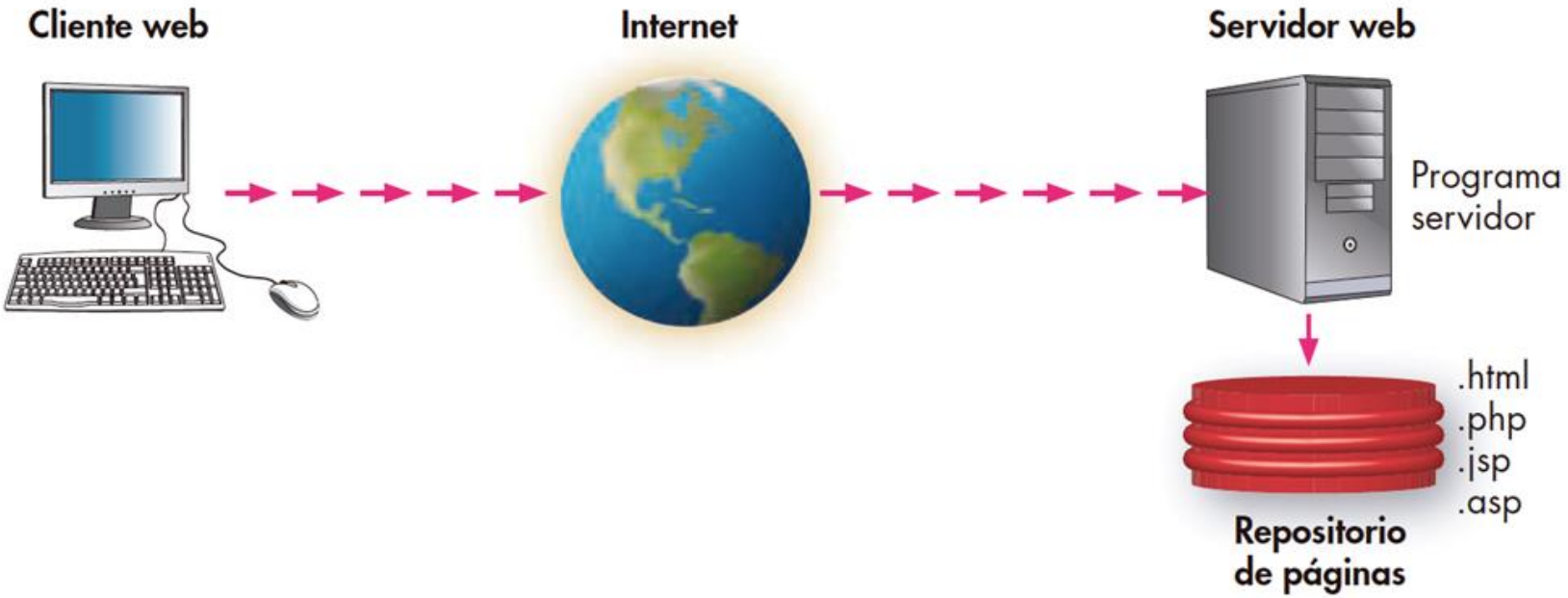
Introduction to web programming

DWES

1.- Features of web programming

What happens when you enter a URL in the browser?



1.- Features of web programming

What happens when you enter a URL in the browser?

1. Request the html file to the server (.html, .php, .asp, .cgi...).
2. The server searches the file in the directory indicated by the URL.
3. If the file is found, the server sends it to the client.
4. The client analyzes the received file.
5. If necessary, complementary files will be requested (css, javascript, images...)
6. The html file is displayed in the window.

1.- Features of web programming

Static web pages

Stored in its final form.

They only vary if the developer alters the content.

Its usefulness is based on showing specific information.

They consume fewer resources.

The file extension is **.hmtl**

Are they useful nowadays?

1.- Features of web programming

Dynamic web pages

Its content changes depending on different factors:

- Day and time accessed.
- If accessed with user.
- Actions carried out previously.

The client receives a file whose content is html (same as in static pages), but said content is not inside an unalterable file.

The file extension will not be .html but rather that of the dynamic web page programming language that the server understands .php, .asp, .cgi...

1.- Features of web programming

Dynamic web pages

Its content changes depending on different factors:

- Day and time accessed.
- If accessed with user.
- Actions carried out previously.

All this happens constantly when we access web pages such as:

Gmail
Blogs
Marca
Twitter
Websites
...

1.- Features of web programming

Steps to do on the server when receiving a web request from a dynamic page.

The code is analyzed line by line.

- If it is html code, remains the same.
- If it is code from the server's programming language, execute it.

Server programming language execution typically includes:

- Database access.
- Access to other files.

The server programming language execution may or may not create html code, if html code is created it will be added at that point in the document.

Once all the lines of code have been analyzed, the generated document is sent to the client. This document **will only contain html code.**

Exercise - Link

A. If it is a dynamic web page, the server sends it to the module responsible for executing the code.

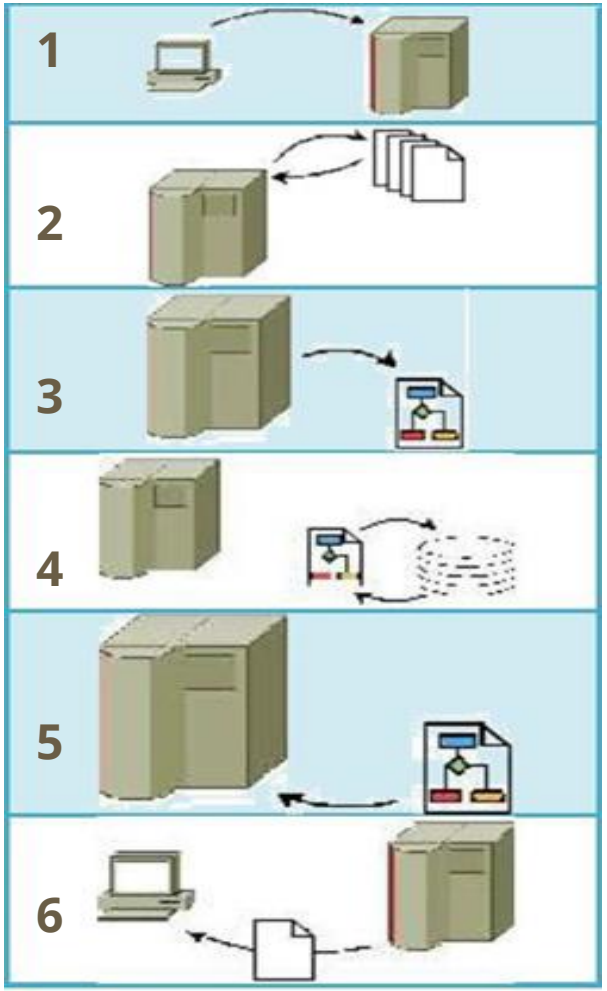
B. The server search for that page and retrieves it.

C. The web client requests a web page.

D. During the execution of the dynamic page a database may be accessed.

E. The server sends the result obtained to the browser that will display it on the screen.

F. The result of the execution will be a document with html code.



1.- Features of web programming

Static and dynamic web pages: advantages and disadvantages

Static:

- It is not necessary to know how to program.
- Its content never varies, the links will always show the same thing.
- Better SEO positioning by always having the same content.
- Manual update by the web developer.

Dynamics:

- More flexibility.
- Greater difficulty in development.
- Greater consumption of resources.
- You have to be careful for SEO positioning.
- Lower speed.
- Higher resource maintenance cost.

1.- Features of web programming

Nowadays most web pages contain static parts and dynamic parts. For example:

Contact

Terms and Conditions

Location

This happens because not everything is stored in a database nor does information need to be processed to display content.

The power is in the union.

1.- Features of web programming

Web applications

Thanks to the increase in Internet speed and the increase in the performance of current equipment, for some years now many companies have taken advantage of the power of dynamic web pages to develop applications that run over the Internet.

Gmail

Office suites

...

1.- Features of web programming

Web applications

Advantages:

- They are only “installed” on one computer, the server.
- Due to the above, it is easy to manage them (backups, updates...)
- No special HW is needed for the clients, only a web client.
- If we have an internet connection they can be used anywhere.

Disadvantages:

- The application interface is limited to the web client interface.
- It depends on an internet connection to use them.
- The information must be transmitted between server and client, this makes it impossible to create web applications when the data to be processed is very large, for example: video editing.

1.- Features of web programming

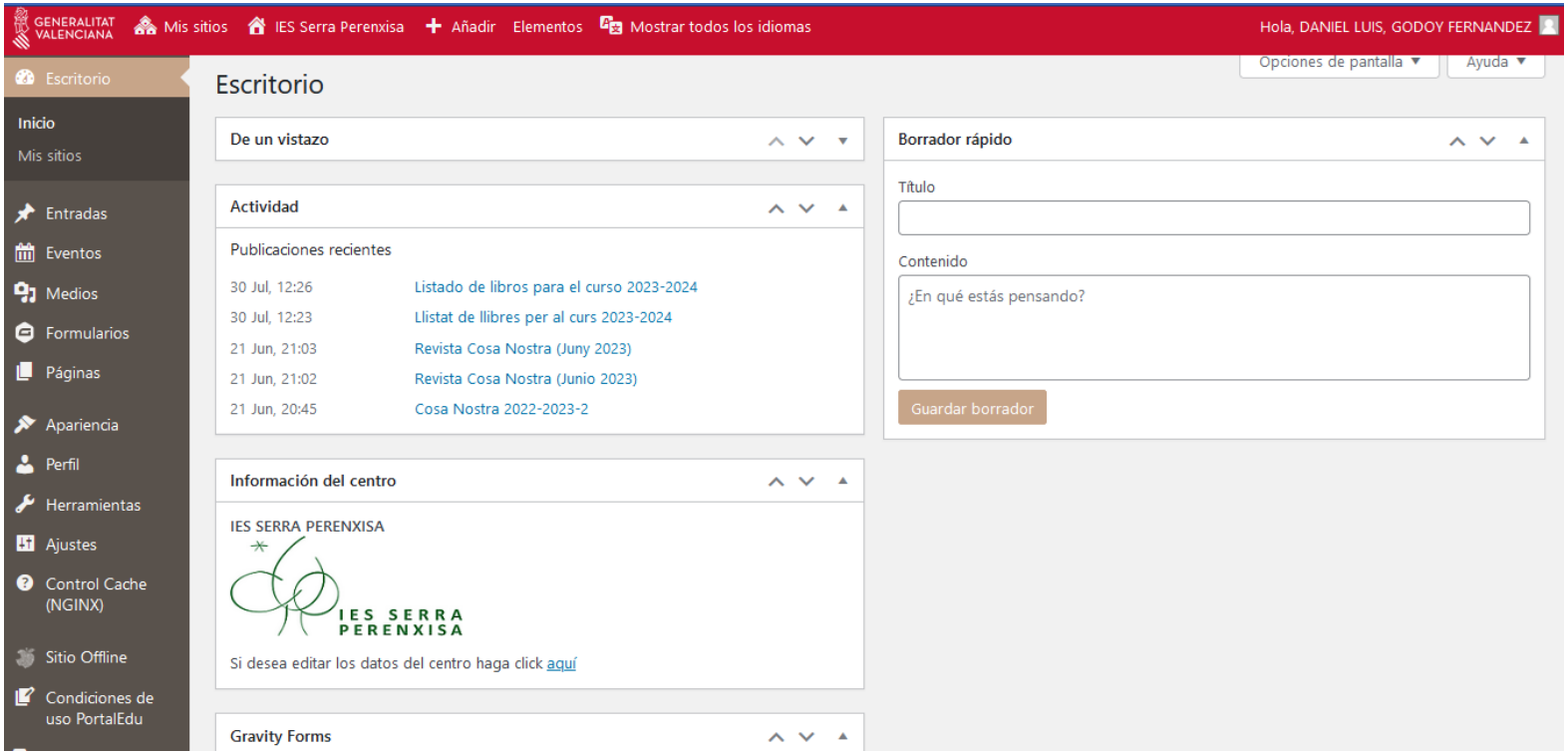
Web applications

front-end

1.- Features of web programming

Web applications

back-end



2.- Technologies for web programming - server

To develop dynamic web pages and web applications you need:

- Web server.
- Programming language.
- Module responsible for executing the code.
- Database

2.- Technologies for web programming - server

It is also necessary to decide the design architecture, which is nothing more than the way in which the code will be organized.

Generally, tiered or layered architectures are used. For example using a 3-tier architecture:

- Client layer: the application interface is defined.
- Functionality layer: all procedures to generate the pages will be included.
- Data access layer: it will be responsible for storing and retrieving data.

2.- Technologies for web programming - server

Architectures and Platforms

JavaEE → Java. Sun & Oracle. Exists many librarys. JSP and servlets.

AMP → Apache MySQL PHP/Perl/Python. Open Source. PostgreSQL, MariaDB

CGI/Perl → Perl + CGI (standard for running programs on the web server of any language). Slow.

.Net → Microsoft. .Net generate's dynamic web pages. Visual Basic, C#. Microsoft IIS. Include IDE.

Python → Open Source. Had frameworks like Flask or Django

2.- Technologies for web programming - server

Architectures and platforms: **Which one do we choose?**

- How big will the project be?
- What programming languages do I know?
  Is it worth the effort to learn a new one?
- Public or proprietary tools.
- Cost of commercial solutions.
- Number of people on the development team.
- Do I already have a web server or database manager or can I choose them?

3.- Programming languages

The difference between server-side web programming languages, lies in how these languages are executed on the server.

- **Scripting:** they are stored in a text file with instructions. The server will use an interpreter that processes the instructions generating a web page.
  PHP, Perl, Python, ASP

- **Native code:** the code is compiled and translated into processor-dependent machine language (binary). It is executed directly.
  CGI → C

- **Intermediate code:** Compiled into processor-independent intermediate code. It is required to interpret that code. platform independent.
  Java, ASP.Net

3.- Programming languages

IDE → **I**ntegrated **D**evelopment **E**nvironment

There are many IDEs for developing web pages, although they are not necessary and a simple text editor is enough.

IDE Features: Code highlighting and autocompletion, error checking when editing, running and debugging, version management.

There are text editors prepared for programming in any programming language, with additional features so that they have many of the functions that IDEs have.

Visual Studio, Eclipse, NetBeans, Intellij Idea, Brackets, Sublime, Notepad++...

3.- Programming languages

Web programming with PHP

PHP is a general-purpose scripting language designed for the development of dynamic web pages.

Syntax based on C and C++ as with Java.

PHP files have the .php extension.

PHP files contain HTML code (which you already know) along with PHP instructions.

The PHP configuration is located in the php.ini file on the server.

Do we install the environment?

Exercise

XAMPP Installation

XAMPP Apache + MariaDB + PHP + Perl

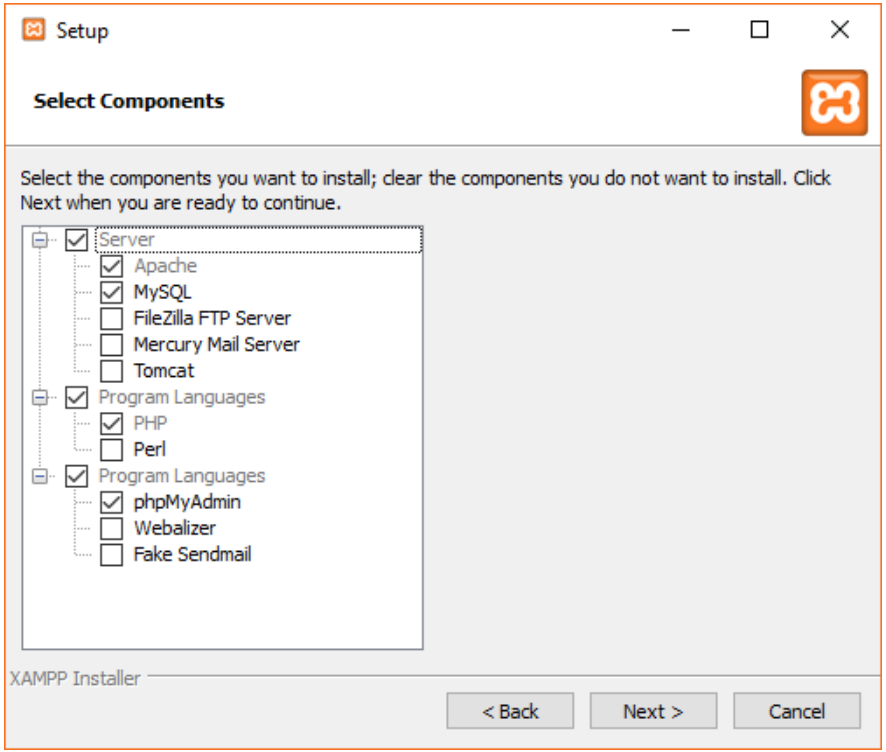
We will install the latest version of XAMPP, but when programming we must take into account that not all servers on the Internet are updated.

XAMPP Official Web

Exercise

XAMPP Installation

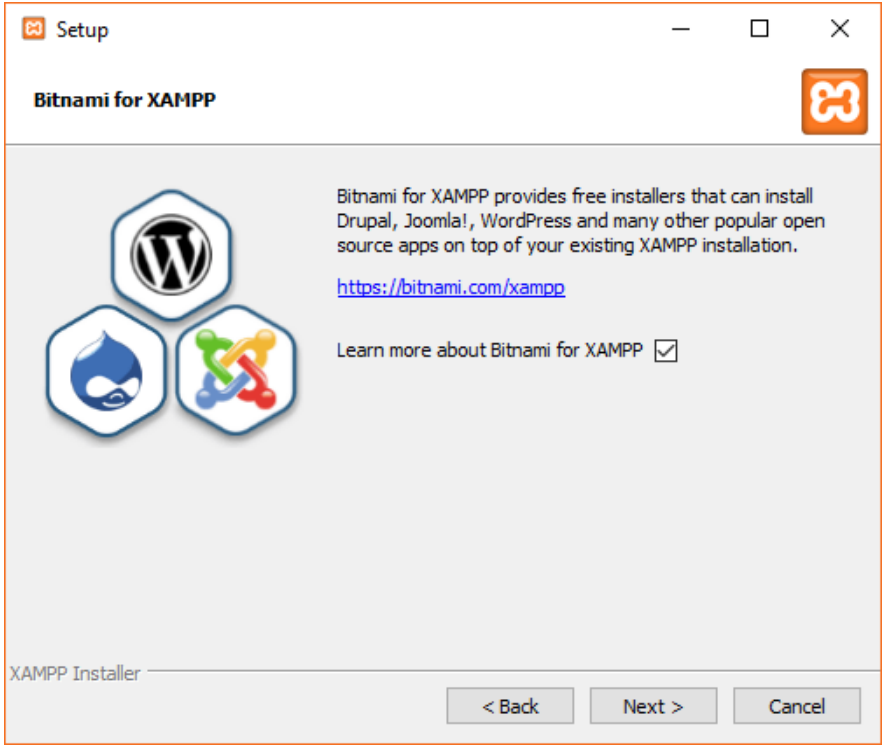
During the installation we can **uncheck** the modules that we will not use during the course:



Exercise

XAMPP Installation

We can also uncheck the following notice:



Exercise

XAMPP Installation

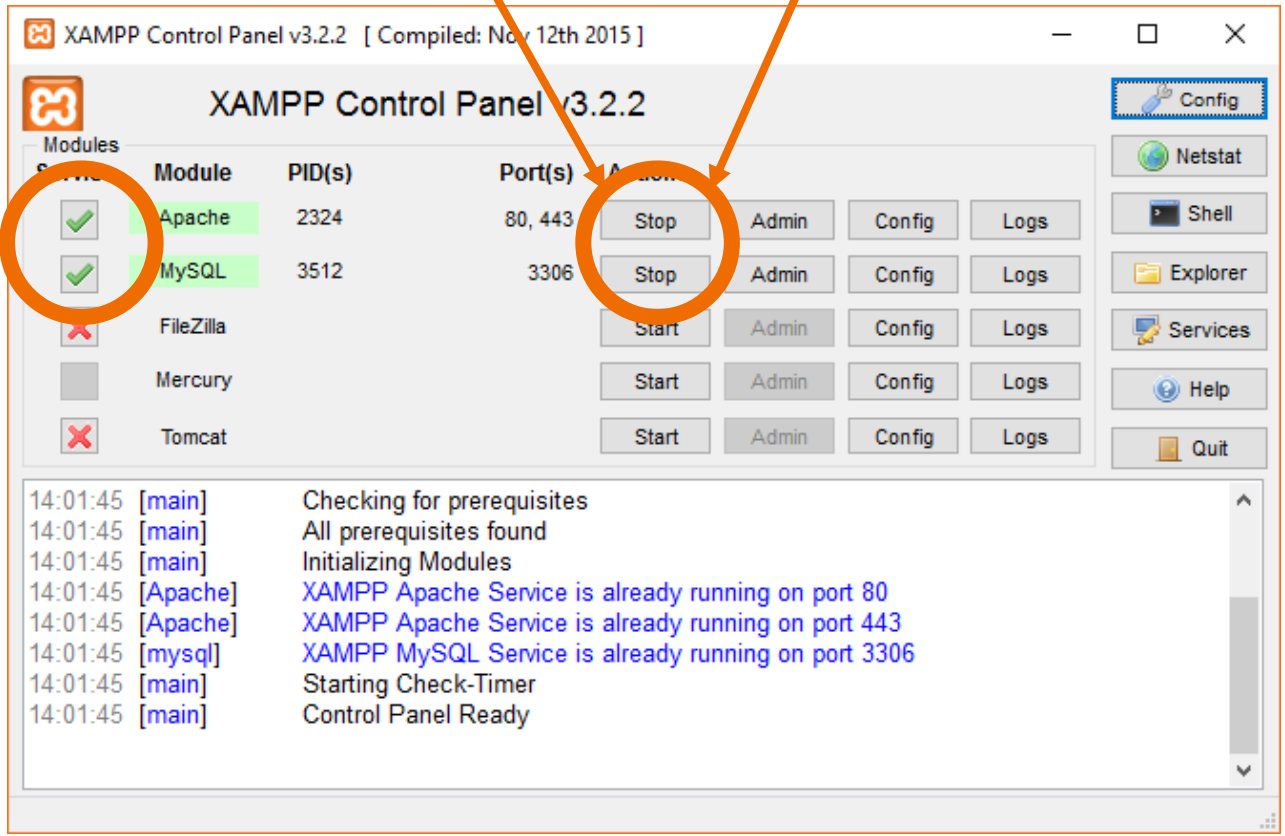
If at the end of the installation it asks you if you want to start XAMPP, tell it not to start.

Now we must tell XAMPP that we want the web server and the database server to always start, to do this we must indicate that the two servers are services:

Go to the installation folder **c:/xampp** and run the **xampp-control.exe** file but as administrator.

For both servers, check the **Service** box and restart the servers.

Exercise

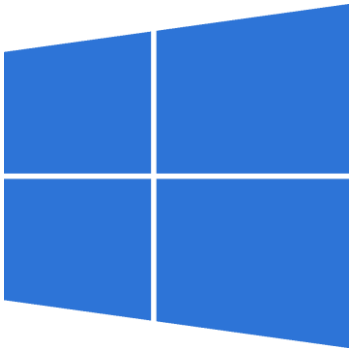

1
2
3
XAMPP Control Panel v3.2.2 [Compiled: Nov 12th 2015]
XAMPP Control Panel v3.2.2
Modules
Module
PID(s)
Port(s)
Apache 2324 80, 443 Stop Admin Config Logs
MySQL 3512 3306 Stop Admin Config Logs
FileZilla Start Admin Config Logs
Mercury Start Admin Config Logs
Tomcat Start Admin Config Logs
Config
Netstat
Shell
Explorer
Services
Help
Quit
14:01:45 [main] Checking for prerequisites
14:01:45 [main] All prerequisites found
14:01:45 [main] Initializing Modules
14:01:45 [Apache] XAMPP Apache Service is already running on port 80
14:01:45 [Apache] XAMPP Apache Service is already running on port 443
14:01:45 [mysql] XAMPP MySQL Service is already running on port 3306
14:01:45 [main] Starting Check-Timer
14:01:45 [main] Control Panel Ready

Exercise

Visual Studio Code Installation

Visual Studio Code

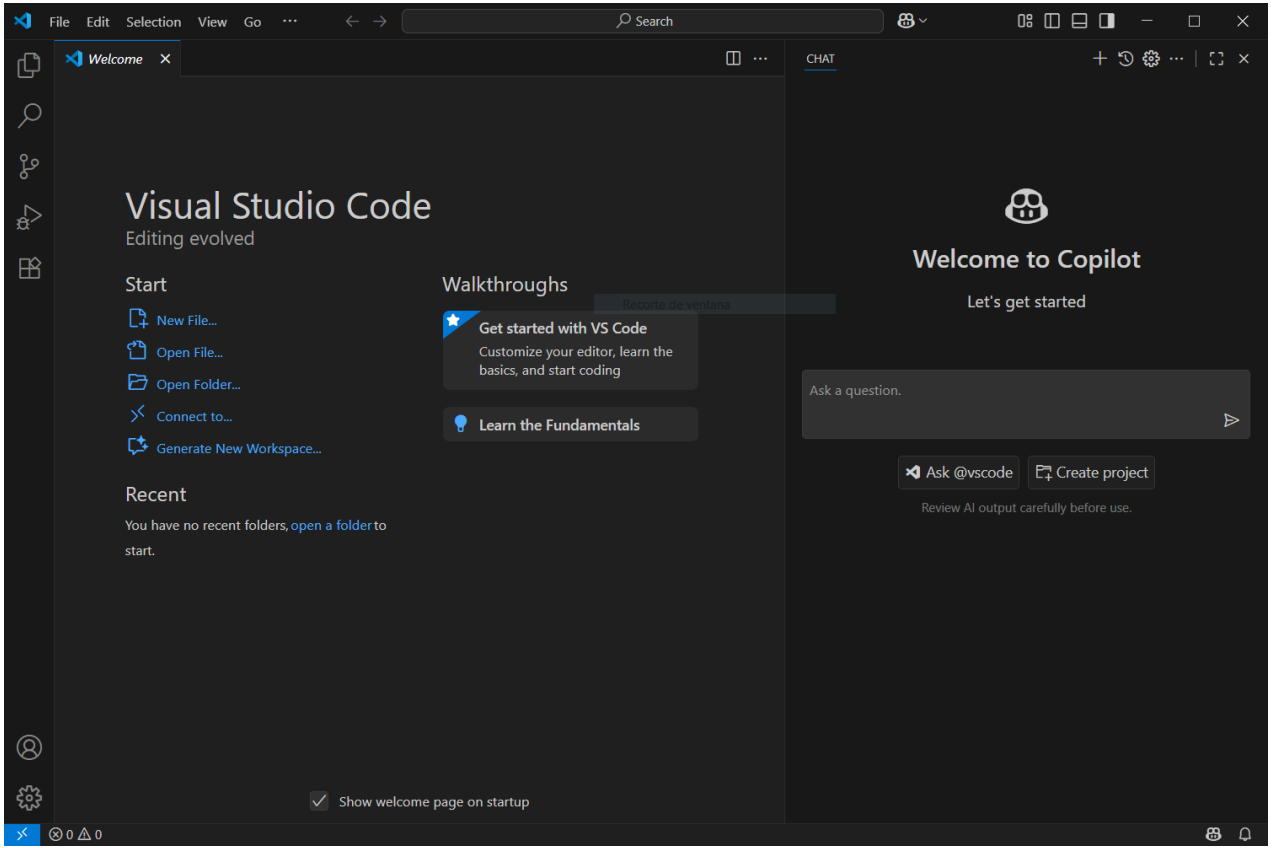
We will install the latest version of Visual Studio Code



Visual Studio Code

Exercise

You can change the language and customize it to your liking



Exercise

Create an account on Github

Access the following link and register

Github