

Git هي أداة للتحكم في الإصدار وليست مخصصة لبرمجة الويب فقط ، ويتم استخدامها عند إنشاء تطبيقات ويب أكبر وأكثر تعقيداً .
Git هي أداة سطر أوامر تتيح لنا متابعة التغييرات التي أجريناها على الكود .

Lecture#4 Git

Git هي أداة يمكننا استخدامها لبناء تطبيق ويب

Git is a tool that we can use in order to build web application

Git is a version control tool and it is not specific for web programming only

It is used when building bigger and more sophisticated web applications

Git is a command line tool that allow us to keep tracking of changes we made on the code.

Terms:

Director->Folder

Terminal or Command Line ->interface for Text commands

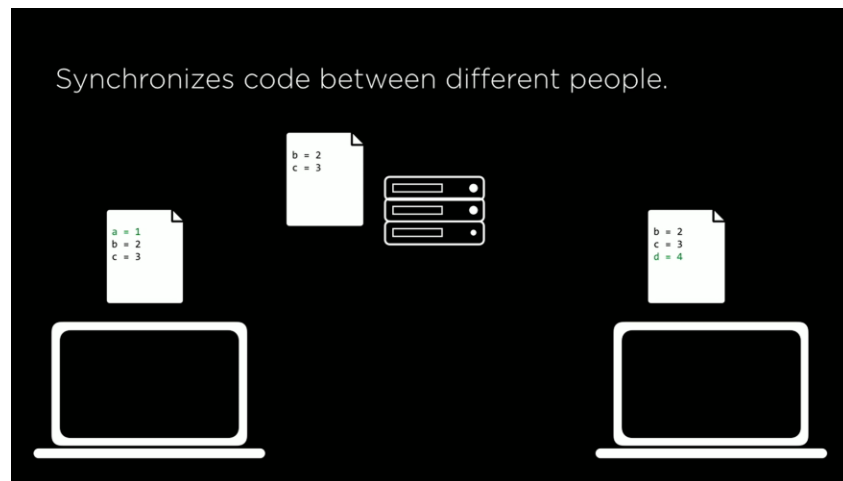
CLI->Command Line Interface

CD->Change Directory

Repository->Project, or the folder/place where your project is kept

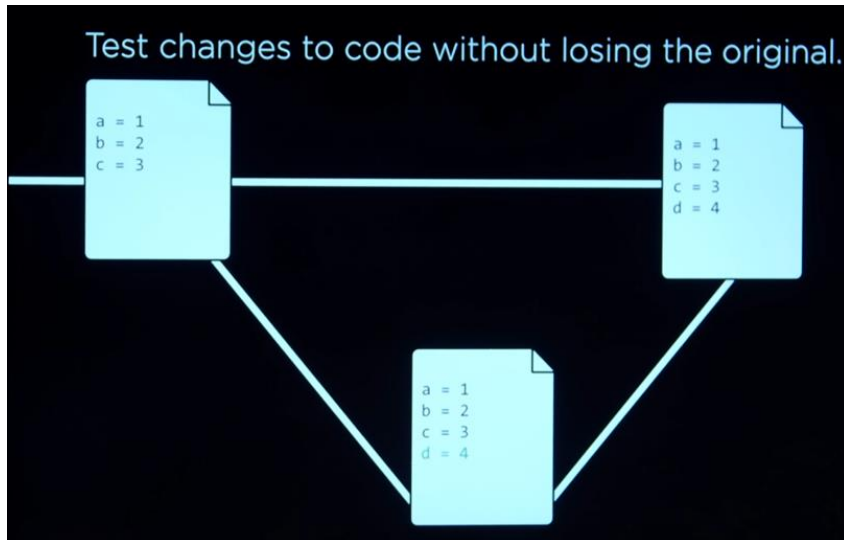
GitHub-> A website or host your repositories online.

يعمل Git على تسهيل مزامنة التعليمات البرمجية بين مختلف الأشخاص عن طريق دفع التغييرات إلى الخادم ثم سحبها إلى أجهزة الكمبيوتر المحلية
Git makes it easy to synchronous code between different people by pushing changes to the server and then pull them to local computers.



Git allows testing changes to code without losing the original

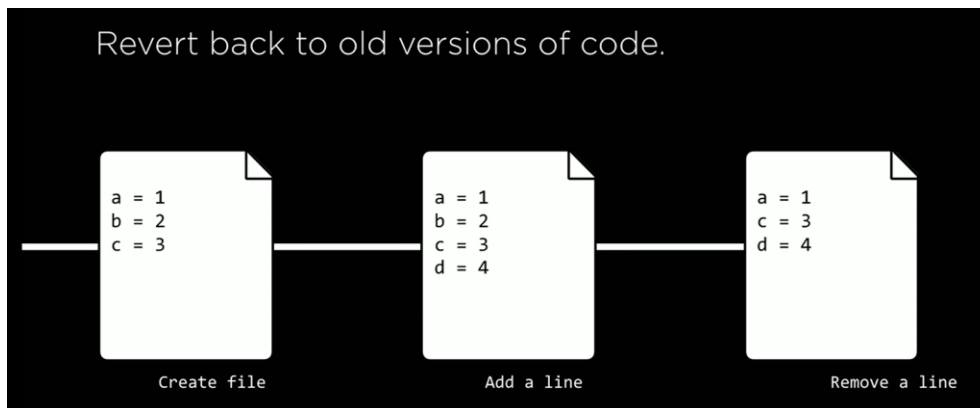
يسمح Git باختبار التغييرات على الكود دون فقد الأصل



يمنح
Git

القدرة على العودة إلى الإصدارات القديمة من التعليمات البرمجية

Git gives the ability to revert back to old versions of code.



عندما نبدأ في استخدام

Git

نحتاج إلى تخزينه في مكان ما عبر الإنترنت لتنزيله من أي مكان ونحتاج إلى مضيف ،

Git

As we begin using Git we need to store it somewhere online in order to download them from anywhere and we need a host Git

GitHub

It is a website that stores Git repositories (such as projects)

To start using GitHub you must have an account

To create a new repository go the URL: <http://github.com/new>

Create a new repository

A repository contains all project files, including the revision history. Already have a project repository elsewhere? [Import a repository.](#)

Owner / Repository name

Great repository names are short and memorable. Need inspiration? How about **fantastic-octo-palm-tree?**

Description (optional)

- Public**
Anyone can see this repository. You choose who can commit.
- Private**
You choose who can see and commit to this repository.

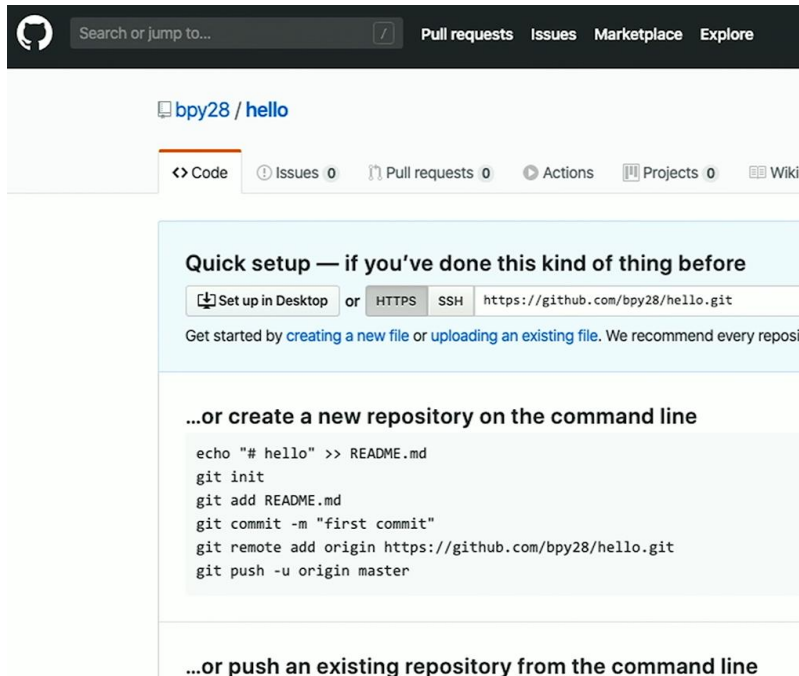
Skip this step if you're importing an existing repository.

- Initialize this repository with a README**
This will let you immediately clone the repository to your computer.

Add .gitignore: **None** ▾

Add a license: **None** ▾ ⓘ

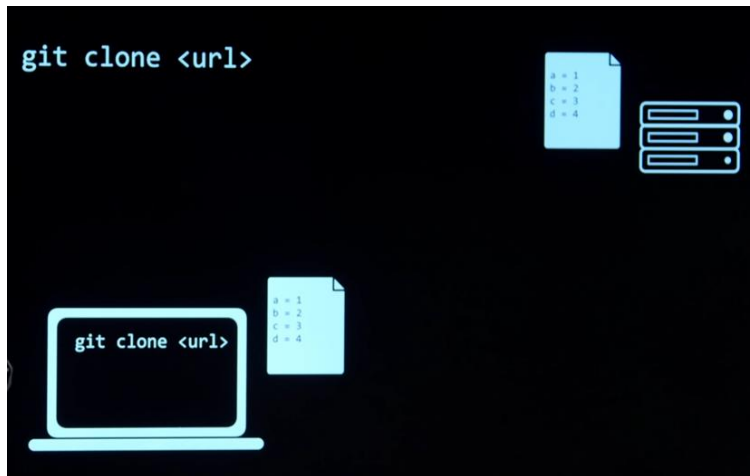
Create repository



Download this repository on your local computer using Git

Git commands:

Git clone: download repository from the internet to your local computer.



```
workspace@Brian-MBP lecture1 % git clone https://github.com/bpy28/hello.git
Cloning into 'hello'...
warning: You appear to have cloned an empty repository.
workspace@Brian-MBP lecture1 % █
```

`ls` command: List all the files and folders which are exist in the current directory

```
workspace@Brian-MBP lecture1 % ls
hello
workspace@Brian-MBP lecture1 % █
```

`cd` command: Change Directory: to move in the directory.

```
workspace@Brian-MBP lecture1 % cd hello
workspace@Brian-MBP hello % █
```

`touch` command: to create a file in the directory

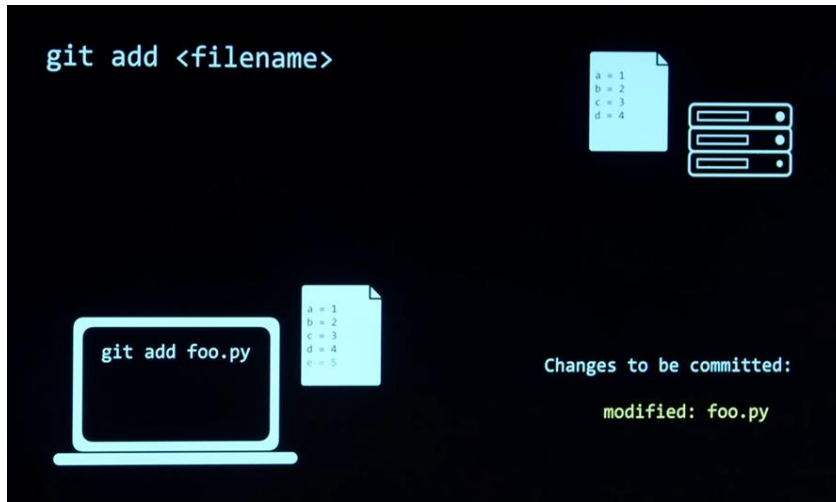
```
workspace@Brian-MBP hello % touch hello.html
workspace@Brian-MBP hello % █
```

Writing some HTML code inside the hello.html

```
hello.html ×
hello.html >  html
1 <!DOCTYPE html>
2 <html lang="en">
3   <head>
4     <title>Hello!</title>
5   </head>
6   <body>
7     Hello, world!
8   </body>
9 </html> █
```

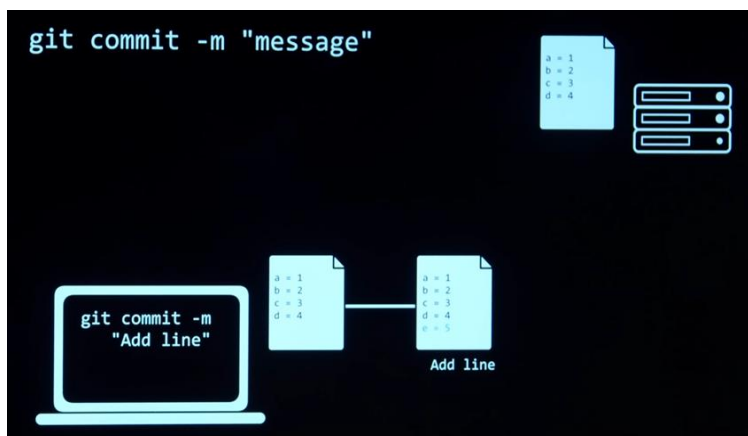
لإضافة ملف معين أريد تتبعه في المرة القادمة التي أريد في الالتزام بها

Git add: to add a specific file that I want to track next time I want to commit



```
workspace@Brian-MBP hello % git add hello.html
workspace@Brian-MBP hello % █
```

commit command: to save the current state of all files and folders and assets exist inside the repository and basically take a snapshot of their current position



لحفظ الحالة الحالية لجميع الملفات والمجلدات والأصول الموجودة داخل المستودع وأخذ لقطة من وضعها الحالي بشكل أساسي

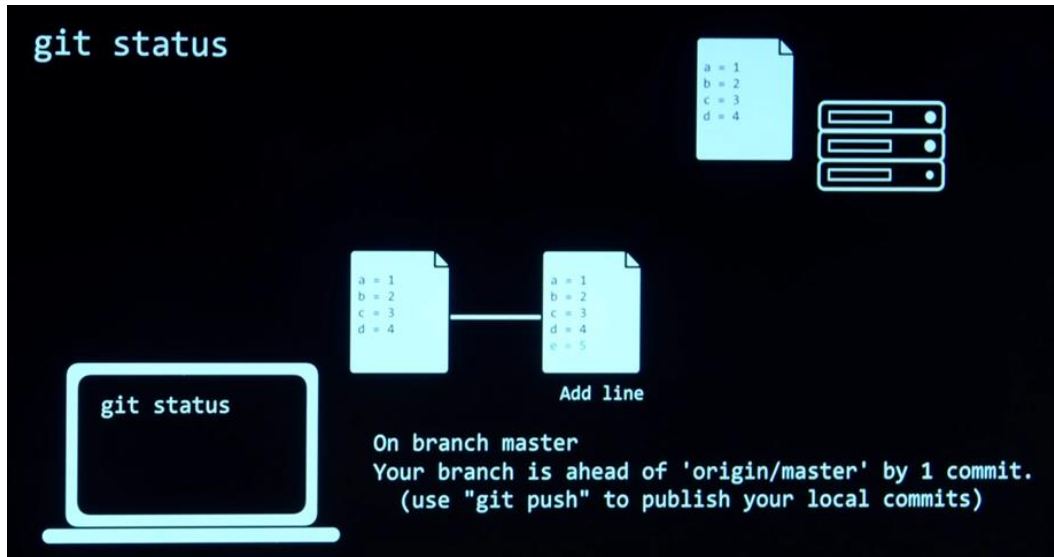
```
workspace@Brian-MBP hello % git commit -m "Add hello.html"
[master (root-commit) 21f231e] Add hello.html
1 file changed, 9 insertions(+)
 create mode 100644 hello.html
workspace@Brian-MBP hello % █
```

لا تزال هناك خطوة أخيرة مفقودة لرؤية الملف الذي أنشأناه على خادم GitHub
وهو:

One final step is still missing in order to see the file we have made on the GitHub server which is:

أمر يخبرنا بما يحدث بالضبط داخل المستودع: `git status`

`git status`: a command is telling what is exactly happening inside the repository

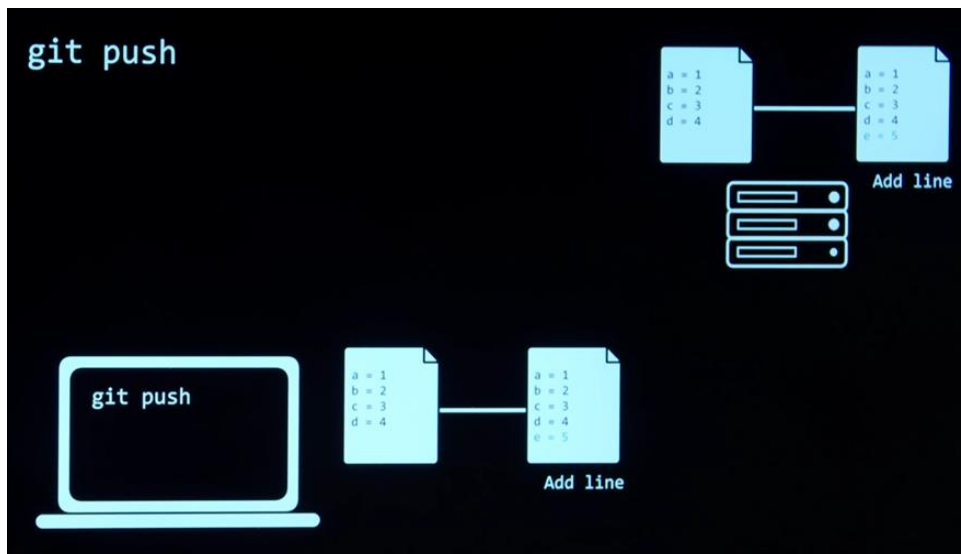


أمر

Git Push: لحفظ جميع التغييرات التي تم إجراؤها على GitHub

وبالتالي فإن النسخة عبر الإنترنت من المستودع لها نفس محتويات الإصدار المحلي.

`Git Push` command: to save all the changes made to GitHub, so the online version of the repository has the same contents as local version.



```
workspace@Brian-MBP hello % git status
On branch master
Your branch is based on 'origin/master', but the upstream is gone.
  (use "git branch --unset-upstream" to fixup)

nothing to commit, working tree clean
workspace@Brian-MBP hello %
```

```
workspace@Brian-MBP hello % git push
Enumerating objects: 3, done.
Counting objects: 100% (3/3), done.
Delta compression using up to 4 threads
Compressing objects: 100% (2/2), done.
Writing objects: 100% (3/3), 303 bytes | 303.00 KiB/s, done.
Total 3 (delta 0), reused 0 (delta 0)
```

And this is the online repository will look like after running the git push command

1 commit 1 branch 0 packages 0 releases 1 contributor

Branch: master New pull request

New file which was created on local computer

Text of commit message

brianyu28 Add hello.html

hello.html Add hello.html

commit fc9a1e3 1 minute ago

1 minute ago

Help people interested in this repository understand your project by adding a README. Add a README

للتزام وجميع التغييرات التي تم إجراؤها

`git commit -am`: to commit and all the changes that have been made

```
workspace@Brian-MBP hello % git commit -am "Add a heading"
[master c614412] Add a heading
 1 file changed, 1 insertion(+)
workspace@Brian-MBP hello %
```


نقل أحدث التغييرات الموجودة على
GitHub
إلى الكمبيوتر المحلي

Git pull: take the latest changes existence on GitHub to the local computer

Merge conflicts

تحدث تعارضات الدمج عندما يحدث أكثر من تغيير لنفس الجزء من الكود ومحاولة مزامنة العمل معًا

Merge conflicts happened when more than one change happened to the same part of the code and trying to sync the work together

At this point there will be some sort of conflict to the same line of code that several persons are working on (for example two different changes to the same code and we must decide what to do to sort this conflict).

في هذه المرحلة ، سيكون هناك نوع من التعارض مع نفس سطر الكود الذي يعمل عليه العديد من الأشخاص (على سبيل المثال ، تغييران مختلفان على نفس الرمز ويجب أن نقرر ما يجب القيام به لفرز هذا التعارض)

To resolve the conflict:

قم بإزالة كافة علامات تعارض الدمج الموجودة في الملف النصي

1- remove all the merge conflict markers that exist in the text file

2- decide what we want as a resolution for the conflict by keeping the local version of changes or keep the remote version of the changes or may be combine them in intelligent way.

تحديد ما نريده كحل للنزاع عن طريق الاحتفاظ بالنسخة المحلية من التغييرات أو الاحتفاظ بالنسخة البعيدة من التغييرات أو دمجها بطريقة ذكية

Merge Conflicts

```
a = 1
<<<<< HEAD
{ b = 2
====
{ b = 0
>>>> 57656c636f6d6520746f20576562
c = 3
d = 4
e = 5
```

your changes

remote changes

Local computer changes

conflicting commit

GitHub repository changes

git pull

Local computer file

```
hello.html ×
hello.html > html > body > h1
1 <!DOCTYPE html>
2 <html lang="en">
3   <head>
4     <title>Hello!</title>
5   </head>
6   <body>
7     <h1>Welcome to my website!!</h1>
8     <h2>Hello!</h2>
9     Hello, world!
10  </body>
11 </html>
```

And then commit the changes

```
workspace@Brian-MBP hello % git commit -am "Add exclamation point"
[master 8b59874] Add exclamation point
 1 file changed, 1 insertion(+), 1 deletion(-)
workspace@Brian-MBP hello %
```

Change the file on the remote repository

```
<!DOCTYPE html>
<html lang="en">
  <head>
    <title>Hello!</title>
  </head>
  <body>
    <h1 style="color:blue;">Welcome to my website!</h1>
    <h2>Hello!</h2>
    Hello, world!
  </body>
</html>
```

```
workspace@Brian-MBP hello % git pull
remote: Enumerating objects: 5, done.
remote: Counting objects: 100% (5/5), done.
remote: Compressing objects: 100% (2/2), done.
remote: Total 3 (delta 1), reused 0 (delta 0), pack-reused 0
Unpacking objects: 100% (3/3), done.
From https://github.com/bpy28/hello
 1f70dd5..b25e375 master    -> origin/master
Auto-merging hello.html
CONFLICT (content): Merge conflict in hello.html
Automatic merge failed; fix conflicts and then commit the result.
workspace@Brian-MBP hello %
```

```
hello.html x
hello.html > html > body > ?
3 | <head>
4 | | <title>Hello!</title>
5 | | </head>
6 | <body>
  |
  | Accept Current Change | Accept Incoming Change | Accept Both Changes | Compare Changes
7 | <<<<<< HEAD (Current Change)
8 | | <h1>Welcome to my website!!</h1>
9 | =====
10 | | <h1 style="color: blue;">Welcome to my website!</h1>
11 | >>>>>> b25e37573ac900ef0630c209eab753e75f2017b (Incoming Change)
12 | | <h2>Hello!</h2>
13 | | Hello, world!
14 | </body>
15 | </html>
```

```
workspace@Brian-MBP hello % git commit -am "Fix merge conflict"
[master 935294d] Fix merge conflict
workspace@Brian-MBP hello %
```

Git log: to keep track to all changes made to the code in a particular repository

لتتبع جميع التغييرات التي تم إجراؤها على الكود في مستودع معين

```

git log

commit 436f6d6d6974204d7367
Author: Brian Yu <brian@cs.
Date: Tue Jan 14 14:06:28

Remove a line

commit 57656c636f6d65207461
Author: Brian Yu <brian@cs.
Date: Tue Jan 14 14:05:21

Add a line

```

أخذ حالة المستودع الحالي وإعادتها إلى حالة قديمة

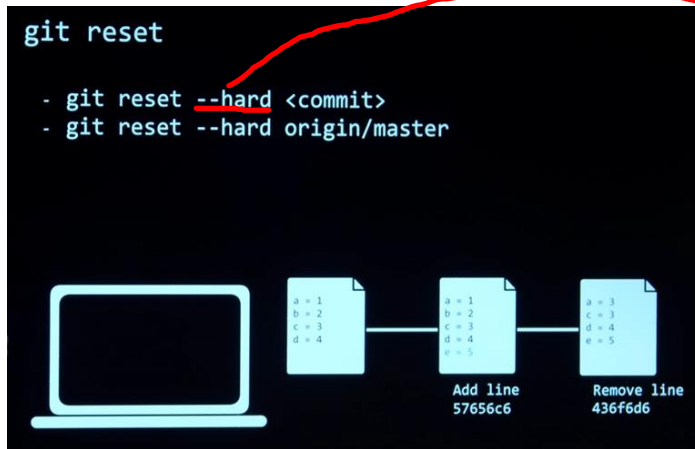
Git reset command: take the state of the current repository and reverts it back to an older state

```

git reset

- git reset --hard <commit>
- git reset --hard origin/master

```



Resets the index and working tree. Any changes to tracked files in the working tree since commit are discarded. Any untracked files or directories in the way of writing any tracked files are simply deleted.

يعيد تعيين الفهرس وشجرة العمل. يتم تجاهل أي تغييرات على الملفات المتعقبة في شجرة العمل منذ أن تم تجاهل . يتم ببساطة حذف أي ملفات لم يتم تعقبها في طريقة كتابة أي ملفات متعقبة

Python تعد Python

لغة قوية جدًا وتُجمل من السهل جدًا إنشاء التطبيق بسرعة لأن هناك العديد من الميزات المضمنة في اللغة تجعلها ملائمة وسريعة للتطوير الإنتاجي. Python is a very powerful language and it makes it very easy to build application quickly because there are many features built in the language make it convenient and quick for productive development.

Python is an interpreted language

بايثون هي لغة مفسرة

hello.py



hello.py

```
1 print("Hello, world!")
```

```
workspace@Brian-MBP src % python hello.py
Hello, world!
workspace@Brian-MBP src %
```

Variables

```
a = 28
b = 1.5
c = "Hello!"
d = True
e = None
```