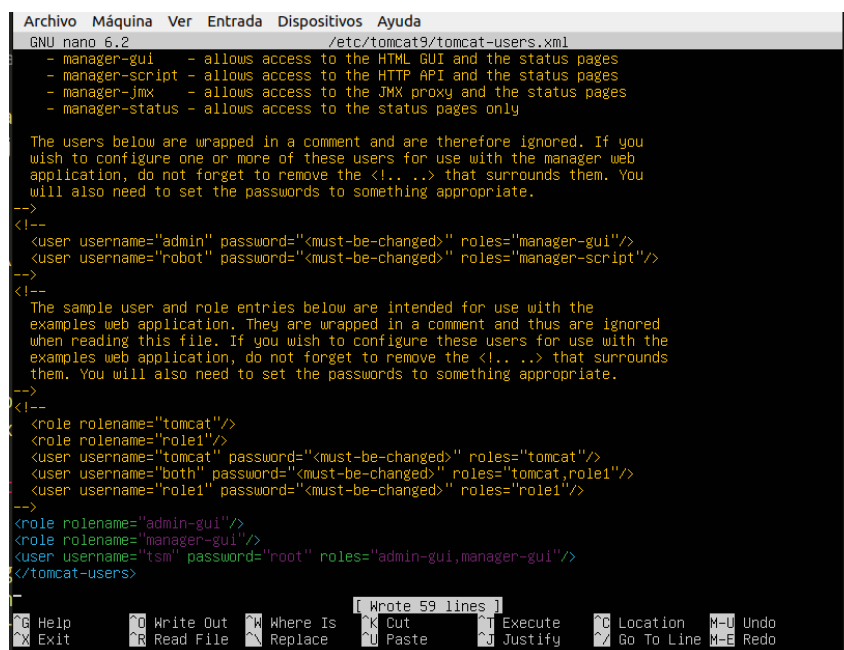


7. Instalar el servidor de aplicaciones Tomcat y comprobar que funciona (tanto en Ubuntu como en Windows). Indicar los pasos y comandos implicados (documentar el proceso de instalación).

- Usaremos los comandos de instalación e instalaremos los paquetes de tomcat9 y tomcat9-admin:

```
1 sudo apt install tomcat9 tomcat9-admin -y
```

- Comprobaremos que el servicio está funcionando utilizando `systemctl status tomcat9`, y de no estarlo, lo arrancaremos con `systemctl start tomcat9`.
- A continuación editaremos el archivo de configuración de los usuarios para crear un usuario con privilegios de administrador. Dicho archivo se encuentra en `/etc/tomcat9/tomcat-users.xml`.



```
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
GNU nano 6.2 /etc/tomcat9/tomcat-users.xml
- manager-gui - allows access to the HTML GUI and the status pages
- manager-script - allows access to the HTTP API and the status pages
- manager-jmx - allows access to the JMX proxy and the status pages
- manager-status - allows access to the status pages only

The users below are wrapped in a comment and are therefore ignored. If you
wish to configure one or more of these users for use with the manager web
application, do not forget to remove the <!-- ... --> that surrounds them. You
will also need to set the passwords to something appropriate.
-->
<!--
<user username="admin" password="<must-be-changed>" roles="manager-gui"/>
<user username="robot" password="<must-be-changed>" roles="manager-script"/>
-->
<!--
The sample user and role entries below are intended for use with the
examples web application. They are wrapped in a comment and thus are ignored
when reading this file. If you wish to configure these users for use with the
examples web application, do not forget to remove the <!-- ... --> that surrounds
them. You will also need to set the passwords to something appropriate.
-->
<!--
<role rolename="tomcat"/>
<role rolename="role1"/>
<user username="tomcat" password="<must-be-changed>" roles="tomcat"/>
<user username="both" password="<must-be-changed>" roles="tomcat,role1"/>
<user username="role1" password="<must-be-changed>" roles="role1"/>
-->
<role rolename="admin-gui"/>
<role rolename="manager-gui"/>
<user username="tsm" password="root" roles="admin-gui,manager-gui"/>
-->
</tomcat-users>
--
[ Wrote 59 lines ]
Help Write Out Where Is Cut Execute Location M-U Undo
Exit Read File Replace U Paste J Justify G Go To Line M-E Redo
```

- Además, quitaremos todas las restricciones que pueda agregar cualquier aplicación. Para ello, editaremos `/usr/share/tomcat9-admin/manager/META-INF/context.xml` comentando la etiqueta “`Valve`”:

```

GNU nano 6.2 /usr/share/tomcat9-admin/manager/META-INF/context.xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
    sameSiteCookies="strict" />
  <!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow="127.\d+\.\d+\.\d+:::1|0:0:0:0:0:0:1" /> -->
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|string)"
    />
</Context>
  
```

- Y haremos lo mismo con el “Host Manager”, el cual se encuentra en `/usr/share/tomcat9-admin/host-manager/META-INF/context.xml`:

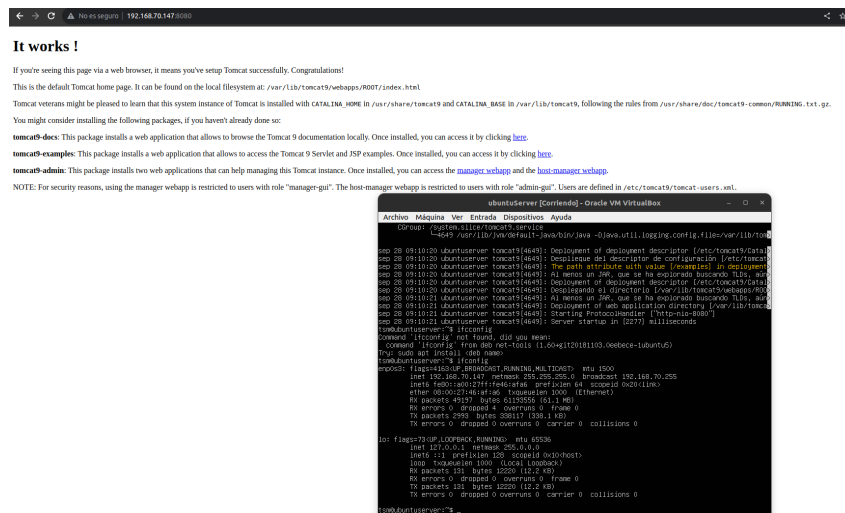
```

ubuntuServer [Corriendo] - Oracle VM VirtualBox
GNU nano 6.2 /usr/share/tomcat9-admin/host-manager/META-INF/context.xml
<?xml version="1.0" encoding="UTF-8"?>
<!--
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contributor license agreements. See the NOTICE file distributed with
this work for additional information regarding copyright ownership.
The ASF licenses this file to You under the Apache License, Version 2.0
(the "License"); you may not use this file except in compliance with
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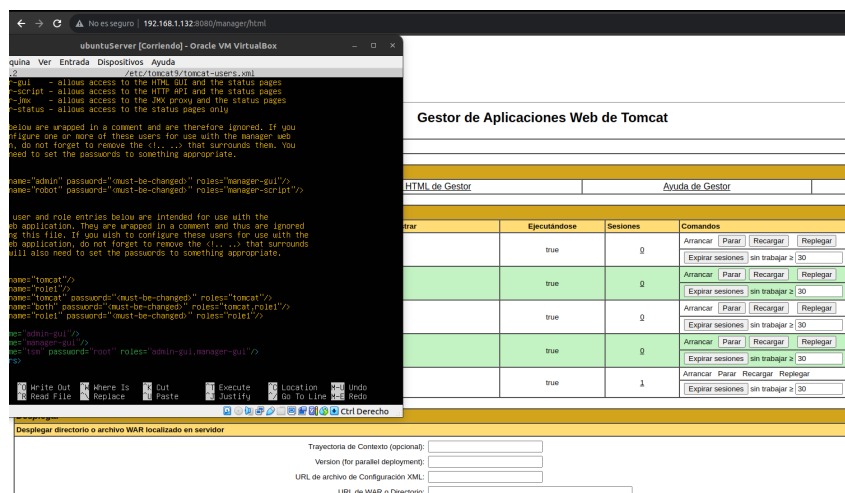
    http://www.apache.org/licenses/LICENSE-2.0

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distributed under the License is distributed on an "AS IS" BASIS,
WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied.
See the License for the specific language governing permissions and
limitations under the License.
-->
<Context antiResourceLocking="false" privileged="true" >
  <CookieProcessor className="org.apache.tomcat.util.http.Rfc6265CookieProcessor"
    sameSiteCookies="strict" />
  <!-- <Valve className="org.apache.catalina.valves.RemoteAddrValve"
    allow="127.\d+\.\d+\.\d+:::1|0:0:0:0:0:0:1" /> -->
  <Manager sessionAttributeValueClassNameFilter="java\.lang\.(?:Boolean|Integer|Long|Number|string)"
    />
</Context>
  
```

- Reiniciaremos el servicio, y comprobaremos que todo funciona correctamente:



- Y desde ahí podremos acceder a `direccion-ip:8080/manager`, donde podremos loguear con el nombre y la contraseña que añadimos previamente en `tomcat-users.xml`:



- También podremos acceder a `direccion-ip:8080/host-manager:`

8. Instalar y configurar de manera segura el servicio SSH. Conectar al servidor de distintas formas. Indicar los pasos y comandos implicados (documentar el proceso de instalación y configuración).

- Empezaremos instalando el paquete ssh mediante `sudo apt install ssh`, y comprobaremos que funciona con `systemctl status ssh`.

```

ubuntuServer [Corriendo] - Oracle VM VirtualBox
Archivo  Máquina  Ver  Entrada  Dispositivos  Ayuda
tsm@ubuntuServer:~$ sudo apt install ssh -y
[sudo] password for tsm:
Leyendo lista de paquetes... Hecho
Creando árbol de dependencias... Hecho
Leyendo la información de estado... Hecho
ssh ya está en su versión más reciente (1:8.9p1-3ubuntu0.4).
0 actualizados, 0 nuevos se instalarán, 0 para eliminar y 0 no actualizados.
tsm@ubuntuServer:~$ systemctl status ssh
● ssh.service - OpenBSD Secure Shell server
   Loaded: loaded (/lib/systemd/system/ssh.service; enabled; vendor preset: enabled)
   Active: active (running) since Sun 2023-10-08 11:59:14 UTC; 26s ago
     Docs: man:sshd(8)
           man:sshd_config(5)
   Process: 709 ExecStartPre=/usr/sbin/sshd -t (code=exited, status=0/SUCCESS)
   Main PID: 759 (sshd)
     Tasks: 1 (limit: 5760)
    Memory: 4.4M
       CPU: 23ms
   CGroup: /system.slice/ssh.service
           └─759 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

oct 08 11:59:14 ubuntuServer systemd[1]: Starting OpenBSD Secure Shell server...
oct 08 11:59:14 ubuntuServer sshd[759]: Server listening on 0.0.0.0 port 22.
oct 08 11:59:14 ubuntuServer sshd[759]: Server listening on :: port 22.
oct 08 11:59:14 ubuntuServer systemd[1]: Started OpenBSD Secure Shell server.
tsm@ubuntuServer:~$ _

```

- Con el servicio arrancado, y si no tenemos firewalls que impidan un correcto funcionamiento del mismo, ya podemos conectarnos desde cualquier punto de acceso a nuestra máquina mediante el siguiente comando:

```
1 ssh dirección-ip -l nombre-usuario-servidor
```

- En este ejemplo, me conecto desde mi host a la máquina:



Si es la primera vez que realizamos la conexión, buscará la ip del servidor en `.ssh/known_hosts`, y de no encontrarla, nos preguntará si queremos acceder y guardarla en la lista de direcciones conocidas.

```
tarik@tarik-dev:~$ ssh 192.168.1.132 -l tsu
The authenticity of host '192.168.1.132 (192.168.1.132)' can't be established.
ED25519 key fingerprint is SHA256:/7wvC0G0GL00gymHwXvK4d/4w/L0ddrVvVLU.
This host key is known by the following other names/addresses:
  ~/.ssh/known_hosts:6: [hashed name]
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.132' (ED25519) to the list of known hosts.
tsu@192.168.1.132's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-86-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:        https://ubuntu.com/advantage

System information as of dom 08 oct 2023 12:22:21 UTC

System load:  0.13728763125
Usage of /:   44.6% of 9.42GB
Memory usage: 18%
Swap usage:   0%
Processes:    138
Users logged in: 1
IPV4 address for enp8s3: 192.168.1.132
IPV6 address for enp8s3: 2a0c:5a82:238d:508:a08:27ff:fe46:afae

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.
   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

El mantenimiento de seguridad expandido para Aplicaciones está desactivado.
Se pueden aplicar 0 actualizaciones de forma inmediata.
2 actualizaciones de seguridad adicionales se pueden aplicar con ESM Apps.
Aprenda más sobre cómo activar el servicio ESM Apps at https://ubuntu.com/esm

Last login: Sun Oct 8 12:05:36 2023 from 127.0.0.1
tsu@ubuntu-server:~$ pwd
/home/tsu
tsu@ubuntu-server:~$
```

- También podríamos usar este otro comando:

```
1 ssh nombre-usuario-servidor@dirección-ip-nombre
```

```
tarik@tarik-dev ~$ pwd
/home/tarik
tarik@tarik-dev ~$ ssh tsm@192.168.1.132
tsm@192.168.1.132's password:
Welcome to Ubuntu 22.04.3 LTS (GNU/Linux 5.15.0-86-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of dom 08 oct 2023 12:26:57 UTC

System load:          0.169921875
Usage of /:            44.6% of 9.42GB
Memory usage:         10%
Swap usage:           0%
Processes:            138
Users logged in:      1
IPv4 address for enp0s3: 192.168.1.132
IPv6 address for enp0s3: 2a0c:5a82:230d:500:a00:27ff:fe46:afa6

 * Strictly confined Kubernetes makes edge and IoT secure. Learn how MicroK8s
   just raised the bar for easy, resilient and secure K8s cluster deployment.

   https://ubuntu.com/engage/secure-kubernetes-at-the-edge

El mantenimiento de seguridad expandido para Applications está desactivado
Se pueden aplicar 0 actualizaciones de forma inmediata.
2 actualizaciones de seguridad adicionales se pueden aplicar con ESM Apps.
Aprenda más sobre cómo activar el servicio ESM Apps at https://ubuntu.com/esm

Last login: Sun Oct  8 12:26:58 2023 from 192.168.1.131
tsm@ubuntuserver:~$ pwd
/home/tsm
tsm@ubuntuserver:~$
```