

Práctica 3.1: Instalación de Tomcat

Abrir el puerto predeterminado de Tomcat

```
david@UbuntuServerDavidArredondo:~$ sudo ufw allow 8080
sudo: password for david:
Rules updated
Rules updated (06)
david@UbuntuServerDavidArredondo:~$
```

Hacemos sudo apt update

```
david@UbuntuServerDavidArredondo:~$ sudo apt update
[ 1152.476053] rcu: INFO: rCU preempt detected stalls on CPUs/tasks:
[ 1152.476567] rcu: o4-...!: (47 GPs behind) idle=c578/0x0 softirq=4408/4409 fqs=1 (false positive?)
[ 1152.476942] rcu: odetected by 1, t=60010 jiffies, g=11873, q=2525 ncpus=5)
[ 1152.478321] rcu: rCU preempt kthread timer wakeup didn't happen for 59873 jiffies! g11873 f0x0 RCU_GP_WAIT_FQS(5) ->state=0x402
[ 1152.478702] rcu: opossible timer handling issue on cpu=4 timer=softirq=925
[ 1152.479102] rcu: rCU preempt kthread starved for 59876 jiffies! g11873 f0x0 RCU_GP_WAIT_FQS(5) ->state=0x402 ->cpu=4
[ 1152.479479] rcu: ounless rCU preempt kthread gets sufficient CPU time, OOM is now expected behavior.
[ 1152.479861] rcu: RCU grace-period kthread stack dump:
[ 1212.523719] rcu: INFO: rCU preempt detected stalls on CPUs/tasks:
[ 1212.524283] rcu: o4-...!: (0 ticks this GP) idle=c6d0/0x0 softirq=4409/4409 fqs=0 (false positive?)
[ 1212.524710] rcu: odetected by 3, t=60045 jiffies, g=11877, q=2921 ncpus=5)
[ 1212.526104] rcu: rCU preempt kthread timer wakeup didn't happen for 60044 jiffies! g11877 f0x0 RCU_GP_WAIT_FQS(5) ->state=0x402
[ 1212.526530] rcu: opossible timer handling issue on cpu=4 timer=softirq=925
[ 1212.526942] rcu: rCU preempt kthread starved for 60047 jiffies! g11877 f0x0 RCU_GP_WAIT_FQS(5) ->state=0x402 ->cpu=4
[ 1212.527361] rcu: ounless rCU preempt kthread gets sufficient CPU time, OOM is now expected behavior.
[ 1212.527759] rcu: RCU grace-period kthread stack dump:
Hit:1 http://es.archive.ubuntu.com/ubuntu noble InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://es.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:4 http://es.archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
26 packages can be upgraded. Run 'apt list --upgradable' to see them.
david@UbuntuServerDavidArredondo:~$
```

Instale Java usando *apt* como se muestra en la siguiente captura de pantalla: `sudo apt`

```
install openjdk-11-jdk -y
```

```
adding debian:UCA_Extended_Validation_Root.pem
adding debian:UCA_Global_G2_Root.pem
adding debian:USERTrust_ECC_Certification_Authority.pem
adding debian:USERTrust_RSA_Certification_Authority.pem
adding debian:Trus_ECC_Root_CA.pem
adding debian:Trus_Root_CA.pem
adding debian:XRAmp_Global_CA_Root.pem
done.
Setting up openjdk-11-jre:amd64 (11.0.28+6~1ubuntu1~24.04.1) ...
Setting up openjdk-11-jdk-headless:amd64 (11.0.28+6~1ubuntu1~24.04.1) ...
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jar to provide /usr/bin/jar (jar) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jarsigner to provide /usr/bin/jarsigner (jarsigner) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/javac to provide /usr/bin/javac (javac) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/javadoc to provide /usr/bin/javadoc (javadoc) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/javap to provide /usr/bin/javap (javap) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jcmd to provide /usr/bin/jcmd (jcmd) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jdb to provide /usr/bin/jdb (jdb) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jdepscan to provide /usr/bin/jdepscan (jdepscan) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jdeps to provide /usr/bin/jdeps (jdeps) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jfr to provide /usr/bin/jfr (jfr) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jimage to provide /usr/bin/jimage (jimage) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jinfo to provide /usr/bin/jinfo (jinfo) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jlink to provide /usr/bin/jlink (jlink) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jmap to provide /usr/bin/jmap (jmap) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jmod to provide /usr/bin/jmod (jmod) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jps to provide /usr/bin/jps (jps) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jrscript to provide /usr/bin/jrscript (jrscript) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jshell to provide /usr/bin/jshell (jshell) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jstack to provide /usr/bin/jstack (jstack) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jstat to provide /usr/bin/jstat (jstat) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jst祩 to provide /usr/bin/jst祩 (jst祩) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/rmic to provide /usr/bin/rmic (rmic) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/serialver to provide /usr/bin/serialver (serialver) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jactc to provide /usr/bin/jactc (jactc) in auto mode
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jhsdb to provide /usr/bin/jhsdb (jhsdb) in auto mode
Setting up openjdk-11-jdk:amd64 (11.0.28+6~1ubuntu1~24.04.1) ...
update-alternatives: using /usr/lib/jvm/java-11-openjdk-amd64/bin/jconsole to provide /usr/bin/jconsole (jconsole) in auto mode
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
david@UbuntuServerDavidArredondo:~$
```

```
Instalamos el tomcat10: sudo apt install tomcat9 -y

Preparing to unpack .../3-tomcat10-common_10.1.16-1_all.deb ...
Unpacking tomcat10-common (10.1.16-1) ...
Selecting previously unselected package tomcat10.
Preparing to unpack .../4-tomcat10_10.1.16-1_all.deb ...
Unpacking tomcat10 (10.1.16-1) ...
Selecting previously unselected package libtcnative-1:amd64.
Preparing to unpack .../5-libtcnative-1_1.2.35-1build2_amd64.deb ...
Unpacking libtcnative-1:amd64 (1.2.35-1build2) ...
Setting up libtomcat-jdt-core-java (3.32.0+eclipse4.26-2) ...
Setting up libtomcat-jdt-javac (10.1.16-1) ...
Setting up tomcat10-common (10.1.16-1) ...
Setting up libapr1164:amd64 (1.7.2-3.1ubuntu0.1) ...
Setting up libtcnative-1:amd64 (1.2.35-1build2) ...
Setting up tomcat10 (10.1.16-1) ...
Creating group 'tomcat' with GID 988.
Creating user 'tomcat' (Apache Tomcat) with UID 988 and GID 988.

Creating config file /etc/tomcat10/tomcat-users.xml with new version

Creating config file /etc/tomcat10/web.xml with new version

Creating config file /etc/tomcat10/server.xml with new version

Creating config file /etc/tomcat10/logging.properties with new version

Creating config file /etc/tomcat10/context.xml with new version

Creating config file /etc/tomcat10/catalina.properties with new version

Creating config file /etc/tomcat10/jaspic-providers.xml with new version

Creating config file /etc/logrotate.d/tomcat10 with new version

Creating config file /etc/default/tomcat10 with new version
Created symlink /etc/systemd/system/multi-user.target.wants/tomcat10.service → /usr/lib/systemd/system/
Processing triggers for rsyslog (8.23.12-0.1ubuntu9.1) ...
Processing triggers for libc-bin (2.39-0ubuntu8.6) ...
Scanning processes...
Scanning linux images...

Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
david@UbuntuServer:~$
```

Antes de agregar un usuario de Tomcat, agregue el grupo tomcat9 ejecutando el siguiente comando. `sudo groupadd tomcat10` y `sudo useradd -s /bin/false -g tomcat10 -d /etc/tomcat10 tomcat10`

```
david@UbuntuServer:~$ sudo groupadd tomcat10  
david@UbuntuServer:~$ sudo useradd -s /bin/false -g tomcat10 -d /etc/tomcat10 tomcat10  
david@UbuntuServer:~$
```

Ahora que Tomcat está instalado, puede iniciararlo y verificar si se inicia correctamente ejecutando los comandos a continuación.`sudo systemctl start tomcat9` y `sudo systemctl status tomcat9`

```
Creating config file /etc/tomcat10/catalina.properties with new version
Creating config file /etc/tomcat10/jaspic-providers.xml with new version
Creating config file /etc/logrotate.d/tomcat10 with new version

Creating config file /etc/default/tomcat10 with new version
Creating config file /etc/systemd/system/tomcat10.service with new version
Processing triggers for raspig (8.2312.0-3ubuntu0.1) ...
Processing triggers for libc-bin (2.39-0ubuntu0.1) ...
Processing triggers for libc-bin (2.39-0ubuntu0.1) ...
Scanning Inode Images...
Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.

david@UbuntuServer:~$ sudo grep tomcat /var/log/kern.log | tail -10
Oct 09 07:15:45 UbuntuServer java[4218]: Oct 09 07:15:45 tomcat10 -d /etc/tomcat10 tomcat10
david@UbuntuServer:~$ sudo systemctl start tomcat10
david@UbuntuServer:~$ sudo systemctl status tomcat10
● tomcat10.service - Tomcat 10 Java Web Application Server
   Loaded: loaded (/usr/lib/systemd/system/tomcat10.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-10-09 07:19:44 UTC; 8min ago
     Main PID: 4218 (java)
    Process: 9213 ExecStartPre=/usr/share/tomcat10/tomcat10-update-policy.sh (code=exited, status=0/SUCCESS)
      Tasks: 1 (limit: 4000)
     Memory: 194.4M (peak: 202.0M)
        CPU: 7.887s
       CGroup: /system.slice/tomcat10.service
               └─ 4218 /usr/bin/java -Djava.util.logging.config.file=/var/lib/tomcat10/conf/logging.properties -Djava.util.logging.ma

Oct 09 07:15:45 UbuntuServer java[4218]: Oct 09 07:15:45 OpenSUSE successfully initialized (OpenSUSE 3.0-13 30 Jan 2024)
Oct 09 07:15:45 UbuntuServer java[4218]: Oct 09 07:15:45 Initializing ProtocolHandler ("http://nio-8080")
Oct 09 07:15:45 UbuntuServer java[4218]: Oct 09 07:15:45 Server initialization in 12591 milliseconds
Oct 09 07:15:45 UbuntuServer java[4218]: Oct 09 07:15:45 Starting service (Catalina)
Oct 09 07:15:45 UbuntuServer java[4218]: Oct 09 07:15:45 Starting Coyote HTTP/1.1 Connector on localhost:8080
Oct 09 07:15:45 UbuntuServer java[4218]: Oct 09 07:15:45 Deploying web application directory /var/lib/tomcat10/webapps/ROOT
Oct 09 07:15:47 UbuntuServer java[4218]: Oct 09 07:15:47 At least one web app was scanned for TLDs. Enable debug logging for this logger for
Oct 09 07:15:47 UbuntuServer java[4218]: Oct 09 07:15:47 at least one TLD was not found.
Oct 09 07:15:47 UbuntuServer java[4218]: Oct 09 07:15:47 Starting ProtocolHandler ("http://nio-8080")
Oct 09 07:15:47 UbuntuServer java[4218]: Oct 09 07:15:47 Starting ProtocolHandler ("https://nio-8443")
```

Accedemos al archivo user.xml: `sudo nano /etc/tomcat9/tomcat-users.xml`. Una vez dentro del archivo, copia el siguiente código reemplazando `linuxhint` con tu nombre de usuario y `YourPasswordHere` con la contraseña a la que deseas acceder a Tomcat.

```
role rolename="admin"/>
role rolename="admin-gui"/>
role rolename="manager"/>
role rolename="manager-gui"/>
<user username="david" password="usuario" roles="admin,admin-gui,manager,manager-gui"/>
/tomcat-users>
```



Ahora, puedes acceder al siguiente enlace: http://Tu_IP:8080/

It works !

If you're seeing this page via a web browser, it means you've setup Tomcat successfully. Congratulations!

This is the default Tomcat home page. It can be found on the local filesystem at: `/var/lib/tomcat10/webapps/ROOT/index.html`

Tomcat veterans might be pleased to learn that this system instance of Tomcat is installed with `CATALINA_HOME` in `/usr/share/tomcat10` and `CATALINA_BASE` in `/var/lib/tomcat10`, following the rules from `/usr/share/doc/tomcat10-common/RUNNING.txt.gz`.

You might consider installing the following packages, if you haven't already done so:

tomcat10-docs: This package installs a web application that allows to browse the Tomcat 10 documentation locally. Once installed, you can access it by clicking [here](#).

tomcat10-examples: This package installs a web application that allows to access the Tomcat 10 Servlet and JSP examples. Once installed, you can access it by clicking [here](#).

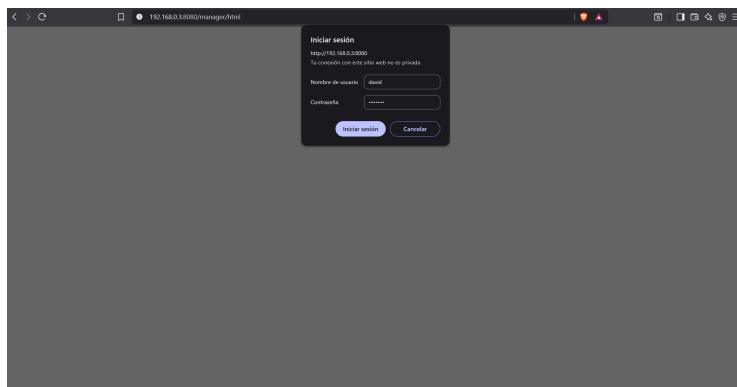
tomcat10-admin: This package installs two web applications that can help managing this Tomcat instance. Once installed, you can access the [manager webapp](#) and the [host-manager webapp](#).

NOTE: For security reasons, using the manager webapp is restricted to users with role "manager-gui". The host-manager webapp is restricted to users with role "admin-gui". Users are defined in `/etc/tomcat10/tomcat-users.xml`.

Instalemos el administrador web y host-manager de Tomcat ejecutando el siguiente comando: `sudo apt install tomcat9-admin`

```
david@UbuntuServerDavidArredondo:~$ sudo apt install tomcat10-admin
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following NEW packages will be installed:
  tomcat10-admin
0 upgraded, 1 newly installed, 0 to remove and 25 not upgraded.
Need to get 67.9 kB of archives.
After this operation, 326 kB of additional disk space will be used.
Get:1 http://es.archive.ubuntu.com/ubuntu/multiverse amd64 tomcat10-admin all 10.1.16-1 [67.9 kB]
Fetched 67.9 kB in 0s (322 kB/s)
Selecting previously unselected package tomcat10-admin.
Reading package lists...
Preparing to unpack .../tomcat10-admin_10.1.16-1_all.deb ...
Unpacking tomcat10-admin (10.1.16-1) ...
Setting up tomcat10-admin (10.1.16-1) ...
Scanning for broken packages...
Scanning linux images...
Running kernel seems to be up-to-date.
No services need to be restarted.
No containers need to be restarted.
No user sessions are running outdated binaries.
No VM guests are running outdated hypervisor (qemu) binaries on this host.
david@UbuntuServerDavidArredondo:~$
```

Acceda http://Tu_IP:8080/manager/html y escriba el nombre de usuario y la contraseña que escribió al editar el archivo /etc/tomcat9/tomcat-users.xml.



Ahora accedemos a http://Tu_IP:8080/host-manager/html para verificar el Administrador de host virtual de Tomcat; Escriba el nombre de usuario y la contraseña cuando se le solicite.

Agregamos el archivo , desplegamos.

Archivo WAR a desplegar
Seleccione archivo WAR a cargar <input type="button" value="Seleccionar archivo"/> hello.war <input type="button" value="Desplegar"/>

Nos metemos en la aplicación.

/hello	Ninguno especificado		true	Q	Arrancar	Parar	Recargar	Replegar
					Expirar sesiones	sin trabajar ≥ 30	minutos	

Vemos que está desplegada.

Hola desde Tomcat con JSP

[Ir al Servlet](#)

Despliegue con Maven

Instalación de Maven

Empezamos haciendo: sudo apt update.

```
[root@louis-OptiPlex-5090 ~]# sudo apt update
[sudo] password for david:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages were automatically installed and are no longer required:
  libcurl4-openssl-dev libcurl4-openssl-dev:i386 libcurl4-openssl-dev:amd64
Use 'apt autoremove' to remove them.
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
[root@louis-OptiPlex-5090 ~]#
```

Instalamos maven

Ponemos mvn —v.

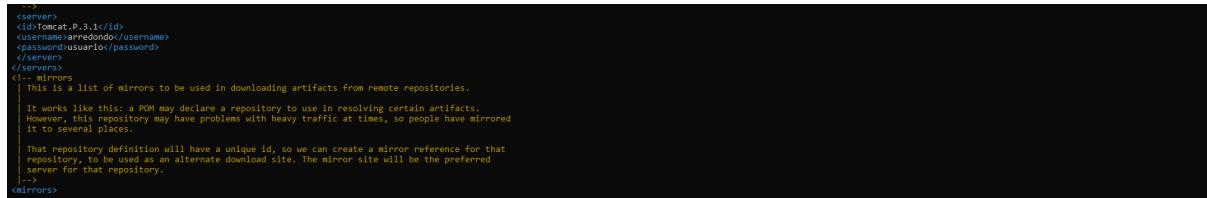
```
[root@arredondo ~]# mvn --v
Apache Maven 3.8.7
Maven home: /usr/share/maven
Java version: 11.0.28, vendor: Ubuntu, runtime: /usr/lib/jvm/java-11-openjdk-amd64
Default locale: en_US, platform encoding: UTF-8
OS name: "linux", version: "6.8.0-85-generic", arch: "amd64", family: "unix"
[INFO] [INFO] [INFO]
```

Nos metemos en el archivo sudo nano /etc/tomcat9/tomcat-users.xml y metemos otro usuario manager-script.



```
<role rolename="admin"/>
<role rolename="admin-gui"/>
<role rolename="manager-gui"/>
<role rolename="manager-script"/>
<user username="arredondo" password="usuari0" roles="manager-script"/>
<user username="david" password="usuari0" roles="admin,admin-gui,manager,manager-gui"/>
</tomcat-users>
```

Editar el archivo /etc/maven/settings.xml para indicarle a Maven, un identificador para el servidor sobre el que vamos a desplegar (no es más que un nombre, poned el nombre que consideréis), así como las credenciales. Todo esto se hará dentro del bloque servers del XML:



```
<!--
<server>
<id>arredondo</id>
<username>arredondo</username>
<password>usuari0</password>
</server>
</servers>
<!-- mirrors
This is a list of mirrors to be used in downloading artifacts from remote repositories.
It works like this: a POM may declare a repository to use in resolving certain artifacts.
However, this repository may have problems with heavy traffic at times, so people have mirrored
it to several places.
That repository definition will have a unique id, so we can create a mirror reference for that
repository, to be used as an alternate download site. The mirror site will be the preferred
server for that repository.
-->
<mirrors>
```

Nos clonamos el repositorio:

```
git clone https://github.com/cameronmcnz/rock-paper-scissors.git
```

Nos situamos dentro de él:

```
cd rock-paper-scissors
```

Y cambiamos de rama:

```
git checkout patch-1
```



```
[root@arredondo ~]# git clone https://github.com/cameronmcnz/rock-paper-scissors.git
Cloning into 'rock-paper-scissors'...
remote: Enumerating objects: 1144, done.
remote: Counting objects: 1080 (49/49), done.
remote: Compressing objects: 100% (49/49), done.
remote: Total 1144 (delta 46), reused 26 (delta 26), pack-reused 1095 (from 4)
Receiving objects: 100% (1144/1144), 29.18 MB | 10.20 MB/s, done.
remote: Resolving deltas: 100% (49/49), done.
[root@arredondo ~]# cd rock-paper-scissors
[root@arredondo rock-paper-scissors]# git checkout patch-1
branch 'patch-1' set up to track 'origin/patch-1'.
Switched to a new branch 'patch-1'.
[root@arredondo rock-paper-scissors]# ls
Dockerfile Dockerfile.automation index.html LabGuide-Protected.pdf pom.xml remote-vm.rdp Slides-Protected.pdf src sweet-day.html test_file.txt training-day.html
```

Nos metemos en el archivo pom.xml para modificarlo : sudo nano pom.xml

```
GNU nano 7.2
pom.xml
<?xml version="1.0" encoding="UTF-8"?>
<project xmlns="http://maven.apache.org/POM/4.0.0" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://maven.apache.org/POM/4.0.0 http://maven.apache.org/xsd/maven-4.0.0.xsd">
  <groupId>com.mcnz.rps.web</groupId>
  <artifactId>rock-paper-scissors</artifactId>
  <version>1.0</version>
  <packaging>war</packaging>
  <name>roshambo web application</name>
  <url>http://www.mcnz.com</url>
  <properties>
    <project.build.sourceEncoding>UTF-8</project.build.sourceEncoding>
    <maven.compiler.source>1.7</maven.compiler.source>
    <maven.compiler.target>1.7</maven.compiler.target>
  </properties>
  <dependencies>
    <dependency>
      <groupId>junit</groupId>
      <artifactId>junit</artifactId>
      <version>4.11</version>
      <scope>test</scope>
    </dependency>
  </dependencies>
  <build>
    <finalName>roshambo</finalName>
    <pluginManagement><!-- lock down plugins versions to avoid using Maven defaults (may be moved to parent pom) -->
      <plugins>
        <plugin>
          <artifactId>maven-clean-plugin</artifactId>
          <version>3.0.0</version>
        </plugin>
        <!-- See http://maven.apache.org/ref/current/maven-core/default-bindings.html#Plugin_bindings_for_war_packaging -->
        <plugin>
          <artifactId>maven-resources-plugin</artifactId>
          <version>3.0.2</version>
        </plugin>
        <plugin>
          <artifactId>maven-compiler-plugin</artifactId>
          <version>3.7.0</version>
        </plugin>
        <plugin>
          <artifactId>maven-surefire-plugin</artifactId>
          <version>3.0.0</version>
        </plugin>
        <plugin>
          <artifactId>maven-war-plugin</artifactId>
          <version>3.2.0</version>
        </plugin>
        <plugin>
          <artifactId>maven-install-plugin</artifactId>
          <version>3.0.2</version>
        </plugin>
      </plugins>
    </pluginManagement>
  </build>
  <!-- Read 66 lines -->
```

Añadimos el esto al pom 3. war-deploy # org.apache.tomcat.maven tomcat7-maven-plugin
2.2 http://localhost:8080/manager/text # Tomcat.P.3.1 # /myapp #

```
<build>
  <finalName>war-deploy</finalName>
  <pluginManagement><!-- lock down plugins versions to avoid using Maven defaults (may be moved to parent pom) -->
    <plugins>
      <plugin>
        <groupId>org.apache.tomcat.maven</groupId>
        <artifactId>tomcat7-maven-plugin</artifactId>
        <version>2.2</version>
        <configuration>
          <uri>http://localhost:8080/manager/text</uri>
          <contextPath>P.1.1</contextPath>
          <path>/myapp</path>
        </configuration>
      </plugin>
      <plugin>
        <artifactId>maven-clean-plugin</artifactId>
        <version>3.0.0</version>
      </plugin>
      <!-- See http://maven.apache.org/ref/current/maven-core/default-bindings.html#Plugin_bindings_for_war_packaging -->
      <plugin>
        <artifactId>maven-resources-plugin</artifactId>
        <version>3.0.2</version>
      </plugin>
      <plugin>
        <artifactId>maven-compiler-plugin</artifactId>
        <version>3.7.0</version>
      </plugin>
      <plugin>
        <artifactId>maven-surefire-plugin</artifactId>
        <version>3.0.0</version>
      </plugin>
    </plugins>
  </pluginManagement>
  <!-- Read 66 lines -->
```

Compilamos con mvn package

```
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-mapping/1.4.9/maven-mapping-1.4.9.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.1.0/plexus-utils-3.1.0.jar
Downloaded from central: https://repo.maven.apache.org/maven2/org/maven/plugins/maven-war-plugin/2.2/maven-war-plugin-2.2.jar
Downloaded from central: https://repo.maven.apache.org/maven2/com/thoughtworks/xstream/xstream/1.4.9/xstream-1.4.9.jar (549 kB at 1.8 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/com/thoughtworks/xstream/xstream-1.4.9.jar (549 kB at 1.8 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/xmlpull/xmlpull/1.1.3.1/xmlpull-1.1.3.1.jar (7.2 kB at 23 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/apache/maven/shared/maven-mapping/3.0.0/maven-mapping-3.0.0.jar (11 kB at 28 kB/s)
Downloaded from central: https://repo.maven.apache.org/maven2/org/codehaus/plexus/plexus-utils/3.1.0/plexus-utils-3.1.0.jar (262 kB at 662 kB/s)
[INFO] 1 package imported
[INFO] Assembling webapp [roshambo] in [/home/david/rock-paper-scissors/target/war-deploy]
[INFO] Processing war project
[INFO] Using build number 1 [file:///home/david/rock-paper-scissors/src/main/webapp]
[INFO] Webapp assembled in [21 msecs]
[INFO] Building war: [/home/david/rock-paper-scissors/target/war-deploy.war]
[INFO] 
[INFO] BUILD SUCCESS
[INFO] 
[INFO] Total time: 13.111 s
[INFO] Finished at: 2025-10-10T08:03:24Z
[INFO] 
[INFO] -----
[INFO] 
[INFO] [root@UbuntuServerDavid@reredondo:~/rock-paper-scissors$]
```

Ponemos mvn tomcat7:deploy este es el ultimo que tenemos que poner

```
Downloaded From central: https://repo.maven.apache.org/maven2/org/apache/maven/maven-settings/2.2.1/maven-settings-2.2.1.jar (49 kB at 22 kB/s)
Downloaded From central: https://repo.maven.apache.org/maven2/org/slf4j/jcl-over-slf4j/1.7.5/jcl-over-slf4j-1.7.5.jar (17 kB at 7.3 kB/s)
[INFO] Deploying war to http://localhost:8080/manager/text/deploy?path=roshambo
[INFO] Uploading: http://localhost:8080/manager/text/deploy?path=roshambo
uploaded: http://localhost:8080/manager/text/deploy?path=roshambo (11 KB)

[INFO] tomcatManager status code:200, ReasonPhrase:
[INFO] FAIL - Invalid context path [roshambo] was specified
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 12.451 s
[INFO] Finished at: 2025-10-10T08:07:28Z
[INFO] -----
[david@UbuntuServerDavidArredondo:~/rock-paper-scissors$
```

mvn tomcat7:redploy

```
[INFO] Building war: /home/david/rock-paper-scissors/target/war-deploy.war
[INFO] <<< tomcat7-maven-plugin:2.2:redploy (default-cli) < package @ roshambo <<<
[INFO]
[INFO] --- tomcat7-maven-plugin:2.2:redploy (default-cli) @ roshambo ---
[INFO] Deploying war to http://localhost:8080/manager/roshambo
[INFO] Uploading: http://localhost:8080/manager/text/deploy?path=roshambo&update=true
uploaded: http://localhost:8080/manager/text/deploy?path=roshambo&update=true (11 KB at 10632.8 kB/sec)

[INFO] tomcatManager status code:200, ReasonPhrase:
[INFO] FAIL - Invalid context path [roshambo] was specified
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 1.352 s
[INFO] Finished at: 2025-10-10T08:08:17Z
[INFO] -----
[david@UbuntuServerDavidArredondo:~/rock-paper-scissors$
```

mvn tomcat7:undeploy borra lo que tenemos hecho

```
[INFO] tomcatManager status code:200, ReasonPhrase:
[INFO] FAIL - Invalid context path [roshambo] was specified
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 1.926 s
[INFO] Finished at: 2025-10-10T08:08:17Z
[INFO] -----
[david@UbuntuServerDavidArredondo:~/rock-paper-scissors$ mvn tomcat7:undeploy
[INFO] Scanning for projects...
[INFO]
[INFO] Building roshambo web application 1.0
[INFO]   [ var ]
[INFO]
[INFO] --- tomcat7-maven-plugin:2.2:undeploy (default-cli) @ roshambo ---
[INFO] Undeploying application at http://localhost:8080/manager/roshambo
[INFO] FAIL - Invalid context path [roshambo] was specified
[INFO] BUILD SUCCESS
[INFO]
[INFO] Total time: 0.932 s
[INFO] Finished at: 2025-10-10T08:08:39Z
[INFO] -----
[david@UbuntuServerDavidArredondo:~/rock-paper-scissors$
```

Aquí podemos ver que /David está correctamente desplegado.

Aplicaciones						
Ruta	Versión	Nombre a Mostrar	Ejecutándose	Sesiones	Comandos	
/	Ninguno especificado		true	0	Arrancar Parar Recargar Replegar Expirar sesiones sin trabajar ≥ 30 minutos	
/david	Ninguno especificado	Roshambo Web Application	true	0	Arrancar Parar Recargar Replegar Expirar sesiones sin trabajar ≥ 30 minutos	
/hello	Ninguno especificado		true	0	Arrancar Parar Recargar Replegar Expirar sesiones sin trabajar ≥ 30 minutos	
/host-manager	Ninguno especificado	Tomcat Host Manager Application	true	0	Arrancar Parar Recargar Replegar Expirar sesiones sin trabajar ≥ 30 minutos	
/manager	Ninguno especificado	Tomcat Manager Application	true	1	Arrancar Parar Recargar Replegar Expirar sesiones sin trabajar ≥ 30 minutos	

Práctica 3.2: Despliegue de aplicaciones con Node Express

Nos aseguramos que todo esté actualizado: sudo apt update && sudo apt upgrade -y

```
Unpacking landscape-common (24.02~Ubuntu05.0) over (24.02~Ubuntu05.3) ...
Preparing to unpack .../99-software-properties-common_0.99.49.3_all.deb ...
Unpacking software-properties-common (0.99.49.3) ...
Preparing to unpack .../10-software-properties-titles_0.99.49.3_all.deb ...
Unpacking python3-software-properties (0.99.49.3) over (0.99.49.2) ...
Preparing to unpack .../11-cloud-init_75.2~Ubuntu01~24.04.1_all.deb ...
Unpacking cloud-init (75.2~Ubuntu01~24.04.1) over (75.1.4~Ubuntu0~24.04.1) ...
Setting up powermgmt-base (1.3~Ubuntu0~1)
Setting up cloud-init (75.2~Ubuntu01~24.04.1)
Installing new version of config file /etc/cloud/templates/sources.list.debian.deb822.tmpl ...
getty-pam (2:3.1-1ubuntu1) over (2:3.1-1ubuntu1~24.04.1) ...
Setting up libhwupd2-amd64 (1.0.31~Ubuntu01~24.04.1) ...
Setting up systemd-dev (255.4~Ubuntu0~1)
Setting up landscape-common (24.02~Ubuntu05.0) ...
Setting up software-properties-common (0.99.49.3) ...
Setting up libsystemd-shared:amd64 (255.4~Ubuntu0~1) ...
Setting up bind9-host (12.18.39~Ubuntu0~24.04.1) ...
Setting up libsystemd (255.4~Ubuntu0~1)
Setting up software-properties-common (0.99.49.3) ...
Setting up systemd-timesyncd (255.4~Ubuntu0~1) ...
Setting up udev (255.4~Ubuntu0~1) ...
Setting up libsystemd (255.4~Ubuntu0~1) ...
Setting up libbind9-dnsutils (1.9.18.39~Ubuntu0~24.04.1) ...
Setting up fwupd (1.9.31~Ubuntu0~24.04.1)
Powermgmt-service is not a valid or a static unit not running, not starting it.
Modem-refresh.service is a disabled or a static unit not running, not starting it.
Modem-resolved.service is a disabled or a static unit not running, not starting it.
Setting up systemd-resolved (255.4~Ubuntu0~1) ...
Setting up systemd-sysv (255.4~Ubuntu0~1)
powermgmt-service is not a valid or a static unit not running, not starting it.
Setting up libpam-systemd:amd64 (255.4~Ubuntu0~1) ...
Setting up liblens-systemd:amd64 (255.4~Ubuntu0~1) ...
Processing triggers for initramfs-tools (0.132-22.5) ...
update-initramfs: Generating /boot/initrd.img-6.8.0-65-generic
Processing triggers for libc-bin (2.39~Ubuntu0~6) ...
Processing triggers for rsyslog (8.33.10~Ubuntu0~1) ...
Processing triggers for libsystemd-daemon (24.04.1) ...
Processing triggers for dbus (1.14.10~Ubuntu0~1) ...
Processing triggers for install-info (7.1.3~build2) ...
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
systemctl restart multipathd.service packagekit.service polkit.service ssh.service udisks2.service upower.service

Service restarts being deferred:
systemctl restart ModemManager.service
/etc/needrestart/restart_dbus.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
david @ session #10: sshd[141]
david @ session #11: login[1051]
david @ session #20: apt[6208]; sshd[6208]
david @ user manager service: systemd[1265]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
```

descargamos el script oficial del repositorio de **NodeSource**: curl -fsSL https://deb.nodesource.com/setup_lts.x | sudo -E bash -

```
curl 0-0@10:04:57 - installing pre-requisites
#1 http://security.ubuntu.com/ubuntu/nobie-security InRelease
#2 http://es.archive.ubuntu.com/ubuntu/nobie InRelease
#3 http://es.archive.ubuntu.com/ubuntu/nobie-updates InRelease
#4 http://es.archive.ubuntu.com/ubuntu/nobie-backports InRelease
Reading package lists... Done
Building dependency tree... Done
Reading status information... Done
-a-certificates is already the newest version (20240203).
accounts-engine is already the newest version (1.1.1).
curl is already the newest version (8.5.0~Ubuntu0~6).
curl set to manually installed.
gnupg is already the newest version (2.4.4~Ubuntu17.3).
gnupg-agent is already the newest version (2.3.0~Ubuntu17.3).
The following NEW packages will be installed:
apt-transport-https
0 upgraded, 0 newly installed, 0 to remove and 1 not upgraded.
Need to get 3,970 B of archives.
After this operation, 36.9 kB of additional disk space will be used.
get https://deb.nodesource.com/ubuntu/nobie-updates/universe amd64 apt-transport-https all 2.8.3 [3,970 B]
authenticated in 9s (38.7 kB/s)
Selecting previously unsselected package apt-transport-https.
Reading database... 91005 files and directories currently installed.
Preparing to unpack .../apt-transport-https_2.8.3_all.deb ...
Unpacking apt-transport-https (2.8.3) ...
Setting up apt-transport-https (2.8.3) ...
Scanning processes...
Scanning candidates...
Scanning linux images...

Running kernel seems to be up-to-date.

Restarting services...
Service restarts being deferred:
/etc/needrestart/restart_dbus.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service

No containers need to be restarted.

User sessions running outdated binaries:
david @ session #10: sshd[141]
david @ session #21: login[1051]
david @ session #20: sshd[6208]
david @ user manager service: systemd[1265]

No VM guests are running outdated hypervisor (qemu) binaries on this host.
#1 http://security.ubuntu.com/ubuntu/nobie-security InRelease
#2 http://es.archive.ubuntu.com/ubuntu/nobie InRelease [12.1 kB]
#3 http://es.archive.ubuntu.com/ubuntu/nobie-updates InRelease
#4 https://deb.nodesource.com/node_22.x nodistro/main amd64 Packages [8,142 B]
#5 http://es.archive.ubuntu.com/ubuntu/nobie-backports InRelease
Fetched 20.3 kB in 0s (49.8 kB/s)
Reading package lists... Done
025-10-09 10:05:03 - Node.js NPM proxy configured successfully.
025-10-09 10:05:03 - To install Node.js, run: apt-get install nodejs -y
025-10-09 10:05:03 - You can use N|solid Runtime as a node.js alternative
025-10-09 10:05:03 - To install N|solid Runtime, run: apt-get install nsolid -y

david@UbuntuServer:~/Desktop$
```

Nos descargamos [Node.js](#) :sudo apt install -y nodejs.

```
[david@UbuntuServer:~]# sudo apt install -y nodejs
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following packages will be installed:
  nodejs
  0 upgraded, 1 newly installed, 0 to remove and 1 not upgraded.
Need to get 37.5 MB of archives.
After this operation, 237 MB of additional disk space will be used.
Get:1 https://deb.nodesource.com/node_22.x nodistro/main amd64 nodejs amd64 22.20.0-1nodesource1 [37.5 MB]
Fetched 37.5 MB in 0s (1,000 kB/s)
Selecting previously unselected package nodejs.
(Reading database ... 91009 files and directories currently installed.)
Preparing to unpack .../nodejs_22.20.0-1nodesource1_amd64.deb ...
Unpacking nodejs (22.20.0-1nodesource1) ...
Getting up nodejs (22.20.0-1nodesource1) ...
Processing triggers for man-db (2.12.0-4build2) ...
Scanning processes...
Scanning candidates...
Scanning linux images...
Running kernel seems to be up-to-date.
Restarting services...
Service restarts being deferred:
/etc/needrestart/restart.d/dbus.service
systemctl restart systemd-logind.service
systemctl restart unattended-upgrades.service
No containers need to be restarted.
User sessions running outdated binaries:
david @ session #10: sshd[1541]
david @ session #2: login[1051]
david @ session #6: sshd[208]
david @ user manager service: systemd[1265]
No VM guests are running outdated hypervisor (qemu) binaries on this host.
[david@UbuntuServer:~]#
```

Comprobamos que está todo bien: node -v y npm -v.

```
[david@UbuntuServer:~]# node -v
v22.20.0
[david@UbuntuServer:~]# npm -v
10.9.3
[david@UbuntuServer:~]
```

Clonar el repositorio a nuestra máquina: git clone <https://github.com/contentful/the-example-app.nodejs.git>

Nos movemos a la carpeta: cd the-example-app.nodejs

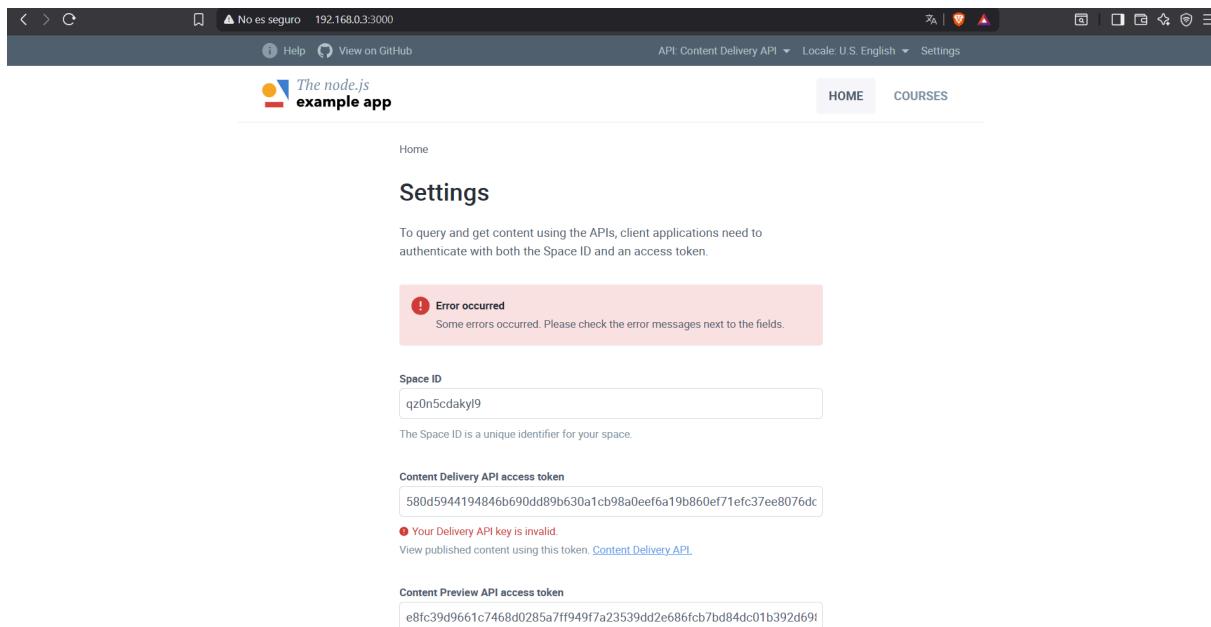
Instalamos las librerías necesarias: npm install

```
[david@UbuntuServer:~/the-example-app.nodejs]# git clone https://github.com/contentful/the-example-app.nodejs.git
Cloning into 'the-example-app.nodejs'...
remote: Enumerating objects: 2935, done.
remote: Counting objects: 100% (2935/2935), done.
remote: Compressing objects: 100% (1519/1519), done.
remote: Total 2935 (delta 12), reused 0 (delta 0), pack-reused 2916 (from 2)
Receiving objects: 100% (2935/2935), 6.81 MiB | 8.68 MiB/s, done.
Resolving deltas: 100% (1519/1519), done.
[david@UbuntuServer:~/the-example-app.nodejs]# cd the-example-app.nodejs
[david@UbuntuServer:~/the-example-app.nodejs]# npm install
npm warn old lockfile
npm warn Using the package-lock.json file was created with an old version of npm.
npm warn old lockfile so supplemental metadata must be fetched from the registry.
npm warn old lockfile
npm warn old lockfile This is a one-time fix-up, please be patient...
npm warn old lockfile
npm warn deprecated wtc-hr-time@0.1: Use your platform's native performance.now() and performance.timeOrigin.
npm warn deprecated url@0.10.6: Please see https://github.com/lydell/url#deprecated. Some browser versions may use Math.random() in certain circumstances, which is known to be problematic. See https://v8.dev/blog/math-random for details.
npm warn deprecated supertest@6.0.0: Please upgrade to supertest@v7.1.3, see release notes at https://github.com/forwardemail/supertest/releases/tag/v7.1.3 - maintenance is supported by Forward Email @ https://forwardemail.net
npm warn deprecated source-map-uri@0.4.0: See https://github.com/lydell/source-map-uri#deprecated
npm warn deprecated set-value@0.5.0: Critical bug fixed in v3.0.1, please upgrade to the latest version.
npm warn deprecated set-value@2.0.0: Relying on a single global instance of a Map is no longer supported. Please update to mkdirp 1.x. Note that the API surface has changed to use Promises in 1.x.
npm warn deprecated resolve-url@0.2.1: https://github.com/lydell/resolve-url#deprecated
npm warn deprecated request-promise-native@0.6.1: The request-promise-native has been deprecated because it extends the now deprecated request package, see https://github.com/request/request/issues/3142
npm warn deprecated source-map-resolve@0.2.1: See https://github.com/lydell/source-map-resolve#deprecated
npm warn deprecated request@2.88.2: request has been deprecated, see https://github.com/request/request#issues/3142
npm warn deprecated superagent@3.9.2: Please upgrade to superagent@v10.2.2+, see release notes at https://github.com/forwardemail/superagent/releases/tag/v10.2.2 - maintenance is supported by Forward Email @ https://forwardemail.net
npm warn deprecated left-pad@1.2.0: use String.prototype.padStart()
npm warn deprecated is-dataDescriptor@0.1.4: Please upgrade to v0.1.7
npm warn deprecated is-accessorDescriptor@0.1.0: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if you want a good and tested way to coalesce async requests by a key value, which is much more comprehensive and powerful.
npm warn deprecated is-accessorDescriptor@0.1.7: This module is not supported, and leaks memory. Do not use it. Check out lru-cache if you want a good and tested way to coalesce async requests by a key value, which is much more comprehensive and powerful.
npm warn deprecated hr-validate@0.1.0: this library is no longer supported
npm warn deprecated glob@1.2: Glob versions prior to v9 are no longer supported
npm warn deprecated formidable@1.1.1: Please upgrade to latest, formidable@v2 or formidable@v3! Check these notes: https://bit.ly/2ZEqIau
npm warn deprecated done-cepeng@0.1.0: Use the platform's native DOMException instead
npm warn deprecated mime@1.4.1: Please upgrade to mime@1.5.0, which implements the new methods instead
npm warn deprecated content-type-parser@0.0.2: Use whatwg-mimetype instead
npm warn deprecated circular-json@ 3.3: CircularJSON is in maintenance only, fisted is its successor.
npm warn deprecated is-dataDescriptor@0.1.0: Please upgrade to v0.1.7
npm warn deprecated is-dataDescriptor@0.1.0: Please upgrade to v0.1.7
npm warn deprecated is-dataDescriptor@0.4.3: Critical bug fixed in v1.0.1, please upgrade to the latest version.
npm warn deprecated is-accessorDescriptor@0.1.0: Please upgrade to v1.0.1
npm warn deprecated is-dataDescriptor@0.0.1: Please upgrade to v1.0.1
npm warn deprecated is-dataDescriptor@0.1.4: Please upgrade to v0.1.5
npm warn deprecated is-accessorDescriptor@0.1.6: Please upgrade to v0.1.7
npm warn deprecated is-dataDescriptor@0.1.0: Please upgrade to v1.0.1
npm warn deprecated is-dataDescriptor@0.0.0: Please upgrade to v1.0.1
npm warn deprecated is-accessorDescriptor@0.1.0: Please upgrade to v1.0.1
npm warn deprecated is-dataDescriptor@0.0.1: Please upgrade to v1.0.1
npm warn deprecated debug@3.2.6: Debug versions >3.2.6 <3.3.1 have a low-severity ReDoS regression when used in a Node.js environment. It is recommended you upgrade to 3.2.7 or 4.3.1. (https://github.com/visionmedia/debug/issues/797)
```

Ponemos el comando para arrancarlo :npm run start:dev

```
[dev@laptop:~/verdadero/nodemon]$ npm run start:dev
> example-contentful-theexampleApp.js@0.0.0 start:dev
node ./bin/www
listening on http://localhost:3000
[HTTP2] 192.168.0.3:3000
GET /styles/main-style.css 200 5.043 ms - 34765
GET /images/the-example-app-logo-nodejs.svg 200 6.396 ms - 12556
GET /images/contentful-logo.svg 200 7.414 ms - 4969
GET /fonts/roboto-medium-webfont.woff2 200 1.054 ms - 1614
GET /scripts/index.js 200 4.977 ms - 64309
GET /images/icon-dotnet.svg 200 5.820 ms - 21475
GET /images/icon.php.svg 200 7.459 ms - 2448
GET /images/icon-nodejs.svg 200 7.459 ms - 1521
GET /images/icon-python.svg 200 7.729 ms - 1370
GET /images/icon-swift.svg 200 6.679 ms - 1855
GET /images/icon-android.svg 200 1.169 ms - 1694
GET /icons/icons.svg 200 1.538 ms - 5336
GET /fonts/roboto-regular-webfont.woff2 200 1.645 ms - 19748
GET /fonts/roboto-light-webfont.woff2 200 1.898 ms - 19804
GET /fonts/roboto-medium-webfont.woff2 200 2.381 ms - 19824
GET /favicon-32x32.png 200 1.129 ms - 774
```

Al meter esta dirección <http://192.168.0.3:3000> aparecerá esta página



Cuestiones

Cuando ejecutáis el comando npm run start:dev, lo que estáis haciendo es ejecutar un script:

- ¿Dónde podemos ver que script se está ejecutando?

Lo que ocurre es que **NPM busca un script llamado start:dev dentro de tu package.json** y ejecuta el comando que esté definido allí.

Abre el archivo package.json de tu proyecto.

Ahí hay una sección llamada "scripts"

- ¿Qué comando está ejecutando?

Nodemon es un programa que **reinicia automáticamente tu app Node** cada vez que detecta cambios en los archivos .js.

Si en vez de nodemon fuera node, simplemente ejecutaría node app.js.

Práctica 3.3: Despliegue de una aplicación "clusterizada" con Node Express

Iniciarizar package.json (si no lo hiciste antes) con: npm init -y

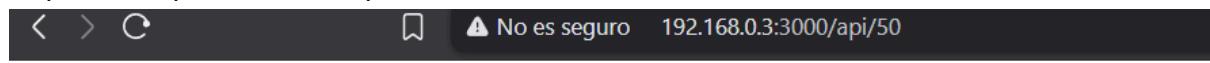
```
pi@elabuntu01:~$ cd /the-example-app-nodejs$ npm init -y
node@v10.15.3 ~ % cd /the-example-app-nodejs$ package.json
{
  "name": "example-contentful-theexampleapp",
  "version": "0.0.0",
  "private": true,
  "scripts": {
    "start:watch": "nodeon ./bin/www --ignore public/",
    "start:dev": "node ./bin/www",
    "debug": "node debug ./bin/www",
    "start": "NODE_ENV=production node ./bin/www",
    "lint": "eslint ./app.js routes",
    "format": "eslint --fix",
    "test:e2e": "npm run test:unit && npm run test:integration && npm run test:e2e",
    "test:e2e": "node test/run-e2e-test.js",
    "test:e2e:dev": "node test/run-e2e-test.js --dev",
    "test:integration": "jest test/integration",
    "test:integration:watch": "jest test/integration --watch",
    "test:unit": "jest test/unit",
    "test:unit:watch": "jest test/unit --watch"
  },
  "engines": {
    "node": ">8.9.3"
  },
  "dependencies": {
    "body-parser": "^1.18.2",
    "contentful": "^6.0.0",
    "express": "^4.14.3",
    "dotenv": "^5.0.0",
    "execa": "^0.9.0",
    "express": "^4.16.2",
    "joi": "^11.0",
    "lodash": "^4.17.5",
    "marked": "^0.3.16",
    "morgan": "^1.9.1",
    "pug": "^2.0.0-beta0"
  },
  "devDependencies": {
    "nodemon": "^1.15.0-re-27",
    "cookie": "^0.3.1"
  }
}
```

```
pi@elabuntu01:~$ cd /the-example-app-nodejs$ npm install
added 32 packages, removed 6 packages, changed 36 packages, and audited 897 packages in 9s
4 packages are looking for funding
  run `npm fund` for details
88 vulnerabilities (11 low, 39 moderate, 37 high, 21 critical)
  To address issues that do not require attention, run:
    npm audit fix
  To address all issues (including breaking changes), run:
    npm audit fix --force
Run `npm audit` for details.
pi@elabuntu01:~$ cd /the-example-app-nodejs$ node app.js
pi@elabuntu01:~$
```

Para comprobarlo, podéis acceder a <http://IP-maq-virtual:3000>



<http://IP maq-virtual:3000/api/50>



Desplegada e iniciada la aplicación, accedé a la ruta
http://IP-maq-virtual:3000/api/5000000000.



Modificamos de nuevo el [app.js](#), para crear varios cluster y así reducir el tiempo drásticamente

```
#!/usr/bin/env node
const express = require('express');
const port = 3000;
const cluster = require('cluster');
const totalCPUs = require('os').cpus().length;
if (cluster.isMaster) {
    console.log(`Number of CPUs is ${totalCPUs}`);
    console.log(`Worker ${process.pid} is running`);
    // Fork workers
    for (let i = 0; i < totalCPUs; i++) {
        cluster.fork();
    }
    cluster.on('exit', (worker, code, signal) => {
        console.log(`Worker ${worker.process.pid} died`);
        console.log(`Worker ${worker.id} fork another worker`);
    });
} else {
    const app = express();
    console.log(`Worker ${process.pid} started`);
    app.get('/', (req, res) => {
        res.end('Hello World!');
    });
    app.get('/api/:n', function (req, res) {
        let n = parseInt(req.params.n);
        if (n > 500000000) n = 500000000;
        for (let i = 0; i < n; i++) {
            count += i;
        }
        res.send(`Final count is ${count}`);
    });
    app.listen(port, () => {
        console.log(`App listening on port ${port}`);
    });
}
```

Aplicamos node [app.js](#) y vemos que va más rápido

```
david@UbuntuServerDavidArredondo:~/the-example-app$ node app.js
Number of CPUs is 5
Master 14082 is running
worker 14092 started
worker 14091 started
worker 14090 started
worker 14089 started
app listening on port 3000
worker 14093 started
worker 14094 started
worker 14095 started
worker 14096 started
app listening on port 3000
app listening on port 3000
app listening on port 3000
```

Instalamos el loadtest con :npm install -g loadtest.

```
david@UbuntuServerDavidArredondo:~$ sudo npm install -g npm@11.6.2
removed 27 packages, and changed 77 packages in 4s
8 packages are looking for funding
  run `npm fund` for details
david@UbuntuServerDavidArredondo:~$ sudo npm install -g loadtest
npm warn deprecated yau@0.0.6: Package no longer supported. Contact Support at https://www.npmjs.com/support for more info.
changed 31 packages in 1s
  package is looking for funding
  run `npm fund` for details
david@UbuntuServerDavidArredondo:~$
```

Mientras ejecutamos la aplicación, en otro terminal realizamos la siguiente prueba de carga:

```
Last login: Thu Oct 9 09:55:21 2025 From 192.168.0.18
david@UbuntuServerDavidArredondo:~$ loadtest http://localhost:3000/api/5000000 -n 1000 -c 100
(node:14420) [DEP0060] DeprecationWarning: The 'util._extend' API is deprecated. Please use Object.assign() instead.
(Use 'node --trace-deprecation ...' to show where the warning was created)
(node:14421) [DEP0060] DeprecationWarning: The 'util._extend' API is deprecated. Please use Object.assign() instead.
(Use 'node --trace-deprecation ...' to show where the warning was created)
(node:14422) [DEP0060] DeprecationWarning: The 'util._extend' API is deprecated. Please use Object.assign() instead.
(Use 'node --trace-deprecation ...' to show where the warning was created)
(node:14423) [DEP0060] DeprecationWarning: The 'util._extend' API is deprecated. Please use Object.assign() instead.
(Use 'node --trace-deprecation ...' to show where the warning was created)
Target URL: http://localhost:3000/api/5000000
Max requests: 1000
Concurrent clients: 300
Running on cores: 3
Agent: none
Completed requests: 1000
Total errors: 0
Total time: 1.2 s
Mean latency: 332.5 ms
Effective rps: 833
Percentage of requests served within a certain time
 50%   153 ms
 90%   795 ms
 95%   838 ms
 99%   866 ms
100%   879 ms (longest request)
```

Para usar PM2, primero instalamos globalmente en nuestra Debian:

```
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ sudo npm install pm2 -g
added 133 packages in 5s
3 packages are looking for funding
  run 'npm fund' for details
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$
```

Vamos a utilizarlo con nuestra primera aplicación, la que no estaba "clusterizada" en el código. Para ello ejecutaremos el siguiente comando: pm2 start app.js -i 0

```
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 start app.js -i 0
-----
[PM2] Spawning PM2 daemon with pm2_home=/home/david/.pm2
[PM2] PM2 Successfully daemonized
[PM2] Starting /home/david/the-example-app.nodejs/app.js in cluster_mode (0 instance)
[PM2] Done.



| <b>id</b> | <b>name</b> | <b>namespace</b> | <b>version</b> | <b>mode</b> | <b>pid</b> | <b>uptime</b> | <b> </b> | <b>status</b> | <b>cpu</b> | <b>mem</b> | <b>user</b> | <b>watching</b> |
|-----------|-------------|------------------|----------------|-------------|------------|---------------|----------|---------------|------------|------------|-------------|-----------------|
| 0         | app         | default          | 0.0.0          | cluster     | 14563      | 0s            | 0        | online        | 0%         | 65.2mb     | david       | disabled        |
| 1         | app         | default          | 0.0.0          | cluster     | 14570      | 0s            | 0        | online        | 0%         | 62.3mb     | david       | disabled        |
| 2         | app         | default          | 0.0.0          | cluster     | 14577      | 0s            | 0        | online        | 0%         | 60.1mb     | david       | disabled        |
| 3         | app         | default          | 0.0.0          | cluster     | 14584      | 0s            | 0        | online        | 0%         | 57.6mb     | david       | disabled        |
| 4         | app         | default          | 0.0.0          | cluster     | 14595      | 0s            | 0        | online        | 0%         | 54.7mb     | david       | disabled        |


david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$
```

Podemos detener la aplicación con el siguiente comando: pm2 stop [app.js](#)

```
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 stop app.js
[PM2] Applying action stopProcessId on app [app.js](ids: [ 0, 1, 2, 3, 4 ])
[PM2] [app](0) 
[PM2] [app](1) 
[PM2] [app](2) 
[PM2] [app](3) 
[PM2] [app](4) 


| <b>id</b> | <b>name</b> | <b>namespace</b> | <b>version</b> | <b>mode</b> | <b>pid</b> | <b>uptime</b> | <b> </b> | <b>status</b> | <b>cpu</b> | <b>mem</b> | <b>user</b> | <b>watching</b> |
|-----------|-------------|------------------|----------------|-------------|------------|---------------|----------|---------------|------------|------------|-------------|-----------------|
| 0         | app         | default          | 0.0.0          | cluster     | 0          | 0             | 0        | stopped       | 0%         | 0b         | david       | disabled        |
| 1         | app         | default          | 0.0.0          | cluster     | 0          | 0             | 0        | stopped       | 0%         | 0b         | david       | disabled        |
| 2         | app         | default          | 0.0.0          | cluster     | 0          | 0             | 0        | stopped       | 0%         | 0b         | david       | disabled        |
| 3         | app         | default          | 0.0.0          | cluster     | 0          | 0             | 0        | stopped       | 0%         | 0b         | david       | disabled        |
| 4         | app         | default          | 0.0.0          | cluster     | 0          | 0             | 0        | stopped       | 0%         | 0b         | david       | disabled        |


david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$
```

En vez de tener que pasar siempre las configuraciones cuando se ejecuta la aplicación con pm2 start app.js -i 0 este comando arranca de nuevo.

```
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 start app.js
[PM2] Applying action restartProcessId on app [app](ids: [ 0, 1, 2, 3, 4 ])
[PM2] [app](0) 
[PM2] [app](1) 
[PM2] [app](2) 
[PM2] [app](3) 
[PM2] [app](4) 
[PM2] Process successfully started


| <b>id</b> | <b>name</b> | <b>namespace</b> | <b>version</b> | <b>mode</b> | <b>pid</b> | <b>uptime</b> | <b> </b> | <b>status</b> | <b>cpu</b> | <b>mem</b> | <b>user</b> | <b>watching</b> |
|-----------|-------------|------------------|----------------|-------------|------------|---------------|----------|---------------|------------|------------|-------------|-----------------|
| 0         | app         | default          | 0.0.0          | cluster     | 14660      | 0s            | 0        | online        | 0%         | 68.4mb     | david       | disabled        |
| 1         | app         | default          | 0.0.0          | cluster     | 14661      | 0s            | 0        | online        | 0%         | 59.4mb     | david       | disabled        |
| 2         | app         | default          | 0.0.0          | cluster     | 14674      | 0s            | 0        | online        | 0%         | 55.8mb     | david       | disabled        |
| 3         | app         | default          | 0.0.0          | cluster     | 14675      | 0s            | 0        | online        | 0%         | 54.8mb     | david       | disabled        |
| 4         | app         | default          | 0.0.0          | cluster     | 14688      | 0s            | 0        | online        | 0%         | 47.3mb     | david       | disabled        |


david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$
```

Generamos el archivo con el comando: pm2 ecosystem.

```
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 ecosystem
file /home/david/the-example-app.nodejs/ecosystem.config.js generated
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$
```

necesitamos modificarlo como se muestra a continuación: sudo nano ecosystem.config.js

```
module.exports = {
  apps: [
    {
      name: "app",
      script: "app.js",
      instances: 0,
      exec_mode: "cluster",
    },
  ],
};
```

Ahora podemos ejecutar la aplicación con: pm2 start ecosystem.config.js

```
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 start app.js
[PM2] Applying action restartProcessId on app [app](ids: [ 0, 1, 2, 3, 4 ])
[PM2] [app](0) []
[PM2] [app](1) []
[PM2] [app](2) []
[PM2] [app](3) []
[PM2] [app](4) []
[PM2] Process successfully started


| id | name | namespace | version | mode    | pid   | uptime |   | status | cpu | mem    | user  | watching |
|----|------|-----------|---------|---------|-------|--------|---|--------|-----|--------|-------|----------|
| 0  | app  | default   | 0.0.0   | cluster | 14660 | 0s     | 0 | online | 0%  | 60.4mb | david | disabled |
| 1  | app  | default   | 0.0.0   | cluster | 14661 | 0s     | 0 | online | 0%  | 59.1mb | david | disabled |
| 2  | app  | default   | 0.0.0   | cluster | 14674 | 0s     | 0 | online | 0%  | 55.8mb | david | disabled |
| 3  | app  | default   | 0.0.0   | cluster | 14675 | 0s     | 0 | online | 0%  | 54.8mb | david | disabled |
| 4  | app  | default   | 0.0.0   | cluster | 14688 | 0s     | 0 | online | 0%  | 47.3mb | david | disabled |


david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 ecosystem
file /home/david/the-example-app.nodejs/ecosystem.config.js generated
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ sudo nano ecosystem.config.js
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 start ecosystem.config.js
[PM2] Applying action restartProcessId on app [app](ids: [ 0, 1, 2, 3, 4 ])
[PM2] [app](0) []
[PM2] [app](1) []
[PM2] [app](2) []
[PM2] [app](3) []
[PM2] [app](4) []


| id | name | namespace | version | mode    | pid   | uptime |   | status | cpu | mem    | user  | watching |
|----|------|-----------|---------|---------|-------|--------|---|--------|-----|--------|-------|----------|
| 0  | app  | default   | 0.0.0   | cluster | 14744 | 0s     | 1 | online | 0%  | 67.1mb | david | disabled |
| 1  | app  | default   | 0.0.0   | cluster | 14745 | 0s     | 1 | online | 0%  | 66.2mb | david | disabled |
| 2  | app  | default   | 0.0.0   | cluster | 14768 | 0s     | 1 | online | 0%  | 63.5mb | david | disabled |
| 3  | app  | default   | 0.0.0   | cluster | 14769 | 0s     | 1 | online | 0%  | 64.4mb | david | disabled |
| 4  | app  | default   | 0.0.0   | cluster | 14791 | 0s     | 1 | online | 0%  | 44.9mb | david | disabled |


david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$
```

comando pm2 ls

```
david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$ pm2 ls


| id | name | namespace | version | mode    | pid   | uptime |   | status | cpu | mem    | user  | watching |
|----|------|-----------|---------|---------|-------|--------|---|--------|-----|--------|-------|----------|
| 0  | app  | default   | 0.0.0   | cluster | 14744 | 3m     | 1 | online | 0%  | 63.6mb | david | disabled |
| 1  | app  | default   | 0.0.0   | cluster | 14745 | 3m     | 1 | online | 0%  | 62.7mb | david | disabled |
| 2  | app  | default   | 0.0.0   | cluster | 14768 | 3m     | 1 | online | 0%  | 63.1mb | david | disabled |
| 3  | app  | default   | 0.0.0   | cluster | 14769 | 3m     | 1 | online | 0%  | 63.0mb | david | disabled |
| 4  | app  | default   | 0.0.0   | cluster | 14791 | 3m     | 1 | online | 0%  | 63.5mb | david | disabled |

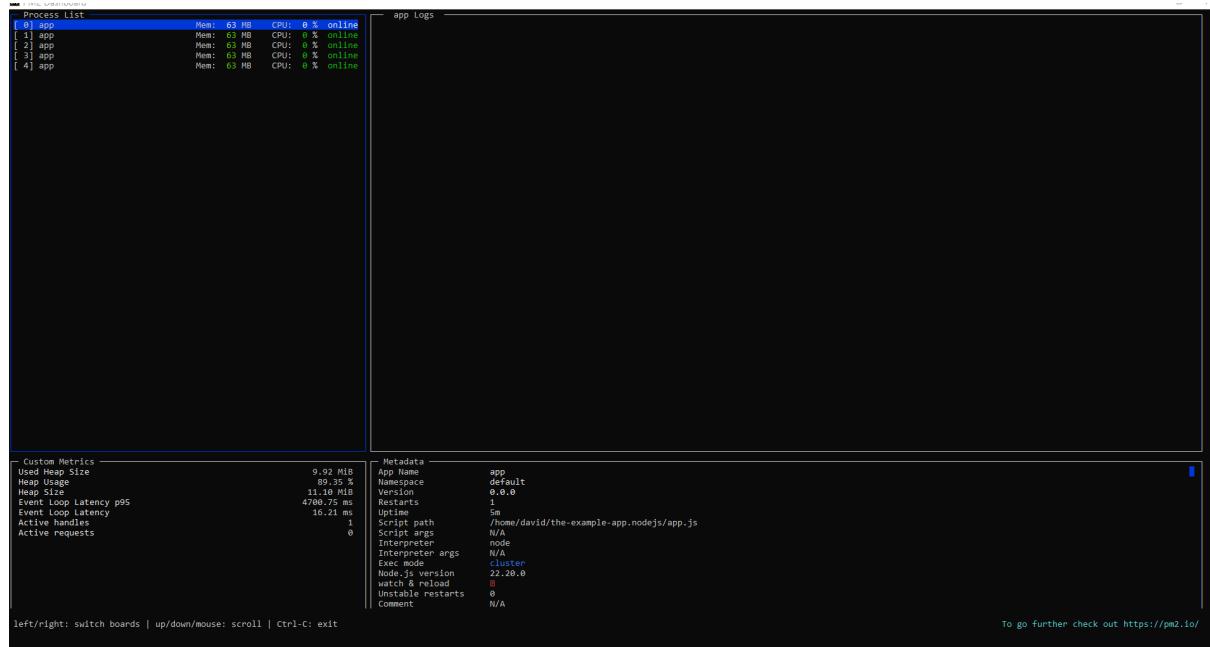

david@UbuntuServerDavidArredondo:~/the-example-app.nodejs$
```

pm2 logs

```
[root@localhost pm2] tail -15 app.log
/home/david/.pm2/logs/app-error.log last 15 lines:
[pm2] [out] [PM2] [log] [app] exited with code [0] via signal [SIGINT]
[pm2] [out] [PM2] [log] [app] exited with code [0] via signal [SIGINT]
[pm2] [out] [PM2] [log] [app] starting in -cluster mode...
[pm2] [out] [PM2] [log] [app] starting in -cluster mode...
[pm2] [out] [PM2] [log] [app] starting in -cluster mode...
[pm2] [out] [PM2] [log] [app] [app] online
[pm2] [out] [PM2] [log] [app] [app] disconnected
[pm2] [out] [PM2] [log] [app] [app] reconnected
[pm2] [out] [PM2] [log] [app] [app] killed by signal [SIGKILL]
[pm2] [out] [PM2] [log] [app] [app] egg-process killed
[pm2] [out] [PM2] [log] [app] [app] online

/home/david/.pm2/logs/app-error.log last 15 lines:
[pm2] [out] [PM2] [log] [app] listening on port 3000
[pm2] [out] [PM2] [log] [app] Worker 34760 started
[pm2] [out] [PM2] [log] [app] Worker 34761 started
[pm2] [out] [PM2] [log] [app] Worker 34762 started
[pm2] [out] [PM2] [log] [app] Worker 34763 started
[pm2] [out] [PM2] [log] [app] Worker 34764 started
[pm2] [out] [PM2] [log] [app] Worker 34765 started
[pm2] [out] [PM2] [log] [app] Worker 34766 started
[pm2] [out] [PM2] [log] [app] Worker 34767 started
[pm2] [out] [PM2] [log] [app] Worker 34768 started
[pm2] [out] [PM2] [log] [app] Worker 34769 started
[pm2] [out] [PM2] [log] [app] Worker 34770 started
[pm2] [out] [PM2] [log] [app] Worker 34771 started
[pm2] [out] [PM2] [log] [app] Worker 34772 started
[pm2] [out] [PM2] [log] [app] Worker 34773 started
[pm2] [out] [PM2] [log] [app] Worker 34774 started
[pm2] [out] [PM2] [log] [app] Worker 34775 started
[pm2] [out] [PM2] [log] [app] Worker 34776 started
[pm2] [out] [PM2] [log] [app] Worker 34777 started
[pm2] [out] [PM2] [log] [app] Worker 34778 started
[pm2] [out] [PM2] [log] [app] Worker 34779 started
[pm2] [out] [PM2] [log] [app] Worker 34780 started
[pm2] [out] [PM2] [log] [app] Worker 34781 started
[pm2] [out] [PM2] [log] [app] App listening on port 3000
```

pm2 monit



Cuestión

¿Por qué la Aplicación sin Clúster es Ligeramente Mejor?

La aplicación sin clúster (single-process) muestra métricas ligeramente mejores (840 RPS vs. 833-808 RPS y 109.4 ms vs. 112.3-115.6 ms) porque la URL que estás probando (<http://localhost:3000/api/500000>) probablemente está ejecutando una operación de bloqueo intensiva en la CPU (CPU-Bound).

En estos casos concretos, la aplicación sin clúster puede rendir mejor debido a los costos de la comunicación entre procesos (IPC).

Aquí están las razones detalladas:

1. Costo de la Coordinación y Comunicación (IPC Overhead)

Cuando configuras un clúster de Node.js, se crean múltiples procesos *Worker* que son gestionados por un proceso *Master*. Para distribuir las solicitudes a estos *Workers*, el proceso *Master* debe:

Coordinar la distribución de las conexiones entrantes (balanceo de carga).

Utilizar la Comunicación Inter-Procesos (IPC) para que los *Workers* y el *Master* puedan intercambiar información (como manejar puertos o enviar mensajes).

Para una prueba de carga relativamente corta y enfocada en una operación que bloquea la CPU (como parece ser la lógica detrás de /api/500000), el tiempo consumido en la coordinación y el *handshake* de las conexiones a través de múltiples procesos puede ser mayor que el beneficio de usar múltiples núcleos. Este *overhead* de la IPC es una penalización de rendimiento que la versión simple (un solo proceso) no tiene.

2. Contención por la CPU (Context Switching)

Aunque el *clustering* utiliza múltiples núcleos, el sistema operativo todavía tiene que manejar el cambio de contexto (*context switching*) entre muchos *Workers* y el proceso *Master*, especialmente bajo alta concurrencia (100 conexiones).

Si la tarea que realiza /api/500000 es muy rápida, el tiempo dedicado a mover la tarea entre los núcleos y coordinar los procesos podría superar la ventaja de paralelismo.

3. Tareas CPU-Bound vs. I/O-Bound

El modelo de agrupación en clústeres de Node.js ofrece beneficios masivos cuando las solicitudes son I/O-Bound (operaciones de entrada/salida, como consultas a bases de datos o llamadas a APIs externas).

- En tareas I/O-Bound: El clúster permite que un *Worker* inactivo atienda una nueva solicitud mientras que otro *Worker* está esperando datos de la base de datos, mejorando drásticamente el rendimiento.
- En tareas CPU-Bound (como la tuya): La ganancia no es tan lineal. El rendimiento solo aumentará si la carga es sostenida y pesada, y el clúster logra repartir la tarea de manera eficiente. En cargas pequeñas o medianas, el *overhead* de la IPC puede hacer que el clúster sea marginalmente más lento.

El resultado es un ejemplo de cómo el *overhead* del *clustering* (costos de coordinación) puede ser mayor que la ganancia de paralelismo para esa carga y URL específicas. Si hubieras ejecutado la prueba con miles de usuarios y tareas I/O-Bound, la versión clusterizada habría mostrado una mejora mucho más significativa.

Aplicación para Netlify.

Nos clonaremos este repositorio:

```
git clone https://github.com/StackAbuse/color-shades-generator
```

```
david@UbuntuServerDavidArredondo:~$ git clone https://github.com/StackAbuse/color-shades-generator
Cloning into 'color-shades-generator'...
remote: Enumerating objects: 61, done.
remote: Counting objects: 100% (61/61), done.
remote: Compressing objects: 100% (49/49), done.
remote: Total 61 (delta 21), reused 49 (delta 12), pack-reused 0 (from 0)
Receiving objects: 100% (61/61), 287.91 KiB | 1.99 MiB/s, done.
Resolving deltas: 100% (21/21), done.
david@UbuntuServerDavidArredondo:~$
```

Nos registramos en NETLIFY

The screenshot shows the Netlify documentation website. The left sidebar has sections for 'Visión general', 'Guías de API' (with 'Introducción a la API' selected), and 'Guías CLI' (with 'Introducción a la CLI' selected). The main content area is titled 'Obtener un token en la interfaz de usuario de Netlify' and contains steps for generating a Personal Access Token (PAT) manually. Step 1: Vaya a [Aplicaciones > Tokens de acceso personal](#). Step 2: Seleccione Nuevo token de acceso. Step 3: Escriba un nombre descriptivo para ayudarle a recordar para qué se usará el token. Step 4: Seleccione Permitir acceso a mi equipo de Netlify basado en SAML para autorizar el acceso a los datos de su equipo basado en SAML a través de la API. Step 5: Seleccione una fecha de vencimiento para su token para ayudar a mantener su información segura. Step 6: Seleccione Generar token. Step 7: Copie el token en el portapapeles y guárdelo en un lugar seguro. Una vez que

Nos registramos en netlify.



Log in to Netlify

The login form has two input fields: one for email ('darrcal761@g.educaand.es') and one for password ('.....'). Below the password field is a 'Forgot your password?' link. At the bottom is a large blue 'Log in' button.

Have GitHub, GitLab or Bitbucket?

[Log in with a Git provider](#)

Seleccionamos nuevo token de acceso

The screenshot shows the Netlify dashboard with a dark theme. On the left sidebar, there are links for 'Perfil', 'Zona de peligro', 'Seguridad', 'Autenticación de dos factores', 'Aplicaciones' (which is selected), 'OAuth', and 'Laboratorios'. The main content area has a header 'Integre otros servicios con Netlify usando OAuth'. Below it, there's a section titled 'Aplicaciones OAuth' with the sub-instruction 'Registre aplicaciones OAuth para crear aplicaciones con la API de Netlify.' A button labeled 'Nueva aplicación OAuth' is visible. Another section below is titled 'Tokens de acceso personal' with the instruction 'Cree tokens de acceso personal para usarlos en scripts de shell y acceso a API.' A button labeled 'Nuevo token de acceso' is present.

Generamos el token

The screenshot shows a 'Create a new personal access token' form. The title is 'Crea un nuevo token de acceso personal' with the sub-instruction 'Los tokens de acceso personal funcionan como los tokens de acceso OAuth comunes.' A progress bar at the top indicates steps 1. Generar token and 2. Copiar token. The 'Generar token' step is active. The form fields include 'Descripción de tu token' (set to 'token_netlify'), 'Caducidad' (set to '7 días'), and a note stating 'The token will expire on Tuesday, October 28, 2025'. At the bottom are 'Generar token' and 'Cancelar' buttons.

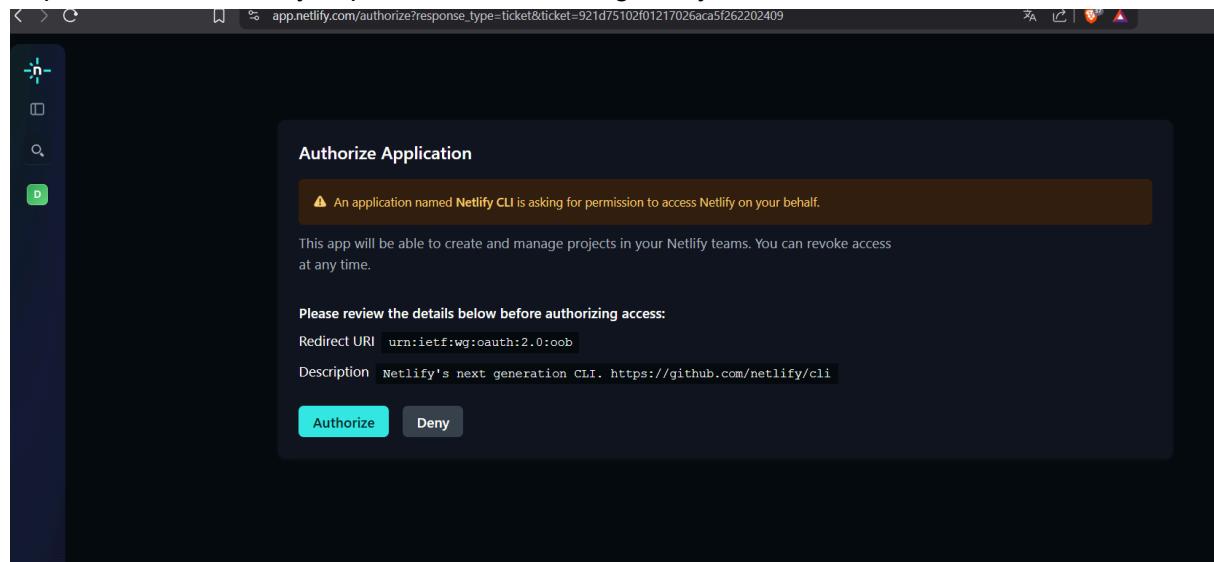
Copiamos el código del token seleccionamos 7 dias de caducidad y le damos a echo

The screenshot shows a confirmation message 'Nuevo token creado' with the sub-instruction 'Copie el token a continuación a su portapapeles. Por razones de seguridad, después de salir de esta página, nadie podrá volver a ver el token.' Below the message is a code snippet 'nfp_c1Vmwa5BPbpaToEnQSaQZ4HzF9R1JpcLc98a' followed by a copy icon. At the bottom is a green 'Hecho' button.

Hacemos el login en netlify poniendo el siguiente comando: `netlify login`

```
david@UbuntuServerDavidArredondo:~$ netlify login
Logging into your Netlify account...
Opening https://app.netlify.com/authorize?response_type=ticket&ticket=921d75102f01217026aca5f262202409
Waiting for authorization...
```

Copiamos ese enlace y lo ponemos en el navegador y autorizamos



Como vemos nos aparecerá que estamos en la cuenta netlify

```
You are now logged into your Netlify account!

Run netlify status for account details

To see all available commands run: netlify help

david@UbuntuServerDavidArredondo:~$ -
```

Nos movemos a la carpeta del directorio clonado

```
david@UbuntuServerDavidArredondo:~$ cd color-shades-generator
david@UbuntuServerDavidArredondo:~/color-shades-generator$ npm install
```

Debemos instalar todas las dependencias que vienen indicadas en el archivo package.json:
npm install

```
david@UbuntuServerDavidArredondo:~/color-shades-generator$ npm install
npm warn deprecated source-map-url@0.4.1: See https://github.com/lydell/source-map-url#deprecated
npm warn deprecated source-map-resolve@0.6.0: See https://github.com/lydell/source-map-resolve#deprecated
npm warn deprecated svgo@1.3.2: This SVGO version is no longer supported. Upgrade to v2.x.x.

added 1396 packages, and audited 1397 packages in 20s

167 packages are looking for funding
  run `npm fund` for details

55 vulnerabilities (6 low, 12 moderate, 31 high, 6 critical)

To address issues that do not require attention, run:
  npm audit fix

To address all issues (including breaking changes), run:
  npm audit fix --force

Run `npm audit` for details.
david@UbuntuServerDavidArredondo:~/color-shades-generator$ -
```

Cuando ya las tengamos instaladas podemos proceder a realizar el build: npm run build

Esto nos creará una nueva carpeta llamada build que contendrá la aplicación que debemos desplegar.

```
david@UbuntuServerDavidArredondo:~/color-shades-generator$ npm run build
> color-shades-generator@0.1.0 build
> react-scripts build

Creating an optimized production build...
Browserslist: caniuse-lite is outdated. Please run:
  npx browserslist@latest --update-db
  Why you should do it regularly: https://github.com/browserslist/browserslist#browsers-data-updating
Browserslist: caniuse-lite is outdated. Please run:
  npx browserslist@latest --update-db
  Why you should do it regularly: https://github.com/browserslist/browserslist#browsers-data-updating
Compiled successfully.

File sizes after gzip:
  49.02 kB  build/static/js/main.56aaeed6.js
  966 B     build/static/css/main.e106b4ce.css

The project was built assuming it is hosted at /.
You can control this with the homepage field in your package.json.

The build folder is ready to be deployed.
You may serve it with a static server:

  npm install -g serve
  serve -s build

Find out more about deployment here:
  https://cra.link/deployment
```

Y ya podemos hacer un pre-deploy de la aplicación de la que hemos hecho build antes:
netlify deploy

```
david@UbuntuServerDavidArredondo:~/color-shades-generator$ netlify deploy
This folder isn't linked to a project yet

To create and deploy in one go, use: netlify deploy --create-site <SITE_NAME>
```

Indicamos que queremos crear y configurar un nuevo site

```
david@UbuntuServerDavidArredondo:~/color-shades-generator$ netlify deploy
This folder isn't linked to a project yet

To create and deploy in one go, use: netlify deploy --create-site <SITE_NAME>
? What would you like to do?
② ③ Link this directory to an existing project
+ Create & configure a new project
```

El Team lo dejamos por defecto

```
david@UbuntuServerDavidArredondo:~/color-shades-generator$ netlify deploy
This folder isn't linked to a project yet

To create and deploy in one go, use: netlify deploy --create-site <SITE_NAME>
? What would you like to do? + Create & configure a new project
? Team: (Use arrow keys)
② darrcal761's team
```

Le indicamos el nombre que queremos emplear para la web

```
david@UbuntuServerDavidArredondo:~/color-shades-generator$ netlify deploy
This folder isn't linked to a project yet

To create and deploy in one go, use: netlify deploy --create-site <SITE_NAME>
? What would you like to do? + Create & configure a new project
? Team: darrcal761's team
? Project name (leave blank for a random name; you can change it later): nombre_web
```

y el directorio a utilizar para el deploy

```
Project Created
Admin URL: https://app.netlify.com/projects/nombre-web
URL: https://nombre-web.netlify.app
Project ID: 1a49de73-d00a-4067-ad49-53edbcec1258

Adding local .netlify folder to .gitignore file...
↳ Linked to nombre-web

Netlify Build

↳ Version
  @netlify/build 35.2.1

↳ Flags
  {}

↳ Current directory
  /home/david/color-shades-generator

↳ Config file
  No config file was defined: using default values.

↳ Context
  production

Build command from Netlify app

$ npm run build

> color-shades-generator@0.1.0 build
> react-scripts build

Creating an optimized production build...
Browserslist: caniuse-lite is outdated. Please run:
  npx browserslist@latest --update-db
  Why you should do it regularly: https://github.com/browserslist/browserslist#browsers-data-updating
Browserslist: caniuse-lite is outdated. Please run:
  npx browserslist@latest --update-db
  Why you should do it regularly: https://github.com/browserslist/browserslist#browsers-data-updating
Compiled successfully.

File sizes after gzip:
```

vemos la URL : <https://68f768de3688a1dea767dfaa--nombre-web.netlify.app>

```
(build.command completed in 8.4s)

Deploying to Netlify

Deploy path: /home/david/color-shades-generator/build

↳ Finished uploading blobs to deploy store
↳ No cached functions were found
↳ Finished hashing
↳ CDN requesting 1 files
↳ Finished uploading 1 assets
↳ Deploy is live!

Netlify Build Complete

(Netlify Build completed in 11.5s)

↳ Deploy complete

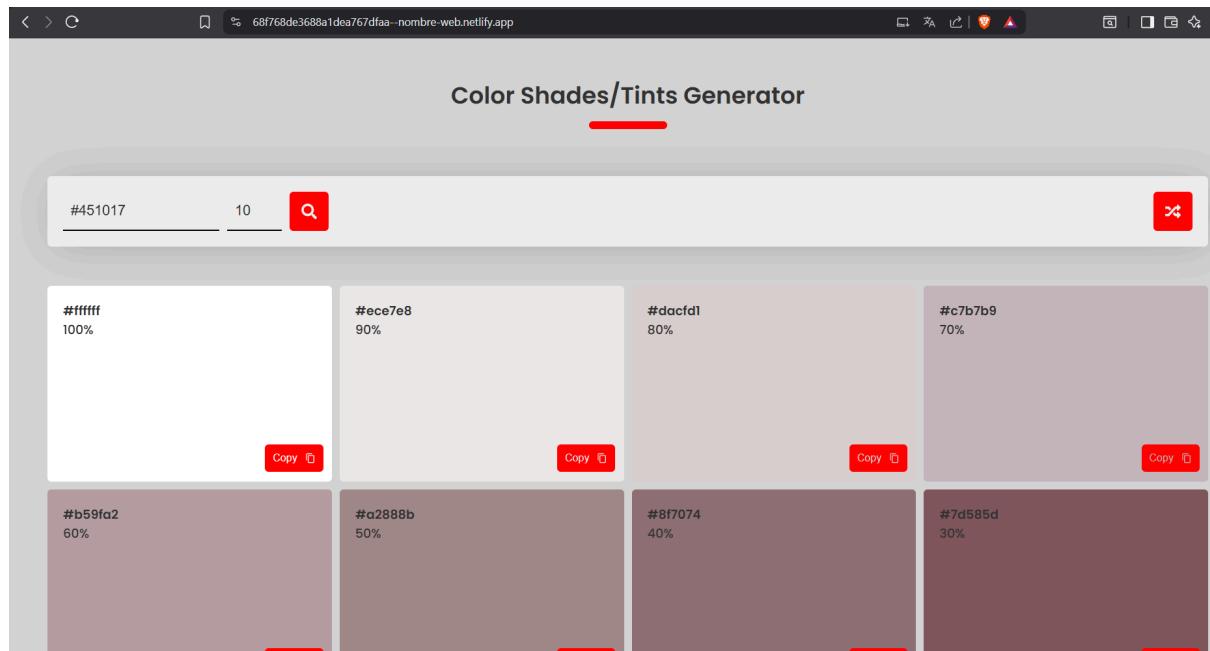
  ┌─────────────────────────────────────────────────────────────────┐
  │ Draft deploy is live ┘ ──────────────────────────────────────────
  └─────────────────────────────────────────────────────────────────┘

  Deployed draft to https://68f768de3688a1dea767dfaa--nombre-web.netlify.app

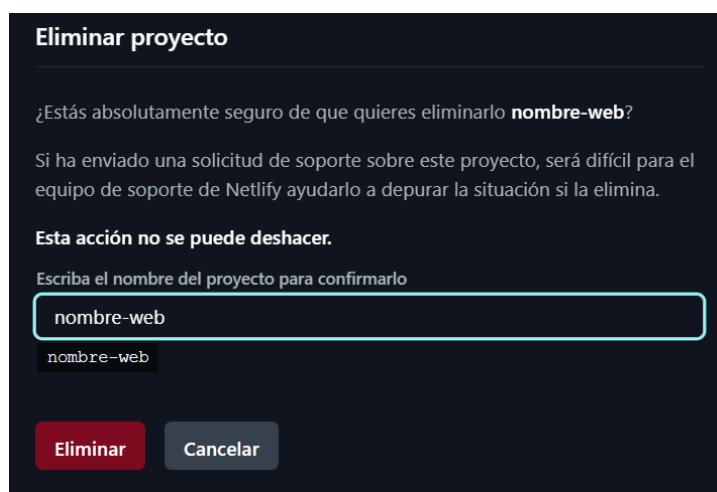
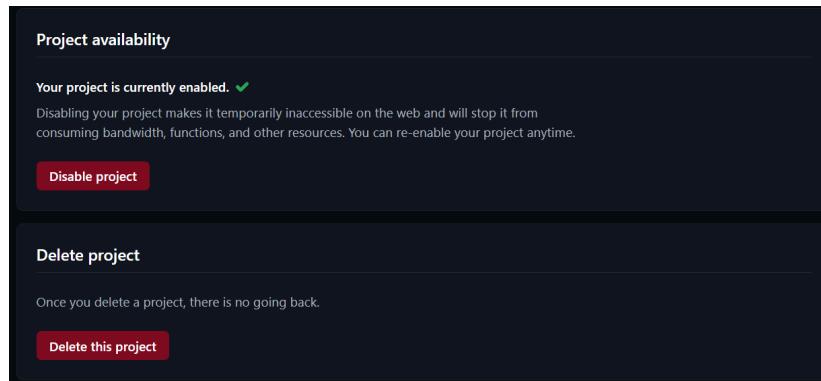
Build logs:      https://app.netlify.com/projects/nombre-web/deploy/68f768de3688a1dea767dfaa
Function logs:   https://app.netlify.com/projects/nombre-web/logs/functions?scope=deploy:68f768de3688a1dea767dfaa
Edge function Logs: https://app.netlify.com/projects/nombre-web/logs/edge-functions?scope=deployid:68f768de3688a1dea767dfaa

If everything looks good on your draft URL, deploy it to your main project URL with the --prod flag:
netlify deploy --prod
```

Abre esa URL y deberías ver el **color-shades-generator** funcionando online
<https://68f768de3688a1dea767dfaa--nombre-web.netlify.app>



Nos vamos a netlify y borramos el sitio que hemos desplegado



Eliminar la carpeta del repositorio clonado anteriormente.

```
david@UbuntuServerDavidArredondo:~$ rm -rf color-shades-generator
david@UbuntuServerDavidArredondo:~$ cd color-shades-generator
-bash: cd: color-shades-generator: No such file or directory
david@UbuntuServerDavidArredondo:~$
```

Descargar el proyecto en formato ZIP:

wget <https://github.com/StackAbuse/color-shades-generator/archive/refs/heads/main.zip>

```
david@UbuntuServerDavidArredondo:~$ wget https://github.com/StackAbuse/color-shades-generator/archive/refs/heads/main.zip
--2025-10-21 11:55:00-- https://github.com/StackAbuse/color-shades-generator/archive/refs/heads/main.zip
Resolving github.com (github.com)... 140.82.121.3
Connecting to github.com (github.com)|140.82.121.3|:443... connected.
HTTP request sent, awaiting response... 302 Found
Location: https://codeload.github.com/StackAbuse/color-shades-generator/zip/refs/heads/main [following]
--2025-10-21 11:55:00-- https://codeload.github.com/StackAbuse/color-shades-generator/zip/refs/heads/main
Resolving codeload.github.com (codeload.github.com)... 140.82.121.10
Connecting to codeload.github.com (codeload.github.com)|140.82.121.10|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: unspecified [application/zip]
Saving to: 'main.zip'

main.zip                                              [ =>]

2025-10-21 11:55:01 (1.51 MB/s) - 'main.zip' saved [288370]
david@UbuntuServerDavidArredondo:~$
```

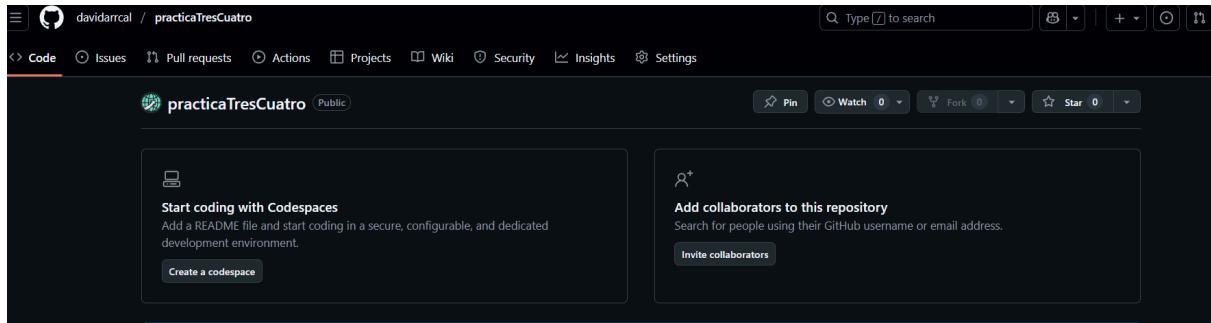
Creamos una carpeta limpia para el ejercicio: mkdir practica3.4

```
david@UbuntuServerDavidArredondo:~$ mkdir practica3.4
```

Usamos este comando para extraer los archivos :mkdir practica3.4

```
david@UbuntuServerDavidArredondo:~$ unzip main.zip -d practica3.4/
Archive: main.zip
4bd3e143b902706896909a966065cf7d1f818bf
  creating: practica3.4/color-shades-generator-main/
  inflating: practica3.4/color-shades-generator-main/.gitignore
  inflating: practica3.4/color-shades-generator-main/README.md
  inflating: practica3.4/color-shades-generator-main/package-lock.json
  inflating: practica3.4/color-shades-generator-main/package.json
  creating: practica3.4/color-shades-generator-main/public/
  inflating: practica3.4/color-shades-generator-main/public/favicon.ico
  inflating: practica3.4/color-shades-generator-main/public/index.html
  inflating: practica3.4/color-shades-generator-main/public/logo192.png
  inflating: practica3.4/color-shades-generator-main/public/logo512.png
  inflating: practica3.4/color-shades-generator-main/public/manifest.json
  inflating: practica3.4/color-shades-generator-main/public/robots.txt
  creating: practica3.4/color-shades-generator-main/src/
  inflating: practica3.4/color-shades-generator-main/src/App.js
  inflating: practica3.4/color-shades-generator-main/src/ErrorModal.js
  inflating: practica3.4/color-shades-generator-main/src/SingleColor.js
  inflating: practica3.4/color-shades-generator-main/src/index.css
  inflating: practica3.4/color-shades-generator-main/src/index.js
david@UbuntuServerDavidArredondo:~$
```

Creamos el repositorio

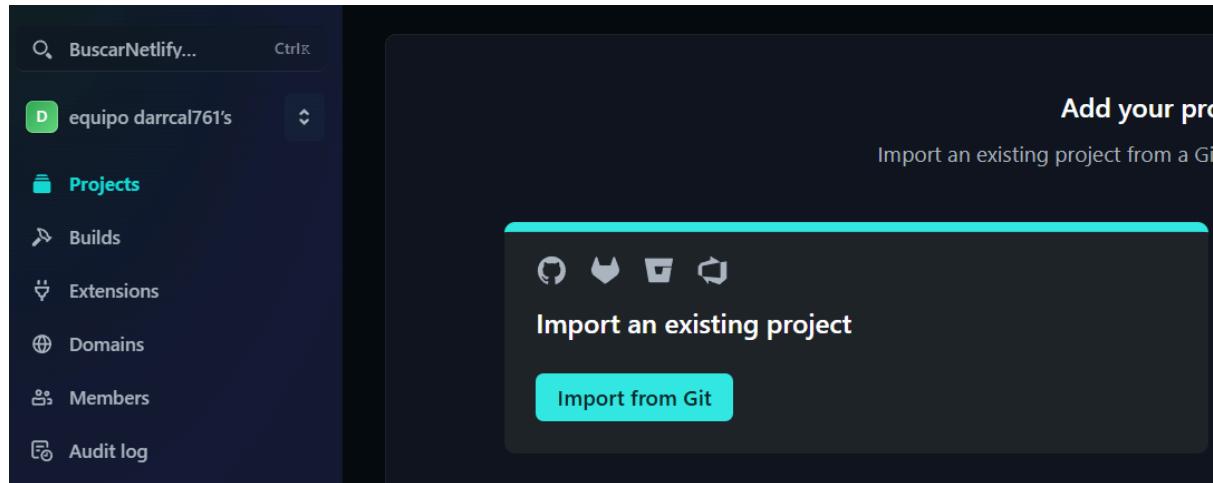


Inicializar repositorio Git localmente

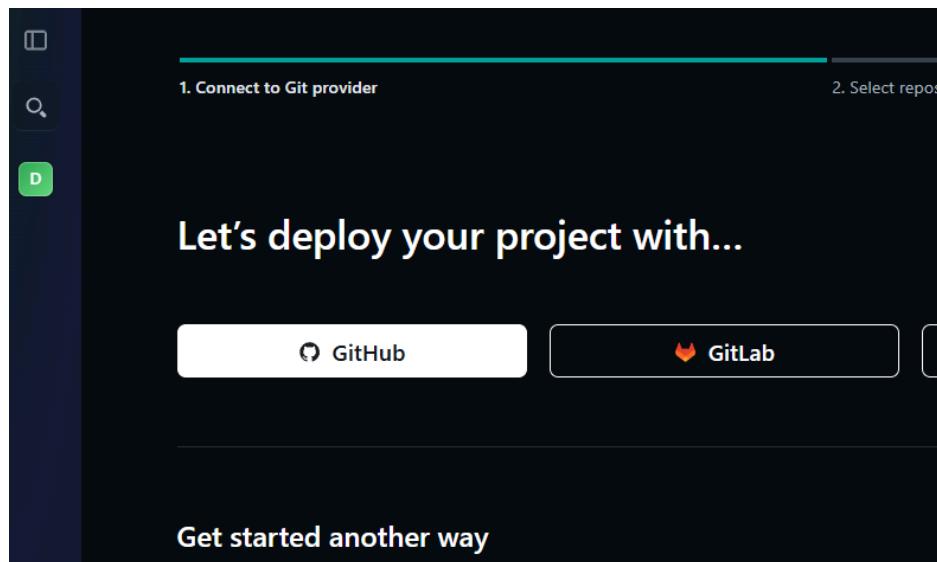
```
git init  
git add .  
git commit -m "Subiendo el código..."  
git branch -M main
```

```
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git init  
hint: Using 'master' as the name for the initial branch. This default branch name  
hint: is subject to change. To configure the initial branch name to use in all  
hint: of your new repositories, which will suppress this warning, call:  
hint:  
hint:   git config --global init.defaultBranch <name>  
hint:  
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and  
hint: 'development'. The just-created branch can be renamed via this command:  
hint:  
hint:   git branch -m <name>  
Initialized empty Git repository in /home/david/practica3.4/color-shades-generator-main/.git/  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git add .  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git commit -m "Subiendo el código..."  
Author identity unknown  
  
*** Please tell me who you are.  
  
Run  
  
  git config --global user.email "you@example.com"  
  git config --global user.name "Your Name"  
  
to set your account's default identity.  
Omit --global to set the identity only in this repository.  
  
fatal: unable to auto-detect email address (got 'david@UbuntuServerDavidArredondo.(none)')  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git remote add origin https://github.com/davidarrcal/practicaTresCuatro.git  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git add .  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git commit -m "Subiendo el código..."  
Author identity unknown  
  
*** Please tell me who you are.  
  
Run  
  
  git config --global user.email "you@example.com"  
  git config --global user.name "Your Name"  
  
to set your account's default identity.  
Omit --global to set the identity only in this repository.  
  
fatal: unable to auto-detect email address (got 'david@UbuntuServerDavidArredondo.(none)')  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git config --global user.email "davidarrcal@gmail.com"  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git config --global user.name "david"  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git add .  
david@UbuntuServerDavidArredondo:~/practica3.4/color-shades-generator-main$ git commit -m "Subiendo el código..."  
[master (root-commit) 22611a8] Subiendo el código...  
 15 files changed, 27797 insertions(+)  
 create mode 100644 .gitignore  
 create mode 100644 README.md  
 create mode 100644 package-lock.json  
 create mode 100644 package.json  
 create mode 100644 public/favicon.ico  
 create mode 100644 public/index.html  
 create mode 100644 public/logo192.png  
 create mode 100644 public/logo512.png  
 create mode 100644 public/manifest.json  
 create mode 100644 public/robots.txt  
 create mode 100644 src/App.js  
 create mode 100644 src/ErrorModal.js  
 create mode 100644 src/SingleColor.js
```

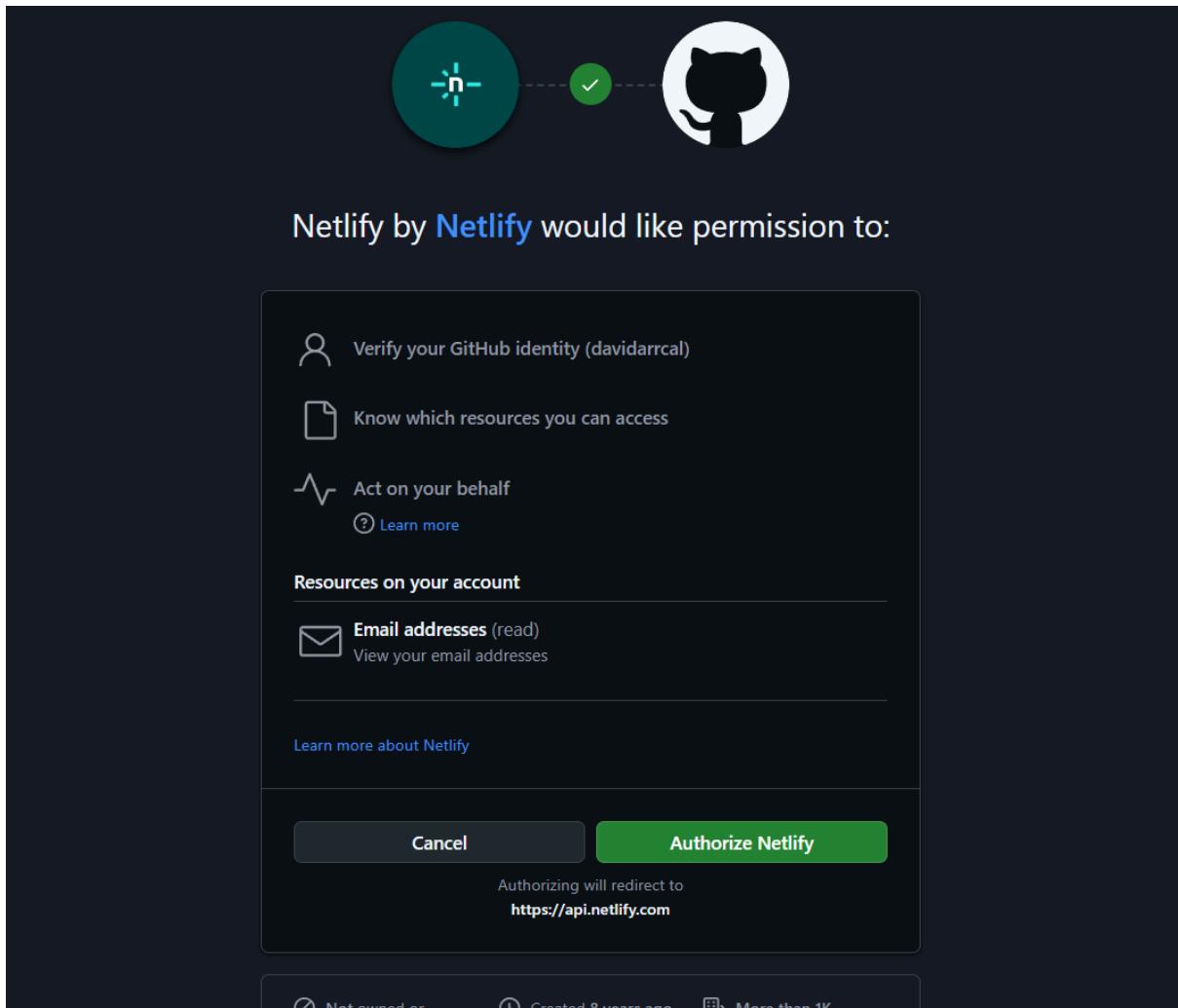
Le damos a importar desde git



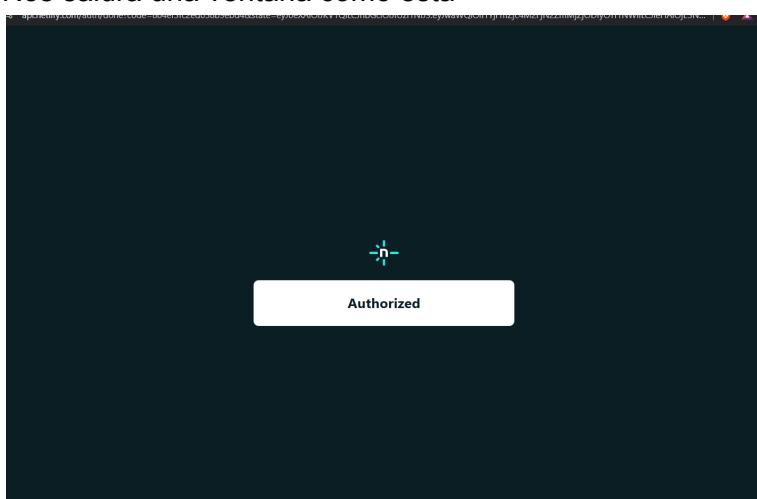
Seleccionamos que es desde github



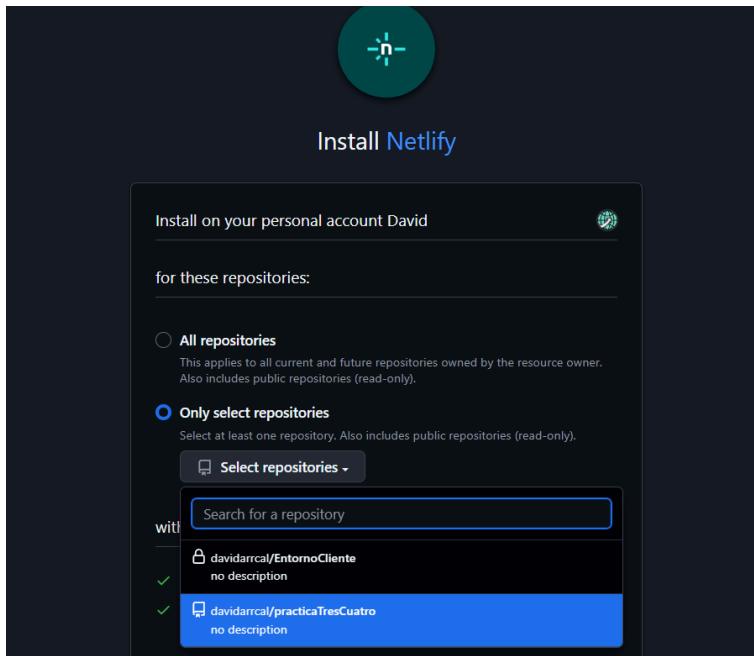
Saltará una ventana pidiendo que autoricemos a Netlify a acceder a nuestros repositorios de Github:



Nos saldra una ventana como esta



le indicaremos que no acceda a todos nuestros repositorios sino sólo al repositorio que necesitamos, que es donde tenemos el código de nuestra aplicación:



Seleccionamos nuestro repositorio

A screenshot of the Netlify deployment interface. At the top, there are three numbered steps: '1. Connect to Git provider', '2. Select repository', and '3. Configure project and dep...'. Step 2 is currently active. Below the steps, the text 'Let's deploy your project with...' is displayed. On the left, there's a user dropdown labeled 'davidarrcal' with a dropdown arrow. On the right, there's a search bar containing the text 'practicaTresCuatro'. Below the search bar, a list shows a single repository: 'practicaTresCuatro' by 'davidarrcal'. To the right of the repository name are the timestamp '19 minutes ago', the status 'Public', and a link icon. At the bottom of the screen, a message reads 'Can't see your repo here? [Configure the Netlify app on GitHub](#)'.

Rellenamos los campos necesarios

1. Connect to Git provider 2. Select repository 3. Configure project and deploy

Let's deploy your project with...

Review configuration for practicaTresCuatro

Deploy as **davidarrcal** on **darrcal761's team** team from **main** branch using **npm run build** command and publishing to **build**

Team
darrcal761's team

Project name
nombre-web
<https://nombre-web.netlify.app>
 Project name is available

Build command
npm run build
Examples: jekyll build, gulp build, make all

Publish directory
build
Examples: _site, dist, public

Functions directory
netlify/functions
Example: my_functions

Environment variables
Define environment variables for more control and flexibility over your build.

Add environment variables ▾

Deploy nombre-web

Ahora vemos que esta desplegado

The screenshot shows the Netlify project dashboard for the 'lambent-brigadeiros-2d4830' project. On the left sidebar, under the 'Deploys' section, there is a green button labeled 'Open production deploy'. This button is highlighted in red in the screenshot. Other options in the sidebar include 'Project overview', 'Project configuration', 'Preview Servers', 'Agent runs', 'Logs', 'Metrics', 'Web security', 'Domain management', 'Forms', and 'Blobs'. The main content area displays a 'Published deploy for lambent-brigadeiros-2d4830' from 'Today at 8:46 AM' on 'Production: master@HEAD'. It includes a 'Permalink' and a 'Download' link, along with buttons for 'Open production deploy', 'Lock to stop auto publishing', and 'Options'.

Le damos a open production deploy

The screenshot shows the deployed application at lambent-brigadeiros-2d4830.netlify.app. The title bar says 'Color Shades/Tints Generator'. The interface features a search bar with '#451017' and a value of '10'. Below the search bar are four color swatches: #ffffff (100%), #ece7e8 (90%), #dacfd1 (80%), and #c7b7b9 (70%).

Nos metemos en public/robots.txt y ponemos nuestro nombre

The screenshot shows a terminal window titled 'david@UbuntuServerDavidArredondo: ~/practica3.4/color-shades-generator-main'. The user is in the directory 'public/robots.txt'. The terminal shows the command 'nano 7.2' and the content of the file:

```
GNU nano 7.2                               public/robots.txt *
# https://www.robotstxt.org/robotstxt.html
User-agent: *
Disallow:David Arredondo Calderon
```

The bottom of the terminal shows the standard nano key bindings.

Cuestiones

1. Investiga y explica que es un Dyno en terminología Heroku.

Un dyno es la unidad de ejecución de Heroku: básicamente un contenedor Linux gestionado por la plataforma que ejecuta un único comando/proceso de tu aplicación (por ejemplo web o worker). Cada dyno arranca con una copia fresca del código desplegado y corre los procesos que hayas definido en tu Procfile. El gestor de dynos de Heroku se encarga de arrancarlos, reiniciarlos y mantenerlos en ejecución para ti, lo que hace que la operación del servicio sea en gran parte “hands-off”.

devcenter.heroku.com

Aspectos prácticos importantes sobre los dynos:

Ephemeral filesystem: el sistema de archivos dentro de un dyno es efímero: cualquier fichero que escribas en disco se pierde cuando el dyno se reinicia o se escala. Por tanto, no debes usar el disco local para almacenar datos persistentes (usa add-ons como S3, Postgres, etc.).

devcenter.heroku.com

Tipos/tamaños: Heroku ofrece varios tiers (eco/basic/standard/performance, etc.) con diferentes memoria/CPU y precios — eliges según carga y presupuesto.

devcenter.heroku.com

Proceso por dyno: normalmente un dyno ejecuta un solo tipo de proceso (por ejemplo web) y si quieres más concurrencia o separación de responsabilidades escalas añadiendo más dynos del mismo tipo o dynos para workers.

2. En Heroku no todo es de color de rosa, tiene sus limitaciones y desventajas. Busca, investiga y explica algunas de ellas detalladamente.

Coste elevado al escalar

Es fácil y cómodo al principio, pero cuando tu app crece o necesita varios dynos/add-ons, el precio sube rápidamente.

Menor control sobre la infraestructura

No puedes configurar ni optimizar el servidor a tu gusto (todo está gestionado por Heroku). Esto limita la personalización y dificulta migrar a otra plataforma.

Recursos limitados y sistema efímero

Cada dyno tiene límites de CPU y memoria, y su sistema de archivos se borra cuando se reinicia. No sirve para guardar datos locales.

Sin plan gratuito permanente

Heroku eliminó los planes gratis, por lo que ya no se puede mantener una app online sin pagar.

Add-ons y servicios adicionales costosos

Muchos servicios (bases de datos, Redis, etc.) Se contratan como complementos, y sus precios también se suman al total.

En resumen: Heroku es muy práctico y rápido para desplegar, pero caro y limitado para proyectos grandes o complejos.

Práctica 3.5: Despliegue de una aplicación Flask (Python)

Instalamos el gestor de paquetes de Python pip:

```
sudo apt-get update
```

```
sudo apt-get install python3-pip
```

```
david@UbuntuServerDavidArredondo:~$ sudo apt-get update
Hit:1 https://deb.nodesource.com/node_22.x nodistro InRelease
Hit:2 http://security.ubuntu.com/ubuntu noble-security InRelease
Hit:3 http://es.archive.ubuntu.com/ubuntu noble InRelease
Hit:4 http://es.archive.ubuntu.com/ubuntu noble-updates InRelease
Hit:5 http://es.archive.ubuntu.com/ubuntu noble-backports InRelease
Reading package lists... Done
david@UbuntuServerDavidArredondo:~$ sudo apt-get install python3-pip
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following additional packages will be installed:
  binutils binutils-common binutils-x86-64-linux-gnu build-essential bzip2 cpp cpp-13 cpp-13-x86-64-linux-gnu
  cpp-x86-64-linux-gnu dpkg-dev fakeroot g++ g++-13 g++-13-x86-64-linux-gnu g++-x86-64-linux-gnu gcc gcc-13
  gcc-13-base gcc-13-x86-64-linux-gnu gcc-x86-64-linux-gnu javascript-common libalgorithm-diff-perl
  libalgorithm-diff-xs-perl libalgorithm-merge-perl libasan8 libatomic1 libbinutils libc1-0 libctf-nobfd0 libctf0
  libdpkg-perl libexpat1-dev libfakeroot libfile-fcntllock-perl libgcc-13-dev libgomp1 libgprofng0 libhwasan0 libis123
  libitm1 libjs-jquery libjs-sphinxdoc libjs-underscore liblsan0 libmpc3 libpython3-dev libpython3.12-dev libquadmath0
  libstdc++-13-dev libtsan2 libubsan1 lto-disabled-list make python3-dev python3-wheel python3.12-dev
  zlib1g-dev
Suggested packages:
  binutils-doc gprofng-gui bzip2-doc cpp-doc gcc-13-locales cpp-13-doc debian-keyring g++-multilib g++-13-multilib
  gcc-13-doc gcc-multilib autoconf automake libtool flex bison gdb gcc-doc gcc-13-multilib gdb-x86-64-linux-gnu
  apache2 | lighttpd | httpd bzip2 libstdc++-13-doc make-doc
The following NEW packages will be installed:
```

Forzamos la instalación de pipenv pip3 install pipenv --break-system-packages

```
david@UbuntuServerDavidArredondo:~$ pip3 install pipenv --break-system-packages
Defaulting to user installation because normal site-packages is not writeable
Collecting pipenv
  Downloading pipenv-2025.0.4-py3-none-any.whl.metadata (17 kB)
Requirement already satisfied: certifi in /usr/lib/python3/dist-packages (from pipenv) (2023.11.17)
Requirement already satisfied: packaging>=22 in /usr/lib/python3/dist-packages (from pipenv) (24.0)
Requirement already satisfied: setuptools>=67 in /usr/lib/python3/dist-packages (from pipenv) (68.1.2)
Collecting virtualenv=20.24.2 (from pipenv)
  Downloading virtualenv-20.35.3-py3-none-any.whl.metadata (4.6 kB)
Collecting distlib<1,>=0.3.7 (from virtualenv>=20.24.2->pipenv)
  Downloading distlib-0.4.0-py2.py3-none-any.whl.metadata (5.2 kB)
Collecting filelock<4,>=3.12.2 (from virtualenv>=20.24.2->pipenv)
  Downloading filelock-3.20.0-py3-none-any.whl.metadata (2.1 kB)
Collecting platformdirs<5,>=3.9.1 (from virtualenv>=20.24.2->pipenv)
  Downloading platformdirs-4.5.0-py3-none-any.whl.metadata (12 kB)
  Downloading pipenv-2025.0.4-py3-none-any.whl (2.9 MB)
    2.9/2.9 MB 10.1 MB/s eta 0:00:00
  Downloading virtualenv-20.35.3-py3-none-any.whl
    6.0/6.0 MB 10.4 MB/s eta 0:00:00
  Downloading distlib-0.4.0-py2.py3-none-any.whl (469 kB)
    469.0/469.0 kB 10.0 MB/s eta 0:00:00
  Downloading filelock-3.20.0-py3-none-any.whl (16 kB)
  Downloading platformdirs-4.5.0-py3-none-any.whl (18 kB)
Installing collected packages: distlib, platformdirs, filelock, virtualenv, pipenv
  WARNING: The script virtualenv is installed in '/home/david/.local/bin' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
  WARNING: The scripts pipenv and pipenv-resolver are installed in '/home/david/.local/bin' which is not on PATH.
  Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed distlib-0.4.0 filelock-3.20.0 pipenv-2025.0.4 platformdirs-4.5.0 virtualenv-20.35.3
david@UbuntuServerDavidArredondo:~$
```

Comprobamos que está instalado correctamente mostrando su versión:
PATH=\$PATH:/home/raul/.local/bin
pipenv --version

```
david@UbuntuServerDavidArredondo:~$ PATH=$PATH:/home/david/.local/bin
david@UbuntuServerDavidArredondo:~$ pipenv --version
pipenv, version 2025.0.4
david@UbuntuServerDavidArredondo:~$
```

Creamos el directorio en el que almacenaremos nuestro proyecto:
sudo mkdir /var/www/nombre_mi_aplicación

Hay que cambiarlo para que el dueño sea nuestro usuario
sudo chown -R \$USER:www-data /var/www/mi_aplicacion

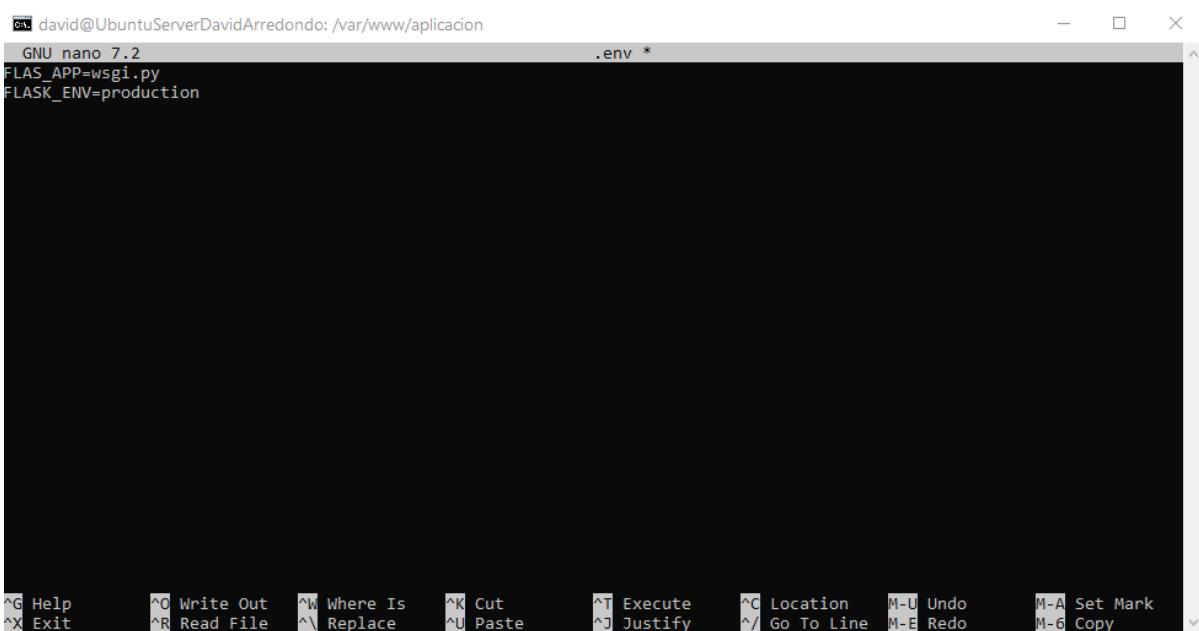
Establecemos los permisos adecuados a este directorio
sudo chmod -R 775 /var/www/mi_aplicacion

```
david@UbuntuServerDavidArredondo:~$ sudo mkdir /var/www
david@UbuntuServerDavidArredondo:~$ sudo mkdir /var/www/aplicacion
david@UbuntuServerDavidArredondo:~$ sudo chown -R $USER:www-data /var/www/aplicacion
david@UbuntuServerDavidArredondo:~$ chmod -R 775 /var/www/mi_aplicacion
chmod: cannot access '/var/www/mi_aplicacion': No such file or directory
david@UbuntuServerDavidArredondo:~$ sudo chmod -R 775 /var/www/mi_aplicacion
chmod: cannot access '/var/www/mi_aplicacion': No such file or directory
david@UbuntuServerDavidArredondo:~$ sudo chmod -R 775 /var/www/aplicacion
david@UbuntuServerDavidArredondo:~$
```

Dentro del directorio de nuestra aplicación, creamos un archivo oculto .env que contendrá las variables de entorno necesarias:sudo nano .env

```
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ sudo nano .env
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ david@UbuntuServerDavidArredondo:/var/www/aplicacion$ _
```

Editamos el archivo y añadimos las variables, indicando cuál es el archivo .py de la aplicación y el entorno, que en nuestro caso será producción:



```
GNU nano 7.2 .env *
FLASK_APP=wsgi.py
FLASK_ENV=production
```

The terminal window shows the command 'david@UbuntuServerDavidArredondo: /var/www/aplicacion\$' followed by the nano editor interface. The file '.env' is open, displaying the two environment variables defined above. The bottom of the window shows the nano key bindings.

Iniciamos ahora nuestro entorno virtual. Pipenv cargará las variables de entorno desde el fichero .env de forma automática: pipenv shell

```
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ pipenv shell
Loading .env environment variables...
Creating a virtualenv for this project
Pipfile: /var/www/aplicacion/Pipfile
Using /usr/bin/python3.12.3 to create virtualenv...
  Creating virtual environment...created virtual environment CPython3.12.3.final.0-64 in 207ms
    creator CPython3Posix(dest=/home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN, clear=False, no_vcs_ignore=False, global=False)
      seeder FromAppData(download=False, pip=bundle, via=copy, app_data_dir=/home/david/.local/share/virtualenv)
        added seed packages: pip==25.2
        activators BashActivator,CShellActivator,FishActivator,NushellActivator,PowerShellActivator,PythonActivator

  Successfully created virtual environment!
Virtualenv location: /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN
Creating a Pipfile for this project...
Launching subshell in virtual environment...
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ source /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/activate
(aplicacion) david@UbuntuServerDavidArredondo:/var/www/aplicacion$
```

Usamos pipenv para instalar las dependencias necesarias para nuestro proyecto:
pipenv install flask gunicorn

```
(aplicacion) david@UbuntuServerDavidArredondo:/var/www/aplicacion$ pipenv install flask gunicorn
Loading .env environment variables...
Pipfile.lock not found, creating...
Locking dependencies...
Locking dependencies...
Updated Pipfile.lock (702ad05de9bc9de99a4807c8dde1686f31e0041d7b5f6f6b74861195a52110f5) !
Installing flask...
  Installation Succeeded
Installing gunicorn...
  Installation Succeeded
Installing dependencies from Pipfile.lock (2110f5)...
All dependencies are now up-to-date!
Upgrading flask, gunicorn in dependencies.
Building requirements...
Resolving dependencies...
Locking packages...
```

Usamos pipenv para instalar las dependencias necesarias para nuestro proyecto: pipenv install flask gunicorn

```
(aplicacion) david@UbuntuServerDavidArredondo:/var/www/aplicacion$ pipenv install flask gunicorn --skip-lock
Loading .env environment variables...
The flag --skip-lock has been reintroduced (but is not recommended). Without the lock resolver it is difficult to manage multiple package indexes, and hash checking is not provided. However it can help manage installs with current deficiencies in locking across platforms.
Installing flask...
  Installation Succeeded
Installing gunicorn...
  Installation Succeeded
Installing dependencies from Pipfile...
(aplicacion) david@UbuntuServerDavidArredondo:/var/www/aplicacion$ pipenv run pip list
Loading .env environment variables...
Package      Version
-----
blinker      1.9.0
click         8.3.0
Flask         3.1.2
gunicorn     23.0.0
itsdangerous 2.2.0
Jinja2        3.1.6
MarkupSafe   3.0.3
packaging    25.0
pip          25.2
werkzeug     3.1.3
(aplicacion) david@UbuntuServerDavidArredondo:/var/www/aplicacion$ pipenv run flask --version
Loading .env environment variables...
Python 3.12.3
Flask 3.1.2
werkzeug 3.1.3
(aplicacion) david@UbuntuServerDavidArredondo:/var/www/aplicacion$
```

Modificamos los archivos [application.py](#) y [wsgi.py](#)

```
david@UbuntuServerDavidArredondo: /var/www/aplicacion
GNU nano 7.2                                     application.py *
from flask import flask
app = Flask(__name__)

@app.route('/')
def index():
    return '<h1>Aplicacion desplegada</h1>'

^G Help      ^O Write Out   ^W Where Is     ^K Cut          ^T Execute      ^C Location    M-U Undo      M-A Set Mark
^X Exit      ^R Read File   ^\ Replace      ^U Paste        ^J Justify      ^/ Go To Line  M-E Redo      M-6 Copy
```

```
david@UbuntuServerDavidArredondo: /var/www/aplicacion
GNU nano 7.2                                     wsgi.py
from application import app
if __name__ == '__main__':
    app.run(debug=False)

^G Help      ^O Write Out   ^W Where Is     ^K Cut          ^T Execute      ^C Location    M-U Undo      M-A Set Mark
^X Exit      ^R Read File   ^\ Replace      ^U Paste        ^J Justify      ^/ Go To Line  M-E Redo      M-6 Copy
```

Corramos ahora nuestra aplicación a modo de comprobación con el servidor web integrado de Flask. Si especificamos la dirección 0.0.0.0 lo que le estamos diciendo al servidor es que escuche en todas sus interfaces, si las tuviera:

```
(aplicacion) david@UbuntuServerDavidArredondo:/var/www/aplicacion$ python3 wsgi.py
 * Tip: There are .env files present. Install python-dotenv to use them.
 * Serving Flask app 'application'
 * Debug mode: off
WARNING: This is a development server. Do not use it in a production deployment. Use a production WSGI server instead.
 * Running on all addresses (0.0.0.0)
 * Running on http://127.0.0.1:5000
 * Running on http://192.168.0.84:5000
Press CTRL+C to quit
```

Metemos la ip



Puesto que ya debemos tener instalado Nginx en nuestro sistema, lo iniciamos y comprobamos que su estado sea activo:

```
sudo systemctl start nginx
```

```
sudo systemctl status nginx
```

```
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ sudo systemctl start nginx
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ sudo systemctl status nginx
● nginx.service - A high performance web server and a reverse proxy server
   Loaded: loaded (/usr/lib/systemd/system/nginx.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-10-23 08:20:25 UTC; 23s ago
     Docs: man:nginx(8)
 Process: 5078 ExecStartPre=/usr/sbin/nginx -t -q -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
 Process: 5083 ExecStart=/usr/sbin/nginx -g daemon on; master_process on; (code=exited, status=0/SUCCESS)
 Main PID: 5123 (nginx)
    Tasks: 6 (limit: 8397)
   Memory: 4.4M (peak: 10.0M)
      CPU: 40ms
     CGroup: /system.slice/nginx.service
             ├─5123 nginx: master process /usr/sbin/nginx -g daemon on; master_process on;
             ├─5126 nginx: worker process
             ├─5127 nginx: worker process
             ├─5128 nginx: worker process
             ├─5129 nginx: worker process
             ├─5130 nginx: worker process

Oct 23 08:20:25 UbuntuServerDavidArredondo systemd[1]: Starting nginx.service - A high performance web server and a reverse proxy server...
Oct 23 08:20:25 UbuntuServerDavidArredondo systemd[1]: Started nginx.service - A high performance web server and a reverse proxy server.
david@UbuntuServerDavidArredondo:/var/www/aplicacion$
```

Creamos este archivo con esta ruta

```
Oct 23 08:20:25 UbuntuServerDavidArredondo systemd[1]: Started nginx.service - A high performance web server and
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ sudo nano /etc/systemd/system/flask_app.service
```

Modificamos el archivo

```
GNU nano 7.2
/etc/systemd/system/flask_app.service
[Service]
Description=Aplicacion Flask de David con Gunicorn
After=network.target

[Service]
User=david # <- ;Cambia ESTO!
Group=www-data
Environment="PATH=/home/david//local/share/virtualenv/aplicacion-Q_WIFnHN/bin" # <- ;Cambia TODA LA RUTA DEL VIRTUALENV!
WorkingDirectory=/var/www/aplicacion # <- ;Cambia ESTO!
ExecStart=/home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock -m 007 aplicacion:app # <- ;Cambia ESTA RUTA Y EL NOMBRE DEL MÓDULO!

[Install]
WantedBy=multi-user.target
```

Ponemos este comando systemctl enable nombre_mi_servicio

```
==== AUTHENTICATING FOR org.freedesktop.systemd1.reload-daemon ====
Authentication is required to reload the systemd state.
Authenticating as: david
Password:
==== AUTHENTICATION COMPLETE ====
david@UbuntuServerDavidArredondo:/var/www/aplicacion$
```

Ponemos systemctl start nombre_mi_servicio

```
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ systemctl start flask_app.service
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ====
Authentication is required to start 'flask_app.service'.
Authenticating as: david
Password:
==== AUTHENTICATION COMPLETE ====
david@UbuntuServerDavidArredondo:/var/www/aplicacion$
```

hacemos un systemctl status nombre_mi_servicio

```
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ sudo systemctl status flask_app.service
● flask_app.service - Flask app service - Aplicación Flask con Gunicorn
   Loaded: loaded (/etc/systemd/system/flask_app.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-10-23 08:40:15 UTC, 4s ago
     Main PID: 5542 (gunicorn)
        Tasks: 5 (limit: 8997)
       Memory: 55.0M (peak: 55.3M)
      CPU: 344ms
     CGroup: /system.slice/flask_app.service
             └─5542 /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app
               ├─5543 /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app
               ├─5544 /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app
               ├─5545 /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenv/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app
Oct 23 08:40:15 UbuntuServerDavidArredondo systemd[1]: Started Flask app service - Aplicación Flask con Gunicorn.
Oct 23 08:40:15 UbuntuServerDavidArredondo gunicorn[5542]: [2025-10-23 08:40:15 +0000] [5542] [INFO] Starting gunicorn 23.0.0
Oct 23 08:40:15 UbuntuServerDavidArredondo gunicorn[5542]: [2025-10-23 08:40:15 +0000] [5542] [INFO] Listening at: unix:/var/www/aplicacion/aplicacion.sock (5542)
Oct 23 08:40:15 UbuntuServerDavidArredondo gunicorn[5542]: [2025-10-23 08:40:15 +0000] [5542] [INFO] Worker class: sync
Oct 23 08:40:15 UbuntuServerDavidArredondo gunicorn[5543]: [2025-10-23 08:40:15 +0000] [5543] [INFO] Booting worker with pid: 5543
Oct 23 08:40:15 UbuntuServerDavidArredondo gunicorn[5544]: [2025-10-23 08:40:15 +0000] [5544] [INFO] Booting worker with pid: 5544
Oct 23 08:40:15 UbuntuServerDavidArredondo gunicorn[5545]: [2025-10-23 08:40:15 +0000] [5545] [INFO] Booting worker with pid: 5545
david@UbuntuServerDavidArredondo:/var/www/aplicacion$
```

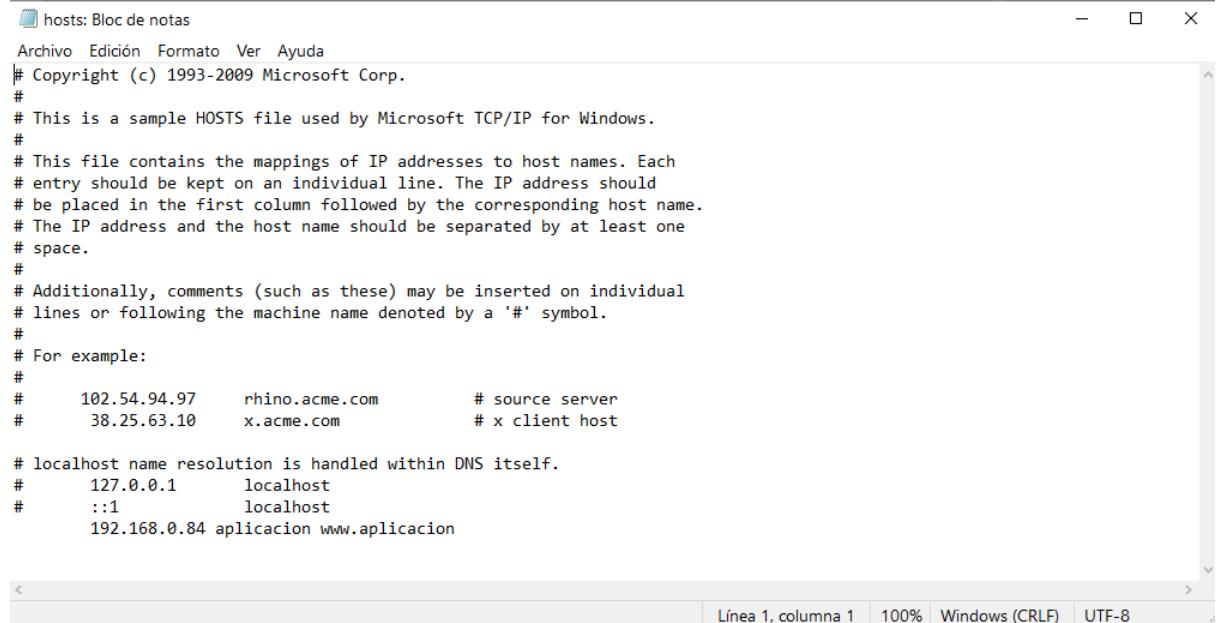
Creamos un archivo con el nombre de nuestra aplicación y dentro estableceremos la configuración para ese sitio web. El archivo, como recordáis, debe estar en /etc/nginx/sites-available/nombre_aplicacion y tras ello lo editamos para que quede:

```
GNU nano 7.2
/etc/nginx/sites-available/aplicacion *
Server {
    listen 80;
    server_name mi_aplicacion www.aplicacion;
    access_log /var/log/nginx/mi_aplicacion.access.log;
    error_log /var/log/nginx/mi_aplicacion.error.log;
    location / {
        include proxy_params;
        proxy_pass
        http://unix:/var/www/nombre_aplicacion/aplicacion.sock;
    }
}
```

Hacemos sudo nginx -t

```
david@UbuntuServerDavidArredondo:/var/www/aplicacion$ sudo nginx -t
nginx: the configuration file /etc/nginx/nginx.conf syntax is ok
nginx: configuration file /etc/nginx/nginx.conf test is successful
david@UbuntuServerDavidArredondo:/var/www/aplicacion$
```

Añadimos nuestra ip y el nombre de la aplicación junto con su dominio



```
hosts: Bloc de notas
Archivo Edición Formato Ver Ayuda
# Copyright (c) 1993-2009 Microsoft Corp.
#
# This is a sample HOSTS file used by Microsoft TCP/IP for Windows.
#
# This file contains the mappings of IP addresses to host names. Each
# entry should be kept on an individual line. The IP address should
# be placed in the first column followed by the corresponding host name.
# The IP address and the host name should be separated by at least one
# space.
#
# Additionally, comments (such as these) may be inserted on individual
# lines or following the machine name denoted by a '#' symbol.
#
# For example:
#
#      102.54.94.97    rhino.acme.com        # source server
#      38.25.63.10    x.acme.com            # x client host

# localhost name resolution is handled within DNS itself.
#      127.0.0.1          localhost
#      ::1               localhost
192.168.0.84 aplicacion www.aplicacion
```

Ponemos http://www.nombre_aplicacion y deberia aparecer esto



Aplicacion desplegada

Nos movemos a /var/www y clonamos con
git clone https://github.com/raul-profesor/Practica-3.5

```
david@UbuntuServerDavidArredondo:~$ cd /var/www
david@UbuntuServerDavidArredondo:/var/www$ git clone https://github.com/raul-profesor/Practica-3.5
fatal: could not create work tree dir 'Practica-3.5': Permission denied
david@UbuntuServerDavidArredondo:/var/www$ sudo git clone https://github.com/raul-profesor/Practica-3.5
Cloning into 'Practica-3.5'...
remote: Enumerating objects: 111, done.
remote: Total 111 (delta 0), reused 0 (delta 0), pack-reused 111 (from 1)
Receiving objects: 100% (111/111), 782.08 KiB | 3.00 MiB/s, done.
Resolving deltas: 100% (49/49), done.
```

Comenzamos con el punto 6 de la práctica anterior

Le damos permisos a la aplicación sudo chown -R \$USER:www-data
/var/www/mi_aplicacion

```
david@UbuntuServerDavidArredondo:/var/www$ sudo chown -R $USER:www-data /var/www/Practica-3.5
david@UbuntuServerDavidArredondo:/var/www$
```

Establecemos los permisos adecuados a este directorio, para que pueda ser leído por todo el mundo:chmod -R 775 /var/www/mi_aplicacion

```
david@UbuntuServerDavidArredondo:/var/www$ chmod -R 775 /var/www/Practica-3.5
david@UbuntuServerDavidArredondo:/var/www$
```

Creamos el archivo .env y le añadimos esto con sudo nano .env

```
GNU nano 7.2
FLASK_APP=app.py
FLASK_ENV=production
```

Iniciamos ahora nuestro entorno virtual. Pipenv cargará las variables de entorno desde el fichero .env de forma automática: pipenv shell

```
david@UbuntuServerDavidArredondo:/var/www/Practica-3.5$ pipenv shell
Loading .env environment variables...
Creating a virtualenv for this project
Pipfile: /var/www/Practica-3.5/Pipfile
Using /usr/bin/python3.12.3 to create virtualenv...
  Creating virtual environment...created virtual environment CPython3.12.3.final.0-64 in 107ms
    creator CPython3Posix(dest=/home/david/.local/share/virtualenvs/Practica-3.5-fn2PEgVy, clear=False, no_vcs_ignore=False, global=False)
    seeder FromAppData(download=False, pip=bundle, via=copy, app_data_dir=/home/david/.local/share/virtualenv)
      added seed packages: pip==25.2
    activators BashActivator,CShellActivator,FishActivator,NushellActivator,PowerShellActivator,PythonActivator

  Successfully created virtual environment!
Virtualenv location: /home/david/.local/share/virtualenvs/Practica-3.5-fn2PEgVy
requirements.txt found in /var/www/Practica-3.5 instead of Pipfile! Converting...
  Success!
Warning: Your Pipfile now contains pinned versions, if your requirements.txt did.
We recommend updating your Pipfile to specify the "*" version, instead.
Launching subshell in virtual environment...
david@UbuntuServerDavidArredondo:/var/www/Practica-3.5$ source /home/david/.local/share/virtualenvs/Practica-3.5-fn2PEgVy/bin/activate
(Practica-3.5) david@UbuntuServerDavidArredondo:/var/www/Practica-3.5$
```

Para instalar las dependencias del proyecto de la aplicación deberás hacer:
`poetry shell`

```
david@UbuntuServerDavidArredondo:/var/www/Practica-3.5$ pipenv shell
Loading .env environment variables...
Creating a virtualenv for this project
Pipfile: /var/www/Practica-3.5/Pipfile
Using /usr/bin/python3.12.3 to create virtualenv...
⠇ Creating virtual environment...created virtual environment CPython3.12.3.final.0-64 in 107ms
creator CPython3Posix(dest=/home/david/.local/share/virtualenvs/Practica-3.5-fn2PEgVy, clear=False, no_vcs_ignore=False, global=False)
seeder FromAppData(download=False, pip=bundle, via=copy, app_data_dir=/home/david/.local/share/virtualenv)
    added seed packages: pip==25.2
activators BashActivator,CShellActivator,FishActivator,NushellActivator,PowerShellActivator,PythonActivator

⠇ Successfully created virtual environment!
Virtualenv location: /home/david/.local/share/virtualenvs/Practica-3.5-fn2PEgVy
requirements.txt found in /var/www/Practica-3.5 instead of Pipfile! Converting...
⠇ Success!
Warning: Your Pipfile now contains pinned versions, if your requirements.txt did.
We recommend updating your Pipfile to specify the "*" version, instead.
Launching subshell in virtual environment...
david@UbuntuServerDavidArredondo:/var/www/Practica-3.5$ source /home/david/.local/share/virtualenvs/Practica-3.5-fn2PEgVy/bin/activate
(Practica-3.5) david@UbuntuServerDavidArredondo:/var/www/Practica-3.5$ pipenv install -r requirements.txt
Loading .env environment variables...
Requirements file provided! Importing into Pipfile...
Pipfile.lock not found, creating...
Locking dependencies...
Building requirements...
Resolving dependencies...
⠇ Success!
Locking dependencies...
Updated Pipfile.lock (ea580f124f22bef5260d86a4c391548fbf2657bffc87a367b957c32ab6cc43d3) !
Installing dependencies from Pipfile.lock (cc43d3)...
(Practica-3.5) david@UbuntuServerDavidArredondo:/var/www/Practica-3.5$
```

Y un último detalle, si miráis el código del proyecto, quee es muy sencillo, veréis que Gunicorn debe iniciarse ahora así: gunicorn --workers 4 --bind 0.0.0.0:5000 wsgi:app

Poniendo <http://192.168.0.84:5000> deberia aparecer esto



Nos metemos en el archivo flask_app.service y lo modificamos para esta aplicacion

```
GNU nano 7.2
[Unit]
Description=Flask app service - Aplicación Flask con Gunicorn
After=network.target

[Service]
User=david
Group=www-data
WorkingDirectory=/var/www/Practica-3.5
Environment="PATH=/home/david/.local/share/virtualenvs/aplicacion_Q_WIFnHN/bin/"
ExecStart=/home/david/.local/share/virtualenvs/aplicacion_Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/Practica-3.5/Practica-3.5.sock app:app

[Install]
WantedBy=multi-user.target
```

Ahora, como cada vez que se crea un servicio nuevo de systemd, se habilita y se
systemctl enable nombre_mi_servicio
systemctl start nombre_mi_servicio

```
(Practica-3.5) david@UbuntuServerDavidArredondo:~$ systemctl enable flask_app.service
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-unit-files ====
Authentication is required to manage system service or unit files.
Authenticating as: david
Password:
==== AUTHENTICATION COMPLETE ====
==== AUTHENTICATING FOR org.freedesktop.systemd1.reload-daemon ====
Authentication is required to reload the systemd state.
Authenticating as: david
Password:
==== AUTHENTICATION COMPLETE ====
(Practica-3.5) david@UbuntuServerDavidArredondo:~$
```

```
(Practica-3.5) david@UbuntuServerDavidArredondo:~$ systemctl start flask_app.service
==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ====
Authentication is required to start 'flask_app.service'.
Authenticating as: david
Password:
==== AUTHENTICATION COMPLETE ====
(Practica-3.5) david@UbuntuServerDavidArredondo:~$
```

Hacemos el status

```
(Practica-3.5) david@UbuntuServerDavidArredondo:~$ systemctl status flask_app.service
● flask_app.service - Flask app service - Aplicación Flask con Gunicorn
   Loaded: loaded (/etc/systemd/system/flask_app.service; enabled; preset: enabled)
   Active: active (running) since Thu 2025-10-23 10:45:32 UTC; 18min ago
     Main PID: 857 (gunicorn)
        Tasks: 4 (limit: 4397)
      Memory: 65.0M (peak: 66.0M)
         CPU: 537ms
      CGroup: /system.slice/flask_app.service
              └─ 857 /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app
                  ├─ 842 /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app
                  ├─ 844 /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app
                  ├─ 845 /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/python /home/david/.local/share/virtualenvs/aplicacion-Q_WIFnHN/bin/gunicorn --workers 3 --bind unix:/var/www/aplicacion/aplicacion.sock wsgi:app

Oct 23 10:45:32 UbuntuServerDavidArredondo gunicorn[857]: [2025-10-23 10:45:32 +0000] [857] [INFO] Starting gunicorn 23.0.0
Oct 23 10:45:32 UbuntuServerDavidArredondo gunicorn[857]: [2025-10-23 10:45:32 +0000] [857] [INFO] Listening at: unix:/var/www/aplicacion/aplicacion.sock (857)
Oct 23 10:45:32 UbuntuServerDavidArredondo gunicorn[842]: [2025-10-23 10:45:32 +0000] [842] [INFO] Booting worker with pid: 942
Oct 23 10:45:33 UbuntuServerDavidArredondo gunicorn[944]: [2025-10-23 10:45:33 +0000] [944] [INFO] Booting worker with pid: 945
Oct 23 10:45:33 UbuntuServerDavidArredondo gunicorn[945]: [2025-10-23 10:45:33 +0000] [945] [INFO] Booting worker with pid: 945
Warning: Journal has been rotated since it was started and some journal files were not opened due to insufficient permissions, output may be incomplete.
(Practica-3.5) david@UbuntuServerDavidArredondo:~$
```

Modificamos el proxypass con el dominio nuevo

```
GNU nano 7.2
server {
    listen 80;
    server_name aplicacion www.aplicacion; # Sustituye por tu dominio o IP
    access_log /var/log/nginx/aplicacion.access.log;
    error_log /var/log/nginx/aplicacion.error.log;
    location / {
        include proxy_params;
        proxy_pass http://unix:/var/www/Practica-3.5/Practica-3.5.sock;
    }
}
```

Comprobamos con la ip y debe de aparecer esto



Cuestiones

Cuestión 1

Busca, lee, entiende y explica qué es y para qué sirve un servidor WSGI

Un servidor WSGI (como Gunicorn o uWSGI) es un traductor y gestor de procesos para aplicaciones Python (Flask/Django) en producción.

Función Principal

Su único propósito es estandarizar la comunicación entre el servidor web (NGINX), que habla HTTP, y tu aplicación Python, que no está diseñada para manejar peticiones de red directamente.

Para Qué Sirve (En Producción) ↗

Traducción: Convierte las peticiones HTTP del servidor web a un formato que Python entiende, y viceversa.

Concurrencia: Ejecuta múltiples procesos de trabajo (workers) de tu aplicación simultáneamente, permitiéndole manejar muchos usuarios a la vez, algo que el servidor de desarrollo no puede hacer.

Estabilidad: Gestiona y reinicia automáticamente los procesos de la aplicación que fallan, asegurando un servicio 24/7.