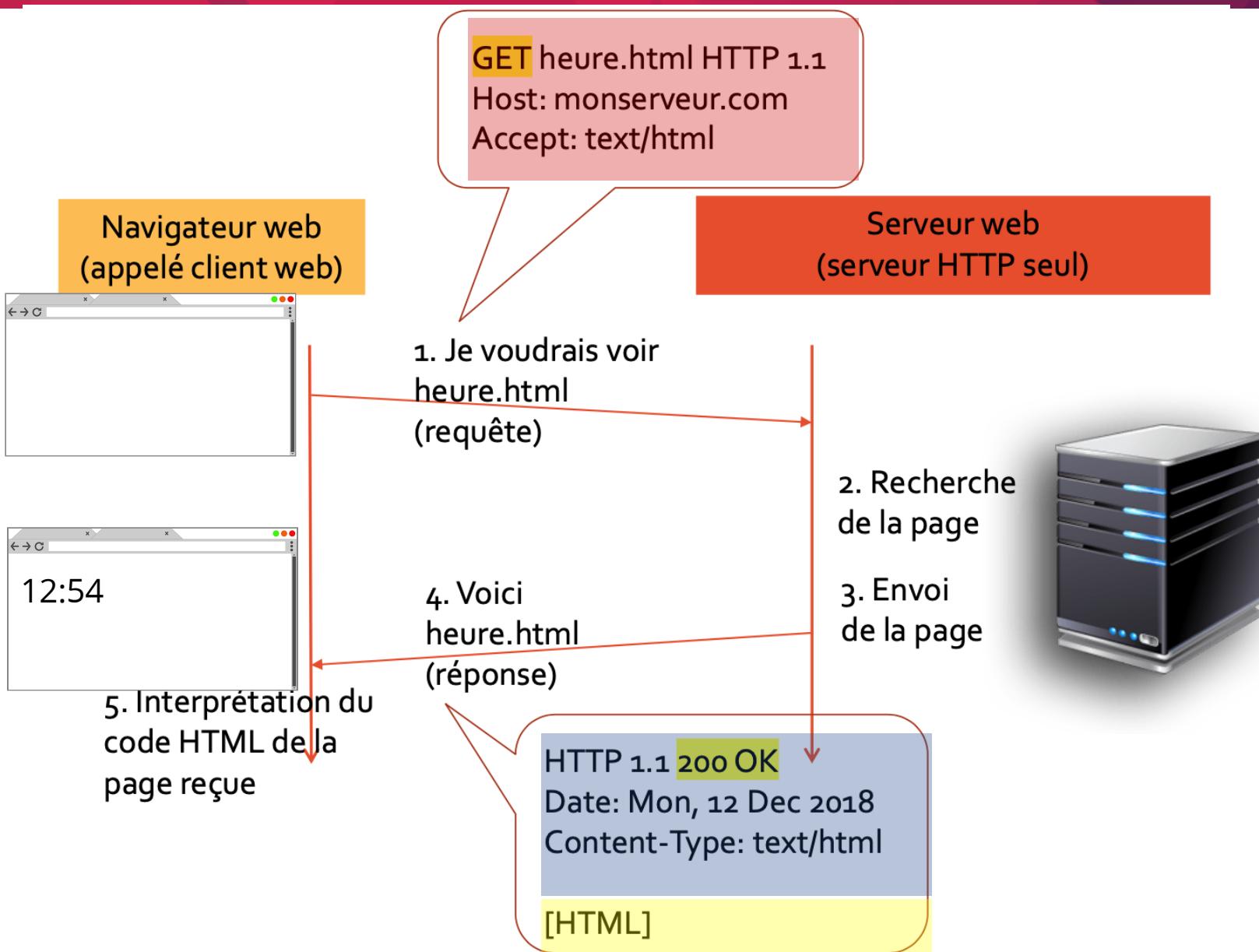
Qu'observez vous ?

Un peu plus loin !

The screenshot shows the Postman application interface. At the top, there's a navigation bar with 'New', 'Import', 'Runner', and other icons. Below it is a search bar labeled 'Filter' and a sidebar with 'History' (selected), 'Collections', and 'APIs BETA'. The main workspace shows an 'Untitled Request' for 'GET google.com'. The status bar at the bottom indicates 'Status: 200 OK' and 'Time: 1103ms'. The interface includes tabs for 'Params', 'Authorization', 'Headers (7)', 'Body', 'Pre-request Script', 'Tests', 'Settings', and 'Cookies' / 'Code' (highlighted). A large green box covers the title 'Verbes HTTP' and part of the request details. On the left, a red box highlights the word 'La requête'. On the right, a yellow box highlights the word 'La réponse'.

- Une autre façon d'accéder à une page internet
- Notre navigateur aide au formatage de la requête
- Notre navigateur interprète la réponse

Un peu plus loin !



Un peu plus loin !

DNS

```
► ping google.com
PING google.com (216.58.215.46): 56 data bytes
64 bytes from 216.58.215.46: icmp_seq=0 ttl=57 time=13.366 ms
64 bytes from 216.58.215.46: icmp_seq=1 ttl=57 time=15.438 ms
^C
--- google.com ping statistics ---
2 packets transmitted, 2 packets received, 0.0% packet loss
round-trip min/avg/max/stddev = 13.366/14.402/15.438/1.036 ms
```

Derrière google.com se cache une IP (216.58.215.46)

google.com est le nom de domaine (DNS) associé à l'IP

Un peu plus loin !

DNS

- Dans Postman, remplacez google.com par son IP

Qu'observez vous ?

Un peu plus loin !

DNS

GET 216.58.215.46 + ... No Environment

Untitled Request Comments (0)

GET 216.58.215.46 Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

Query Params

| KEY | VALUE | DESCRIPTION | ... | Bulk Edit |
|-----|-------|-------------|-----|-----------|
| Key | Value | Description | | |

Body Cookies Headers (10) Test Results Status: 200 OK Time: 210ms Size: 5.43 KB Save Response ▾

Pretty Raw Preview Visualize BETA

Recherche [Images](#) [Maps](#) [Play](#) [YouTube](#) [Actualités](#) [Gmail](#) [Drive](#) [Plus »](#) Historique Web | Paramètres | Connexion

 Google

Recherche avancée

Recherche Google J'ai de la chance

Un peu plus loin !

CURL

```
> curl www.google.com
<!doctype html><html itemscope="" itemtype="http://schema.org/WebPage" lang="fr"><head><meta content="text/html; charset=UTF-8" http-equiv="Content-Type">
<meta content="/images/branding/googleg/1x/googleg_standard_color_128dp.png" itemprop="image"><title>Google</title><script nonce="mZ6jbLxwRDDGaJ8iokxH4A==">
(function(){window.google={kEI:'W_OgX_0mFY0lgwelgoPQBQ',kEXPI:'0,202162,1151585,5662,731,223,5104,207,3204,10,1226,364,1499,611,206,383,246,5,304,825,225,6
48,3452,314,3,65,769,5,211,284,868,110,454,733,2584,90,7,312,1116857,1197719,564,6,328978,13677,4855,32691,16115,17444,11240,9188,8384,4858,1362,9291,3028,
4739,8000,3033,1808,4020,978,7931,5296,2055,919,874,4192,6430,14528,4517,2777,919,2277,8,2796,1593,1279,2212,530,149,1103,840,517,1466,56,158,4101,107,204,
1137,2,2063,606,2023,1777,522,1945,2229,94,327,1284,16,2927,2246,1813,1787,2269,1,957,419,2427,6,2904,1869,1295,6286,4454,642,599,7277,4929,108,3407,908,2,
941,2614,2398,1026,10,6433,3275,3,576,1835,8,4616,149,3501,2042,8,439,7985,1,1,2,1528,2304,217,1019,271,874,405,805,4,1051,2393,1510,281,52,976,345,1056,46
4,459,1555,4067,2351,3,2108,1172,1426,69,305,2310,1514,1297,1303,450,690,1968,872,3031,1,338,519,914,562,504,177,8,430,31,469,834,2689,1539,1556,786,204,52
,3030,2469,850,547,908,638,666,874,84,360,115,2,567,915,3497,992,754,615,55,745,3255,542,43,166,607,2,73,704,104,319,230,174,413,11,686,45,42,22,601,112,22
5,1357,451,281,973,237,890,532,712,187,693,670,739,200,2,1,3,92,60,272,147,433,1983,46,2,2,786,340,23,17,261,192,508,901,222,45,1942,144,25,132,473,5,4,126
,585,1836,86,63,29,1,336,608,2,692,98,496,179,5741004,3707,8798209,549,333,444,1,2,80,1,900,896,1,9,2,2551,1,748,141,59,736,563,1,4265,1,1,2,1017,9,305,329
9,248,596,1113,259,66,1,54,20,12,7,2,3,7,1,10,2,50,23958654,2716137,1984',kBL:'EpvJ'});google.sn='webhp';google.kHL='fr';})(());(function(){google.lc=[];googl
e.li=0;google.getEI=function(a){for(var c;a&&(!a.getAttribute()||!(c=a.getAttribute("eid")));)a=a.parentNode;return c}|google.kEI};google.getLEI=function(a){for(var c=null;a&&(!a.getAttribute()||!(c=a.getAttribute("leid")));)a=a.parentNode;return c};google.ml=function(){return null};google.time=function(){return Date.now()};google.log=function(a,c,b,d,g){if(b=google.logUrl(a,c,b,d,g)){a=new Image;var e=google.lc,f=google.li;e[f]=a;a.onerror=a.onload=a.onabort=funct
ion(){delete e[f]};google.vel&&google.vel.lu&&google.vel.lu(b);a.src=b;google.li=f+1}};google.logUrl=function(a,c,b,d,g){var e="",f=google.ls||"";b||-1!=c.
search("&ei=")||!(e=="&ei="+google.getEI(d),-1==c.search("&lei=")&&(d=google.getLEI(d))&&(e+="&lei="+d));d="";!b&&google.cshid&&-1==c.search("&cshid=")&&"slh
"!=a&&(d=="&cshid="+google.cshid);b=b||"/"+(g||"gen_204")+"?atyp=i&ct="+a+"&cad="+c+e+f+"&zx="+google.time()+d;/^http://i.test(b)&&"https":=window.location.
protocol&&(google.ml(Error("a")),!1,{src:b,glmm:1}),b="");return b}}).call(this);(function(){google.y={};google.x=function(a,b){if(a)var c=a.id;else{do c=M
ath.random();while(google.y[c])google.y[c]=[a,b];return!1};google.lm=[];google.plm=function(a){google.lm.push.apply(google.lm,a)};google.lq=[];google.load
=function(a,b,c){google.lq.push([a,b,c])};google.loadAll=function(a,b){google.lq.push([a,b])}).call(this);google.f={};(function(){document.documentElement.addEventListener("submit",function(b){var a;if(a=b.target){var c=a.getAttribute("data-submitfalse"));a="1"==c||"q"==c&&!a.elements.
q.value?!0:!1}else a=!1;a&&(b.preventDefault(),b.stopPropagation())},!0);document.documentElement.addEventListener("click",function(b){var a;a:{for(a=b.tar
get;a&&a!=document.documentElement;a=a.parentElement)if("A"==a.tagName){a="1"==a.getAttribute("data-nohref");break}a=a!=1}a&&b.preventDefault(),!0});).cal
l(this);
var a=window.location,b=a.href.indexOf("#");if(0<=b){var c=a.href.substring(b+1);/(^|&)q=/test(c)&&-1==c.indexOf("#")&&a.replace("/search?"+c.replace(/(^|
)&fp=[^&]*/g,"")+"&cad=h");}</script><style>#gbar,#guser{font-size:13px;padding-top:1px !important;}#gbar{height:22px}#guser{padding-bottom:7px !important;
text-align:right}.gbh,.gbd{border-top:1px solid #c9d7f1;font-size:1px}.gbh{height:0;position:absolute;top:24px;width:100%}@media all{.gb1{height:22px;margi
n-right:.5em;vertical-align:top}#gbar{float:left}}a.gb1,a.gb4{text-decoration:underline !important}a.gb1,a.gb4{color:#00c !important}.gb1 .gb4{color:#dd8e2
7 !important}.gbf .gb4{color:#900 !important}
</style><style>body,td,a,p,.h{font-family:arial,sans-serif}body{margin:0;overflow-y:scroll}#gog{padding:3px 8px 0}td{line-height:.8em}.gac_m td{line-height
```

Un peu plus loin !

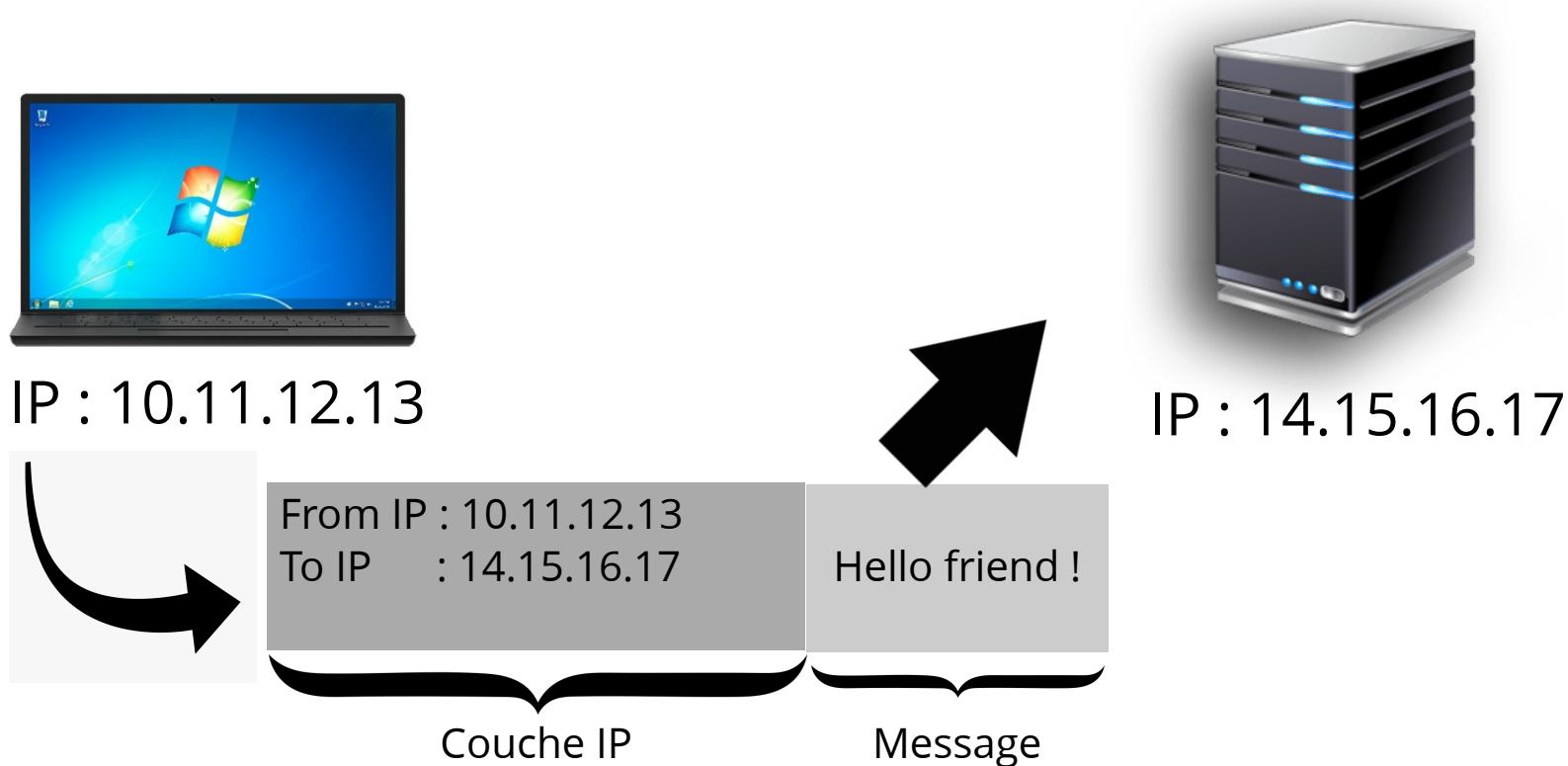
CURL

```
> curl -v http://stackoverflow.com/
*   Trying 151.101.1.69...
* TCP_NODELAY set
* Connected to stackoverflow.com (151.101.1.69) port 80 (#0)
> GET / HTTP/1.1
> Host: stackoverflow.com
> User-Agent: curl/7.64.1
> Accept: */*
```

Un peu plus loin !

C'est quoi ce 80 ?

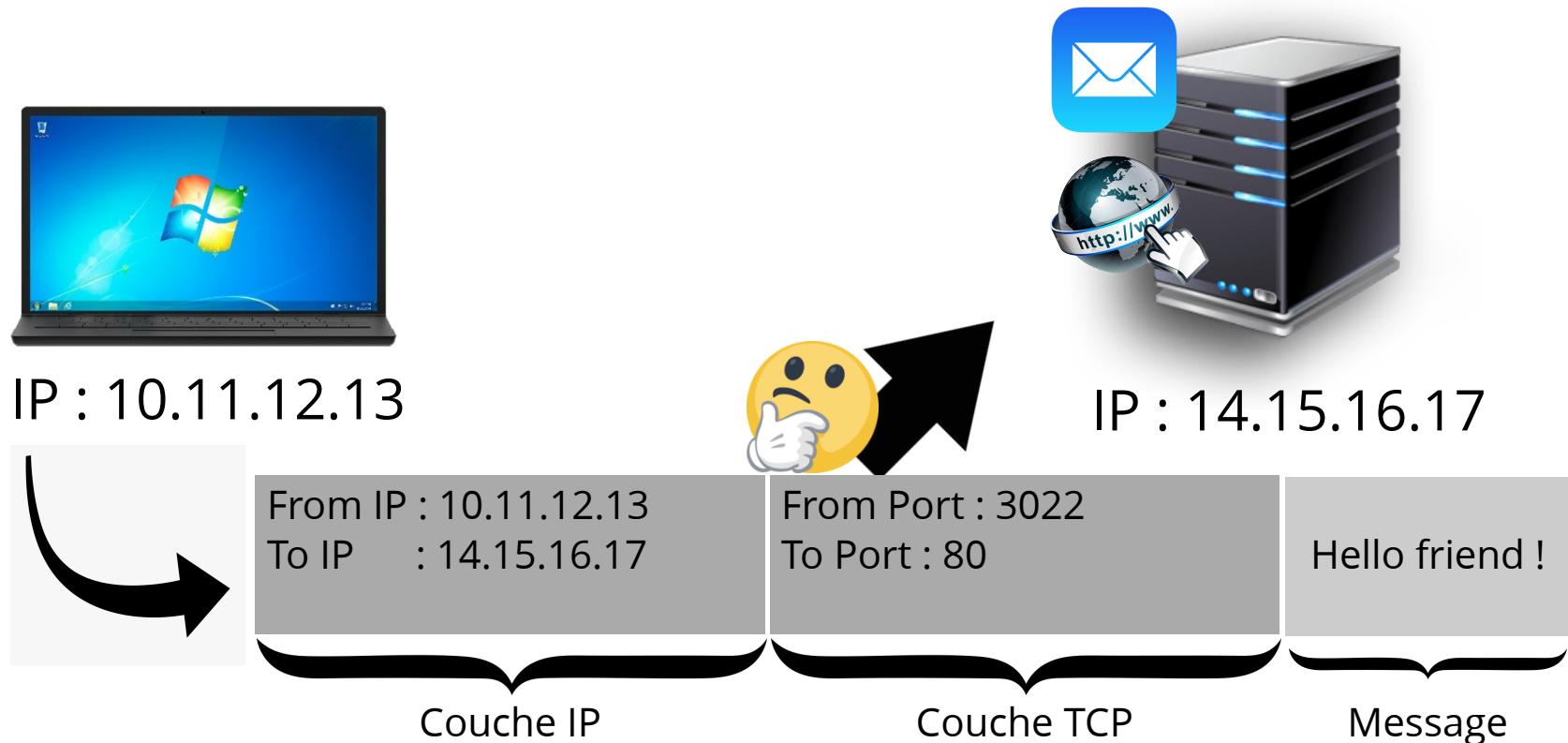
Je souhaite envoyer un message et j'ai l'adresse IP ça suffit non ?



Un peu plus loin !

C'est quoi ce 80 ?

Je souhaite envoyer un message et j'ai l'adresse IP ça suffit non ?



Un peu plus loin !

À retenir

Une machine connectée à internet a une adresse IP

Le nom de domaine est une sur-couche "User Friendly" de l'**adresse IP**

Un serveur est capable de faire tourner plusieurs **services**

Chaque service à un port qui lui est associé

Le port 80 est associé par défaut au service HTTP

Le port 443 est associé par défaut au service HTTPS (à privilégier)