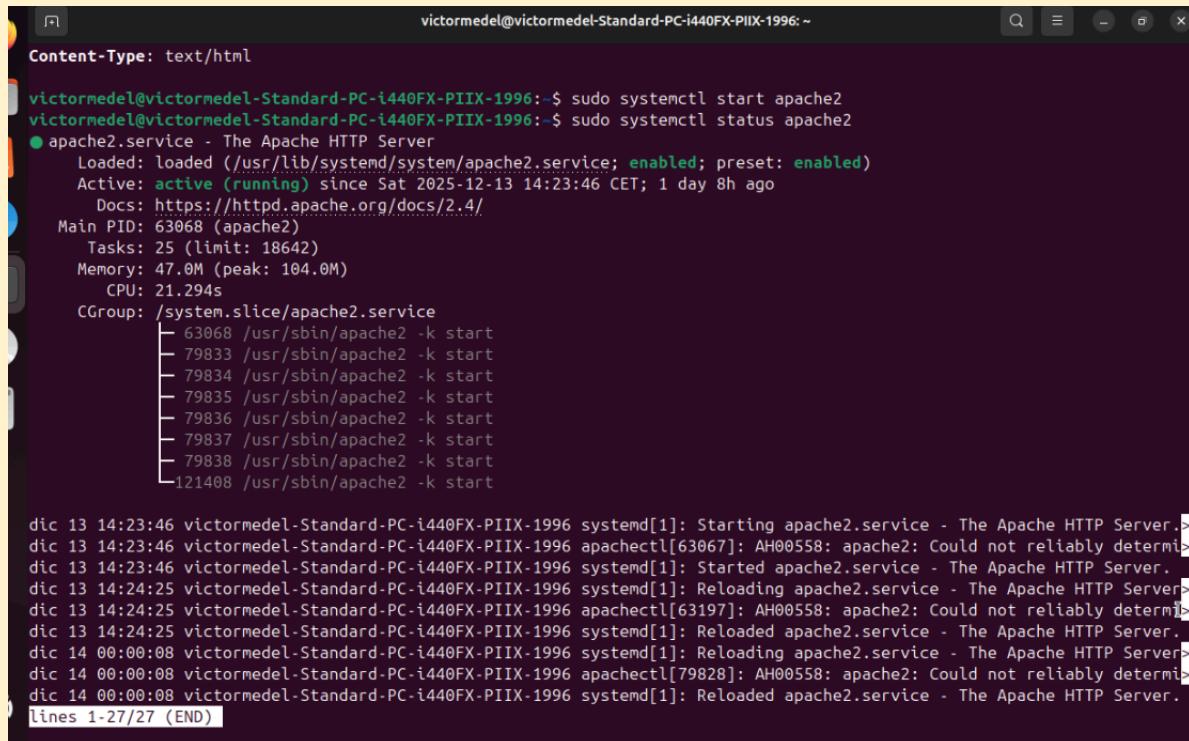


Actividad 2.1 Configuración avanzada de Apache:

PASO 1 → Arrancar Apache y comprobar estado:



```
Content-Type: text/html

victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo systemctl start apache2
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo systemctl status apache2
● apache2.service - The Apache HTTP Server
   Loaded: loaded (/usr/lib/systemd/system/apache2.service; enabled; preset: enabled)
   Active: active (running) since Sat 2025-12-13 14:23:46 CET; 1 day 8h ago
     Docs: https://httpd.apache.org/docs/2.4/
   Main PID: 63068 (apache2)
      Tasks: 25 (limit: 18642)
     Memory: 47.0M (peak: 104.0M)
        CPU: 21.294s
      CGroup: /system.slice/apache2.service
              └─ 63068 /usr/sbin/apache2 -k start
                  ├─ 79833 /usr/sbin/apache2 -k start
                  ├─ 79834 /usr/sbin/apache2 -k start
                  ├─ 79835 /usr/sbin/apache2 -k start
                  ├─ 79836 /usr/sbin/apache2 -k start
                  ├─ 79837 /usr/sbin/apache2 -k start
                  ├─ 79838 /usr/sbin/apache2 -k start
                  ├─ 121408 /usr/sbin/apache2 -k start

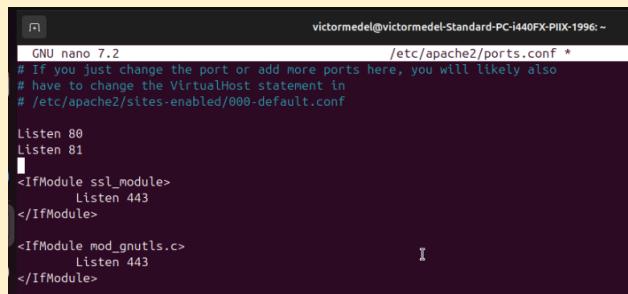
dic 13 14:23:46 victormedel-Standard-PC-i440FX-PIIX-1996 systemd[1]: Starting apache2.service - The Apache HTTP Server.
dic 13 14:23:46 victormedel-Standard-PC-i440FX-PIIX-1996 apachectl[63067]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.0.1 for Port 80
dic 13 14:23:46 victormedel-Standard-PC-i440FX-PIIX-1996 systemd[1]: Started apache2.service - The Apache HTTP Server.
dic 13 14:24:25 victormedel-Standard-PC-i440FX-PIIX-1996 systemd[1]: Reloading apache2.service - The Apache HTTP Server.
dic 13 14:24:25 victormedel-Standard-PC-i440FX-PIIX-1996 apachectl[63197]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.0.1 for Port 80
dic 13 14:24:25 victormedel-Standard-PC-i440FX-PIIX-1996 systemd[1]: Reloaded apache2.service - The Apache HTTP Server.
dic 14 00:00:08 victormedel-Standard-PC-i440FX-PIIX-1996 systemd[1]: Reloading apache2.service - The Apache HTTP Server.
dic 14 00:00:08 victormedel-Standard-PC-i440FX-PIIX-1996 apachectl[79828]: AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.0.1 for Port 80
dic 14 00:00:08 victormedel-Standard-PC-i440FX-PIIX-1996 systemd[1]: Reloaded apache2.service - The Apache HTTP Server.
lines 1-27/27 (END)
```

PASO 2 → Apache escuchando en el puerto 81 además del 80:

→ Editar puertos de Apache:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo nano /etc/apache2/ports.conf
```

→Añadiré:



```
GNU nano 7.2                               /etc/apache2/ports.conf *
# If you just change the port or add more ports here, you will likely also
# have to change the VirtualHost statement in
# /etc/apache2/sites-enabled/000-default.conf

Listen 80
Listen 81
<IfModule ssl_module>
    Listen 443
</IfModule>
<IfModule mod_gnutls.c>
    Listen 443
</IfModule>
```

→ Tras guardar y salir, reiniciaremos:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo systemctl restart apache2
```

→ Comprobar:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo systemctl restart apache2
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo ss -tulpn | grep apache
tcp    LISTEN  0      511          *:81          *:*      users:(("apache2",pid=122125,fd=6),("apache2",pid=12212
4,fd=6),("apache2",pid=122123,fd=6),("apache2",pid=122122,fd=6),("apache2",pid=122121,fd=6),("apache2",pid=122118,fd=6))
tcp    LISTEN  0      511          *:80          *:*      users:(("apache2",pid=122125,fd=4),("apache2",pid=12212
4,fd=4),("apache2",pid=122123,fd=4),("apache2",pid=122122,fd=4),("apache2",pid=122121,fd=4),("apache2",pid=122118,fd=4))
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

PASO 3 → Añadir dominio marisma.intranet al fichero hosts:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo nano /etc/hosts
```

→ Añadiré lo siguiente:

```
GNU nano 7.2                                         /etc/hosts *
127.0.0.1 localhost
127.0.1.1 victormedel-Standard-PC-i440FX-PIIX-1996
127.0.0.1 centro.intranet
127.0.0.1 departamentos.centro.intranet
127.0.0.1 servidor2.centro.intranet
127.0.0.1 marisma.intranet
# The following lines are desirable for IPv6 capable hosts
::1      ip6-localhost ip6-loopback
fe00::0  ip6-localnet
ff00::0  ip6-mcastprefix
ff02::1  ip6-allnodes
ff02::2  ip6-allrouters
```

PASO 4 → Cambiar ServerTokens:

→ Editar configuración global:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo nano /etc/apache2/conf-available/security.conf
```

→ Cambiar:

```
ServerTokens OS
#C T L S E
```

→ Por:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~
GNU nano 7.2                               /etc/apache2/conf-available/security.conf *
# Changing the following options will not really affect the security of the
# server, but might make attacks slightly more difficult in some cases.

#
# ServerTokens
# This directive configures what you return as the Server HTTP response
# Header. The default is 'Full' which sends information about the OS-Type
# and compiled in modules.
# Set to one of: Full | OS | Minimal | Minor | Major | Prod
# where Full conveys the most information, and Prod the least.
#ServerTokens Minimal
ServerTokens FULL
#ServerTokens Full
```

PASO 5 → Cambiar ServerSignature y comprobar pie de página:

→ En el mismo archivo anterior, cambiaremos lo siguiente:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~
GNU nano 7.2                               /etc/apache2/conf-available/secu
# Changing the following options will not really affect the security of the
# server, but might make attacks slightly more difficult in some cases.

#
# ServerTokens
# This directive configures what you return as the Server HTTP response
# Header. The default is 'Full' which sends information about the OS-Type
# and compiled in modules.
# Set to one of: Full | OS | Minimal | Minor | Major | Prod
# where Full conveys the most information, and Prod the least.
#ServerTokens Minimal
ServerTokens FULL
#ServerTokens Full

#
# Optionally add a line containing the server version and virtual host
# name to server-generated pages (internal error documents, FTP directory
# listings, mod_status and mod_info output etc., but not CGI generated
# documents or custom error documents).
# Set to 'Email' to also include a mailto: link to the ServerAdmin.
# Set to one of: On | Off | EMail
#ServerSignature Off
ServerSignature On
```

→ Probar a entrar en una página inexistente desde el navegador:

The requested URL was not found on this server.

Apache/2.4.58 (Ubuntu) mod_wsgi/5.0.0 Python/3.12 Server at marisma.intranet Port 80

*Abajo aparece infomación del servidor, junto a la página de error, ya que no existe, y con la firma activa

PASO 6 → Crear directorios prueba y prueba2:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo mkdir /var/www/html/prueba
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo mkdir /var/www/html/prueba2
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Crear páginas:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ echo "<h1>Pagina PRUEBA</h1>" | sudo tee /var/www/html/prueba/index.html
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ echo "<h1>Pagina PRUEBA2</h1>" | sudo tee /var/www/html/prueba2/index.html
```

→ Tras crearlas, probaremos que funcionan correctamente:

Index of /prueba

Name	Last modified	Size	Description
Parent Directory	-	-	

Apache/2.4.58 (Ubuntu) mod_wsgi/5.0.0 Python/3.12 Server at marisma.intranet Port 80

Index of /prueba2

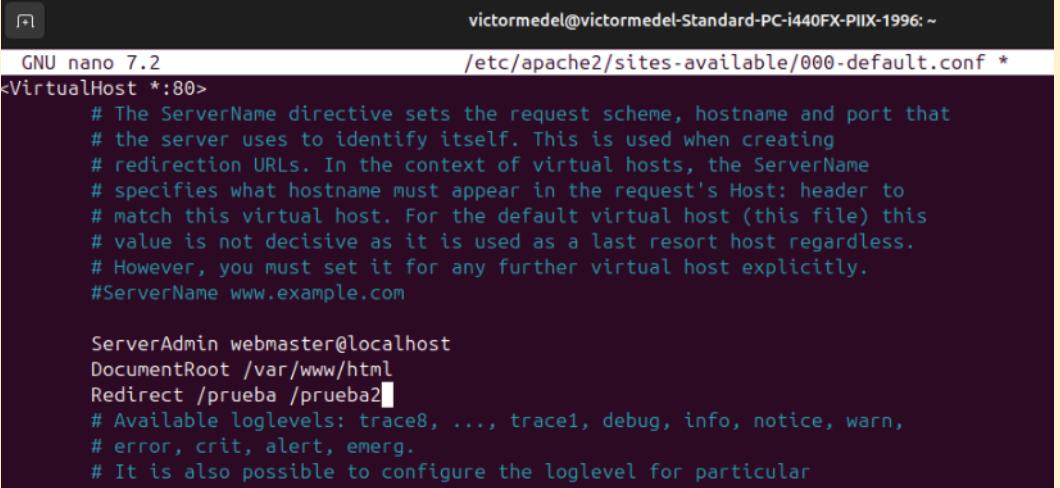
Name	Last modified	Size	Description
Parent Directory	-	-	

Apache/2.4.58 (Ubuntu) mod_wsgi/5.0.0 Python/3.12 Server at marisma.intranet Port 80

PASO 7 → Redireccionar carpeta prueba → prueba2:

→ Editar el VirtualHost:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo nano /etc/apache2/sites-available/000-default.conf
```



```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

```
GNU nano 7.2
```

```
/etc/apache2/sites-available/000-default.conf *
```

```
<VirtualHost *:80>
    # The ServerName directive sets the request scheme, hostname and port that
    # the server uses to identify itself. This is used when creating
    # redirection URLs. In the context of virtual hosts, the ServerName
    # specifies what hostname must appear in the request's Host: header to
    # match this virtual host. For the default virtual host (this file) this
    # value is not decisive as it is used as a last resort host regardless.
    # However, you must set it for any further virtual host explicitly.
    #ServerName www.example.com

    ServerAdmin webmaster@localhost
    DocumentRoot /var/www/html
    Redirect /prueba /prueba2
    # Available loglevels: trace8, ..., trace1, debug, info, notice, warn,
    # error, crit, alert, emerg.
    # It is also possible to configure the loglevel for particular
```

PASO 8 → Redireccionar SOLO a una página:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ Redirect /prueba/index.html /prueba2/index.html
No se ha encontrado la orden «Redirect», pero se puede instalar con:
sudo apt install libxerces-c-samples
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo apt install libxerces-c-samples
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
Se instalarán los siguientes paquetes adicionales:
```



```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ Redirect /prueba/index.html /prueba2/index.html
```

```
Usage:
  Redirect <XML file>

This program installs an entity resolver, traps the call to
the external DTD file and redirects it to another application
specific file which contains the actual dtd.

The program then counts and reports the number of elements and
attributes in the given XML file.
```

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

PASO 9 → Usar directiva userdir:

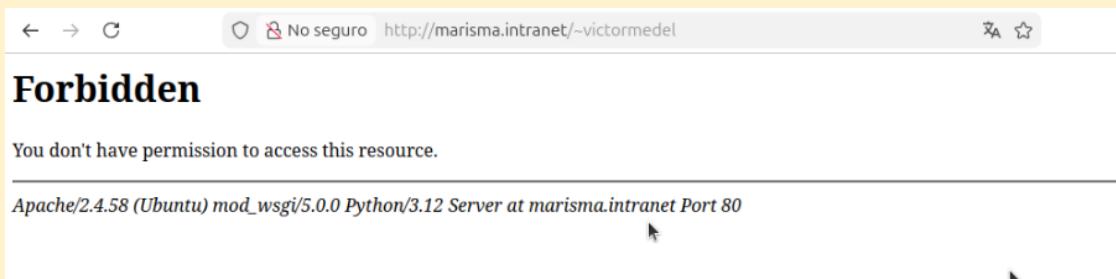
→ Lo primero que haremos será activar el módulo:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo a2enmod userdir
Enabling module userdir.
To activate the new configuration, you need to run:
  systemctl restart apache2
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Crear carpeta en tu usuario:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ mkdir ~/public_html
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ echo "<h1>UserDir funcionando</h1>" > ~/public_html/index.html
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Acceder:



→ Vamos a solucionar este error:

→ Activar el módulo userdir, y reiniciar Apache:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo a2enmod userdir
[sudo] contraseña para victormedel:
Module userdir already enabled
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo systemctl restart apache2
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

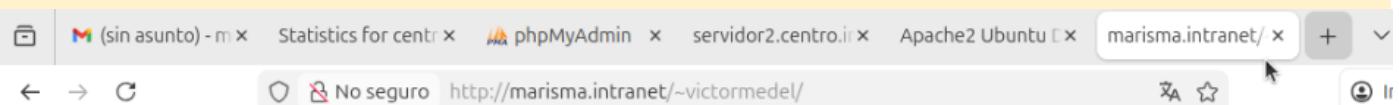
→ Crear el directorio public_html del usuario:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ chmod 771 /home/victormedel
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ chmod 755 /home/victormedel/public_html
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Reiniciar Apache otra vez:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo systemctl restart apache2
[sudo] contraseña para victormedel:
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Y por último, volveremos a probar en el navegador:



UserDir funcionando

PASO 10 → Directiva Alias, que la usaremos para redireccionar a una carpeta dentro del directorio del usuario:

→ Crear una carpeta dentro de tu public_html:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ mkdir /home/victormedel/public_html/alias
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ echo "<h1>Alias funcionando</h1>" > /home/victormedel/public_html/alias/index.html
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Editar el VirtualHost de marisma.intranet:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo nano /etc/apache2/sites-available/marisma.intranet.conf
```

→ Y dentro del VirtualHost añadiré lo siguiente:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ GNU nano 7.2 /etc/apache2/sites-available/marisma.intranet.conf *
Alias /mi-alias /home/victormedel/public_html/alias

<Directory /home/victormedel/public_html/alias>
    Require all granted
</Directory>
```

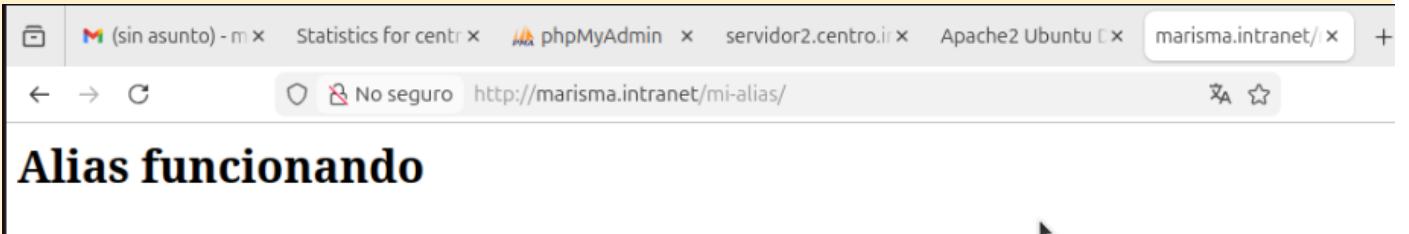
→ A continuación, reiniciaré Apache:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo nano /etc/apache2/sites-available/victormedel.conf
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo systemctl restart apache2
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ █
```

→ Y tras esto, Se ha comprobado la correcta carga de los VirtualHost mediante el comando apachectl -S, verificando que Apache reconoce y gestiona correctamente los dominios configurados (centro.intranet, departamentos.centro.intranet y servidor2.centro.intranet) en el puerto 80:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo apachectl -S
AH00558: apache2: Could not reliably determine the server's fully qualified domain name, using 127.0.1.1. Set the 'ServerName' directive globally to suppress this message
VirtualHost configuration:
*:80          is a NameVirtualHost
               default server 127.0.1.1 (/etc/apache2/sites-enabled/000-default.conf:1)
               port 80 namevhost 127.0.1.1 (/etc/apache2/sites-enabled/000-default.conf:1)
               port 80 namevhost centro.intranet (/etc/apache2/sites-enabled/centro.intranet.conf:1)
               port 80 namevhost departamentos.centro.intranet (/etc/apache2/sites-enabled/departamentos.centro.intranet.conf:1)
               port 80 namevhost servidor2.centro.intranet (/etc/apache2/sites-enabled/servidor2.centro.intranet.conf:1)
ServerRoot: "/etc/apache2"
Main DocumentRoot: "/var/www/html"
Main ErrorLog: "/var/log/apache2/error.log"
Mutex default: dir="/var/run/apache2/" mechanism=default
Mutex mpm-accept: using_defaults
Mutex watchdog-callback: using_defaults
Mutex rewrite-map: using_defaults
PidFile: "/var/run/apache2/apache2.pid"
Define: DUMP_VHOSTS
Define: DUMP_RUN_CFG
Define: ENABLE_USR_LIB_CGI_BIN
User: name="www-data" id=33
Group: name="www-data" id=33
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ █
```

→ Y ahora probaremos en el navegador:



PASO 11 → Directiva Options(indexes) + comprobar indexado:

→ Comprueba si Apache indexa directorios:

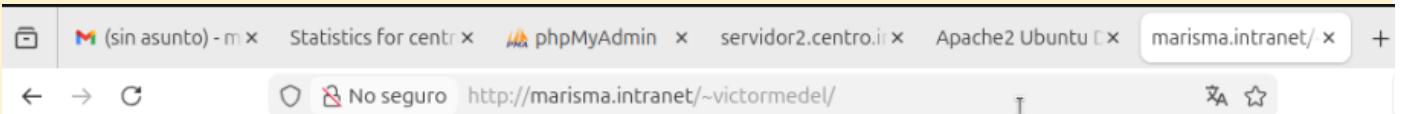
```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo mkdir -p /var/www/marisma.intranet/listado  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Desactivar el indexado:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ sudo nano /etc/apache2/sites-available/marisma.intranet.conf  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$  
  
GNU nano 7.2 /etc/apache2/sites-available/marisma.intranet.conf *  
Alias /mi-alias /home/victormedel/public_html/alias  
  
<Directory /home/victormedel/public_html/alias>  
    Require all granted  
    AllowOverride All  
    Require all granted  
</Directory>
```

→ Por último, verificaré que funciona:

→ Y como podemos ver, ya no indexa:



UserDir funcionando

Actividad 2.2 Scripts en Bash:

→ SCRIPT 1 – Añadir puerto a Apache:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~
```

```
GNU nano 7.2          script Puerto.sh *
```

```
echo "Uso: $0 PUERTO"
exit 1
fi

PUERTO=$1
ARCHIVO="/etc/apache2/ports.conf"

# Comprobar si el puerto ya existe
grep -q "Listen $PUERTO" $ARCHIVO

if [ $? -eq 0 ]; then
    echo "El puerto $PUERTO ya está configurado"
else
    echo "Añadiendo puerto $PUERTO a Apache"
    sudo cp $ARCHIVO $ARCHIVO.bak
    echo "Listen $PUERTO" | sudo tee -a $ARCHIVO
    sudo systemctl restart apache2
    echo "Puerto $PUERTO añadido correctamente"
fi
```

→ Ahora, daremos los permisos de ejecución:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~$ chmod +x script Puerto.sh
```

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~$ ls -l script Puerto.sh
-rwxrwxr-x 1 victormedel victormedel 560 dic 15 17:31 script Puerto.sh
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~$
```

→ Y por último, ejecutaremos el script:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ ./script Puerto.sh 81
El puerto 81 ya está configurado
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ SCRIPT 2 – Añadir dominio e IP a /etc/hosts:



```
GNU nano 7.2          script_hosts.sh *
IP=$1
DOMINIO=$2
ARCHIVO="/etc/hosts"

# Comprobar si el dominio ya existe
grep -q "$DOMINIO" $ARCHIVO

if [ $? -eq 0 ]; then
    echo "El dominio $DOMINIO ya existe en /etc/hosts"
else
    echo "Añadiendo $DOMINIO con IP $IP"
    sudo cp $ARCHIVO $ARCHIVO.bak
    echo "$IP      $DOMINIO" | sudo tee -a $ARCHIVO
    echo "Dominio añadido correctamente"
fi
```

→ Dar permisos de ejecución:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ nano script_hosts.sh
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ chmod +x script_hosts.sh
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ ls -l script_hosts.sh
-rwxrwxr-x 1 victormedel victormedel 512 dic 15 17:34 script_hosts.sh
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Por último, lo ejecutaremos para ver que funciona, como se puede ver a continuación:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ ./script_hosts.sh  
0.1 marisma.intranet  
El dominio marisma.intranet ya existe en /etc/hosts  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ grep marisma.intranet /etc/hosts  
127.0.0.1 marisma.intranet  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ SCRIPT 3 – Crear una página web automáticamente:

The screenshot shows a terminal window titled "victormedel@victormedel-Standard-PC-i440FX-PIIX-1996: ~". The user is editing a file named "script_web.sh" using the "nano" editor. The script content is as follows:

```
GNU nano 7.2                         script_web.sh *  
CABECERA=$2  
MENSAJE=$3  
RUTA="/var/www/html/pagina.html"  
  
sudo tee $RUTA > /dev/null <<EOF  
<!DOCTYPE html>  
<html lang="es">  
<head>  
    <meta charset="UTF-8">  
    <title>$TITULO</title>  
</head>  
<body>  
    <h1>$CABECERA</h1>  
    <p>$MENSAJE</p>  
</body>  
</html>  
EOF  
  
echo "Página web creada en $RUTA"
```

→ Dar permisos:

```
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ cd ~  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ nano script_web.sh  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ chmod +x script_web.sh  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ ls -l script_web.sh  
-rwxrwxr-x 1 victormedel victormedel 476 dic 15 17:39 script_web.sh  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$
```

→ Por último, ejecutaremos el Script:

```
F1WXIWX1-X I VICTORMEDEL VICTORMEDEL 470 011 17.59 script_web.sh  
victormedel@victormedel-Standard-PC-i440FX-PIIX-1996:~$ ./script_web.sh /var/www  
/html/prueba_script.html "Servidor APACHE" "Hola Mundo "Pagina creada con un scr  
ipt bash"  
> █
```

→