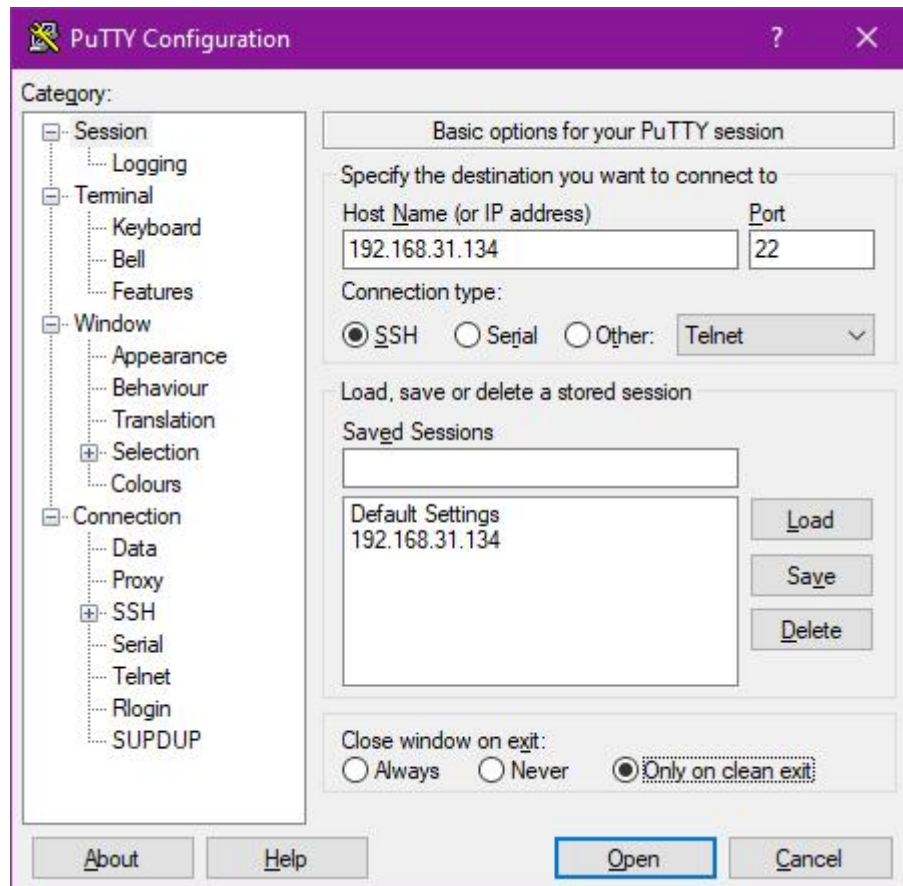
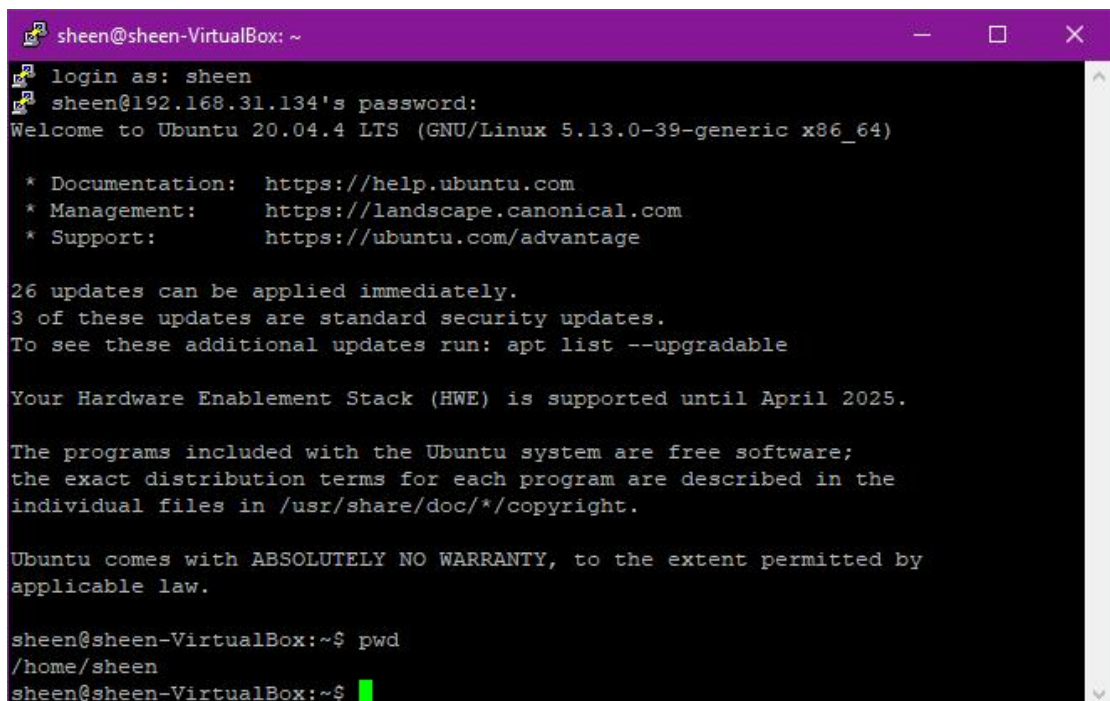


Завдання мінімум

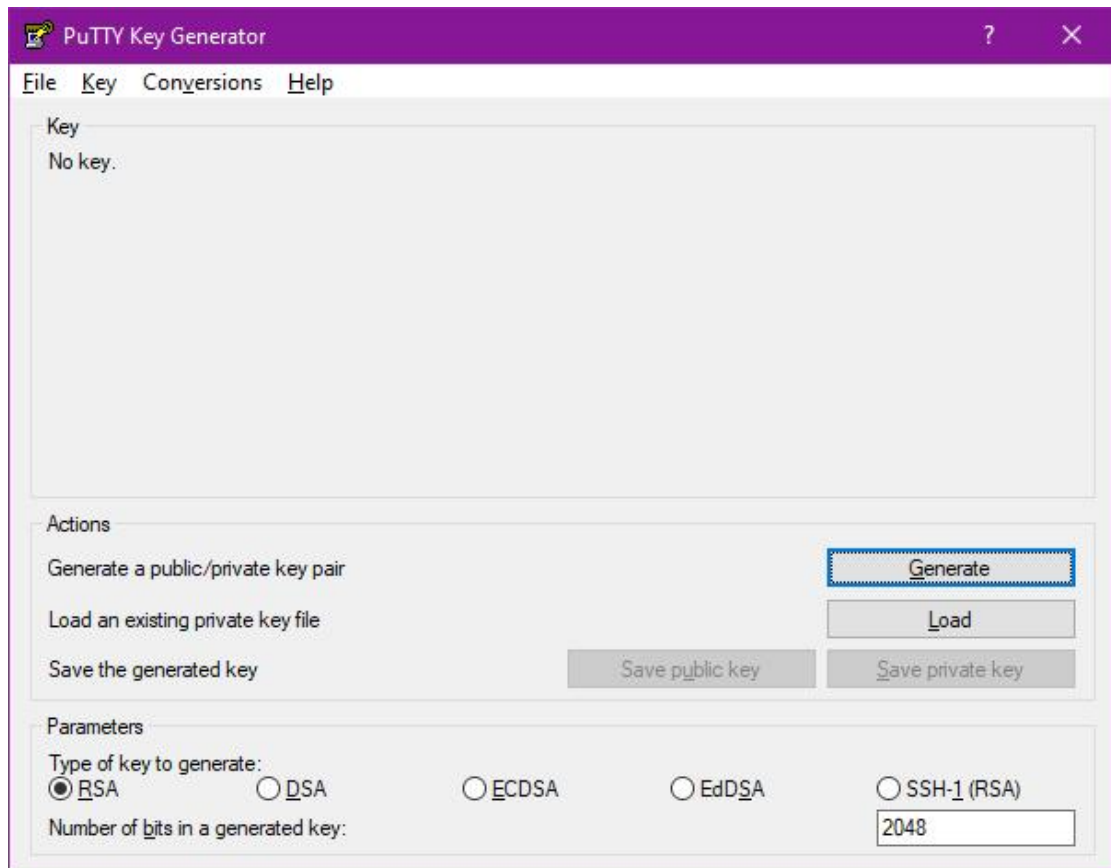


Вікно налаштувань PuTTY



Підключення по SSH

Завдання *



Вікно PuTTY Generator для генерування SSH ключа

```

sheen@sheen-VirtualBox: ~/ssh
login as: sheen
sheen@192.168.31.134's password:
Access denied
sheen@192.168.31.134's password:
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-39-generic x86_64)

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

23 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Fri Apr  8 23:48:11 2022 from 192.168.31.20
sheen@sheen-VirtualBox:~$ pwd
/home/sheen
sheen@sheen-VirtualBox:~$ ls -la
total 112
drwxr-xr-x 18 sheen sheen 4096 kbi  8 21:25 .
drwxr-xr-x  3 root  root  4096 kbi  2 00:48 ..
-rw-r----- 1 sheen sheen  901 kbi  8 23:48 .bash_history
-rw-r--r--  1 sheen sheen  220 kbi  2 00:48 .bash_logout
-rw-r--r--  1 sheen sheen 3771 kbi  2 00:48 .bashrc
drwx----- 17 sheen sheen 4096 kbi  8 21:31 .cache
drwx----- 14 sheen sheen 4096 kbi  2 22:36 .config
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Desktop
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Documents
drwxr-xr-x  2 sheen sheen 4096 kbi  2 22:35 Downloads
drwx-----  3 sheen sheen 4096 kbi  2 19:26 .gnupg
drwx-----  3 sheen sheen 4096 kbi  2 00:55 .local
drwx-----  4 sheen sheen 4096 kbi  2 01:22 .mozilla
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Music
drwxr-xr-x  2 sheen sheen 4096 kbi  5 20:03 Pictures
-rw-r--r--  1 sheen sheen  807 kbi  2 00:48 .profile
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Public
drwx-----  3 sheen sheen 4096 kbi  2 21:39 snap
drwx-----  2 sheen sheen 4096 kbi  2 01:05 .ssh
-rw-r--r--  1 sheen sheen   0 kbi  2 01:08 .sudo_as_admin_successful
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Templates
drwxrwxr-x  6 sheen sheen 4096 kbi  5 19:53 test
-rw-rw-r--  1 sheen sheen  53 kbi  2 22:28 text
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-clipboard.pid
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-display-svga-x11.pid
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-draganddrop.pid
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-seamless.pid
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Videos
-rw-----  1 sheen sheen 969 kbi  2 22:31 .viminfo
sheen@sheen-VirtualBox:~$ chmod 700 .ssh/
sheen@sheen-VirtualBox:~$ ls -la
total 112
drwxr-xr-x 18 sheen sheen 4096 kbi  8 21:25 .
drwxr-xr-x  3 root  root  4096 kbi  2 00:48 ..
-rw-r----- 1 sheen sheen  901 kbi  8 23:48 .bash_history
-rw-r--r--  1 sheen sheen  220 kbi  2 00:48 .bash_logout
-rw-r--r--  1 sheen sheen 3771 kbi  2 00:48 .bashrc
drwx----- 17 sheen sheen 4096 kbi  8 21:31 .cache
drwx----- 14 sheen sheen 4096 kbi  2 22:36 .config
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Desktop
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Documents
drwxr-xr-x  2 sheen sheen 4096 kbi  2 22:35 Downloads
drwx-----  3 sheen sheen 4096 kbi  2 19:26 .gnupg
drwx-----  3 sheen sheen 4096 kbi  2 00:55 .local
drwx-----  4 sheen sheen 4096 kbi  2 01:22 .mozilla
drwx-----  4 sheen sheen 4096 kbi  2 01:22 .mozilla
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Music
drwxr-xr-x  2 sheen sheen 4096 kbi  5 20:03 Pictures
-rw-r--r--  1 sheen sheen  807 kbi  2 00:48 .profile
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Public
drwx-----  3 sheen sheen 4096 kbi  2 21:39 snap
drwx-----  2 sheen sheen 4096 kbi  2 01:05 .ssh
-rw-r--r--  1 sheen sheen   0 kbi  2 01:08 .sudo_as_admin_successful
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Templates
drwxrwxr-x  6 sheen sheen 4096 kbi  5 19:53 test
-rw-rw-r--  1 sheen sheen  53 kbi  2 22:28 text
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-clipboard.pid
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-display-svga-x11.pid
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-draganddrop.pid
-rw-r----- 1 sheen sheen   5 kbi  8 21:24 .vboxclient-seamless.pid
drwxr-xr-x  2 sheen sheen 4096 kbi  2 00:56 Videos
-rw-----  1 sheen sheen 969 kbi  2 22:31 .viminfo
sheen@sheen-VirtualBox:~$ cd .ssh
sheen@sheen-VirtualBox:~/.ssh$ touch authorized_keys
sheen@sheen-VirtualBox:~/.ssh$ chmod 600 authorized_keys
sheen@sheen-VirtualBox:~/.ssh$ ls -la
total 8
drwx----- 2 sheen sheen 4096 kbi  9 00:01 .
drwxr-xr-x 18 sheen sheen 4096 kbi  8 21:25 ..
-rw-r----- 1 sheen sheen   0 kbi  9 00:01 authorized_keys
sheen@sheen-VirtualBox:~/.ssh$ cat >> authorized_keys << EOF
> ssh-rsa AAAAB3NzaClyc2EAAAADAQABAAQCTDk9iMqCJqcKnxTUTcrEYK1CsRQHMVUC/k1RsS+hJHMrbzMEqtFUXgAObCmhq17ETxW094GRPgq4tAPSZGbsDsqrRCdoOdoXds80TsfrGNEqLDC+W5IKsQbWIXSM1XwNBIFkGsoSxU00Hm4Eiu7p9axq+KctjTVhte49emwqHzZmMocZBLAa2dFJtwzPLGhNRuMfcj4dPN6AhH5CtSQBYJL2ITsFZuT5qOJL18tRcL4KCPV4bHpw1QZHkbHXbwHT2G1Q0KV9WmlZwK0BYmIOPj4PAXCT4lrVFNHQYxqqvfyHJtkiriBulXygtYNQ2h7FQIElgh51ixjMB+Zex3  rsa-key-20220408
> EOF
sheen@sheen-VirtualBox:~/.ssh$ cat authorized_keys
ssh-rsa AAAAB3NzaClyc2EAAAADAQABAAQCTDk9iMqCJqcKnxTUTcrEYK1CsRQHMVUC/k1RsS+hJHMrbzMEqtFUXgAObCmhq17ETxW094GRPgq4tAPSZGbsDsqrRCdoOdoXds80TsfrGNEqLDC+W5IKsQbWIXSM1XwNBIFkGsoSxU00Hm4Eiu7p9axq+KctjTVhte49emwqHzZmMocZBLAa2dFJtwzPLGhNRuMfcj4dPN6AhH5CtSQBYJL2ITsFZuT5qOJL18tRcL4KCPV4bHpw1QZHkbHXbwHT2G1Q0KV9WmlZwK0BYmIOPj4PAXCT4lrVFNHQYxqqvfyHJtkiriBulXygtYNQ2h7FQIElgh51ixjMB+Zex3  rsa-key-20220408
sheen@sheen-VirtualBox:~/.ssh$

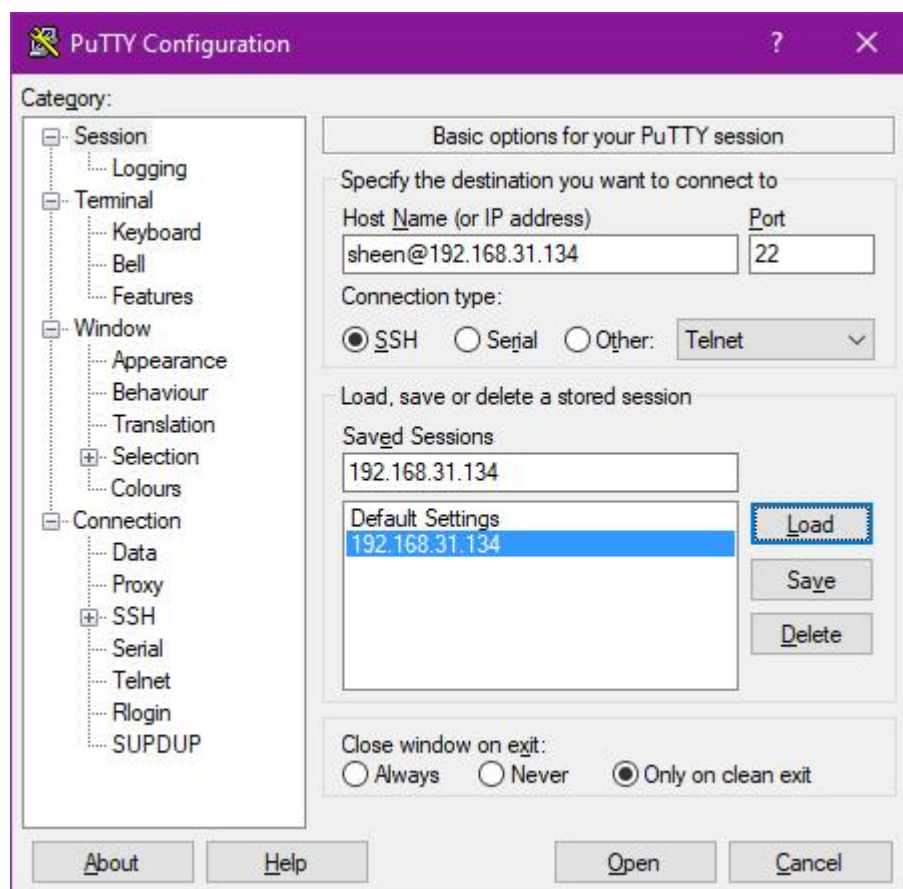
```

Додавання публічного ключа

```
sheen@sheen-VirtualBox: ~  
login as: sheen  
Authenticating with public key "rsa-key-20220408"  
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-39-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
23 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
Your Hardware Enablement Stack (HWE) is supported until April 2025.  
Last login: Fri Apr  8 23:50:40 2022 from 192.168.31.20  
sheen@sheen-VirtualBox:~$
```

Авторизація за допомогою ключа з вводом логіна

Налаштування для входу без вводу логіна і пароля:



Конфігурація PuTTY


```
sheen@sheen-VirtualBox: ~  
Using username "sheen".  
Authenticating with public key "rsa-key-20220408"  
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-39-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:        https://ubuntu.com/advantage  
  
23 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
Your Hardware Enablement Stack (HWE) is supported until April 2025.  
Last login: Sat Apr  9 00:14:30 2022 from 192.168.31.20  
sheen@sheen-VirtualBox:~$
```

Результат

Завдання **

Пишемо команду

`sudo nano /etc/ssh/sshd_config`

Редагуємо документ вписавши потрібний порт і закоментувавши 22 порт

```
sheen@sheen-VirtualBox: ~  
GNU nano 4.8 /etc/ssh/sshd_config  
#  
#OpenSSH: sshd_config,v 1.103 2019/04/09 20:41:22 t.j. Exp #  
#  
# This is the sshd server system-wide configuration file. See  
# sshd_config(5) for more information.  
#  
# This sshd was compiled with PATH=/usr/bin:/bin:/usr/sbin:/sbin  
#  
# The strategy used for options in the default sshd config shipped with  
# OpenSSH is to specify options with their default value where  
# possible, but leave them commented. Uncommented options override the  
# default value.  
#  
# Include /etc/ssh/sshd_config.d/*.conf  
#Port 22  
Port 2282  
#AddressFamily any  
#ListenAddress 0.0.0.0  
#ListenAddress ::  
#  
#HostKey /etc/ssh/ssh_host_rsa_key  
#HostKey /etc/ssh/ssh_host_ecdsa_key  
#HostKey /etc/ssh/ssh_host_ed25519_key  
#  
# Ciphers and keying  
#KeyLimit default none  
#  
# Logging  
#SyslogFacility AUTH  
#LogLevel INFO  
#  
# Authentication:  
#  
#LoginGraceTime 3m  
#PermitRootLogin prohibit-password  
#StrictModes yes  
#MaxAuthTries 6  
#MaxSessions 10  
#PubkeyAuthentication yes  
# Expect .ssh/authorized_keys2 to be disregarded by default in future.  
#AuthorizedKeysFile .ssh/authorized_keys .ssh/authorized_keys2  
#AuthorizedPrincipalsFile none  
#AuthorizedKeysCommand none  
#AuthorizedKeysCommandUser nobody  
#  
# For this to work you will also need host keys in /etc/ssh/ssh_known_hosts  
#HostbasedAuthentication no  
# Change to yes if you don't trust ~/.ssh/known_hosts for  
# HostbasedAuthentication  
#IgnoreUserKnownHosts no  
# Don't read the user's ~/.rhosts and ~/.shosts files  
#IgnoreRhosts yes  
# To disable tunneled clear text passwords, change to no here!  
#PasswordAuthentication yes  
#PermitEmptyPasswords no  
#  
# Get Help  
# Exit  
# Write Out  
# Read File  
# Where Is  
# Replace  
# Cut Text  
# Paste Text  
# Justify  
# To Spell  
# Cur Pos  
# Go To Line  
# Undo  
# Redo  
# Mark Text  
# Copy Text  
# To Bracket  
# Where Was  
# Previous  
# Next  
# Back  
# Forward  
# Prev Word  
# Next Word  
# Home  
# End
```

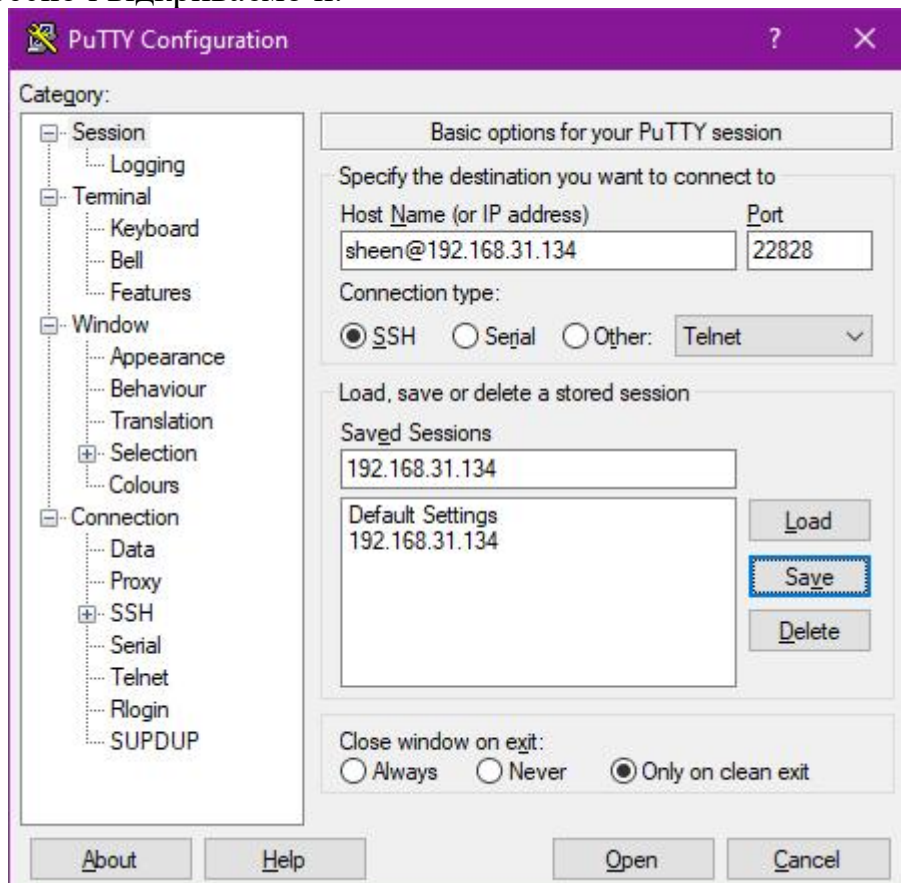
Редагування документу для введення потрібного порту

Здійснюємо рестарт SSH-сервера

```
sheen@sheen-VirtualBox: ~  
Using username "sheen".  
Authenticating with public key "rsa-key-20220408"  
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-39-generic x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:       https://ubuntu.com/advantage  
  
23 updates can be applied immediately.  
To see these additional updates run: apt list --upgradable  
  
Your Hardware Enablement Stack (HWE) is supported until April 2025.  
Last login: Sat Apr  9 00:38:50 2022 from 192.168.31.20  
sheen@sheen-VirtualBox:~$ sudo nano /etc/ssh/sshd_config  
[sudo] password for sheen:  
sheen@sheen-VirtualBox:~$ /etc/init.d/ssh restart  
Restarting ssh (via systemctl): ssh.service==== AUTHENTICATING FOR org.freedesktop.systemd1.manage-units ===  
Authentication is required to restart 'ssh.service'.  
Authenticating as: ,,, (sheen)  
Password:  
==== AUTHENTICATION COMPLETE ====  
sheen@sheen-VirtualBox:~$
```

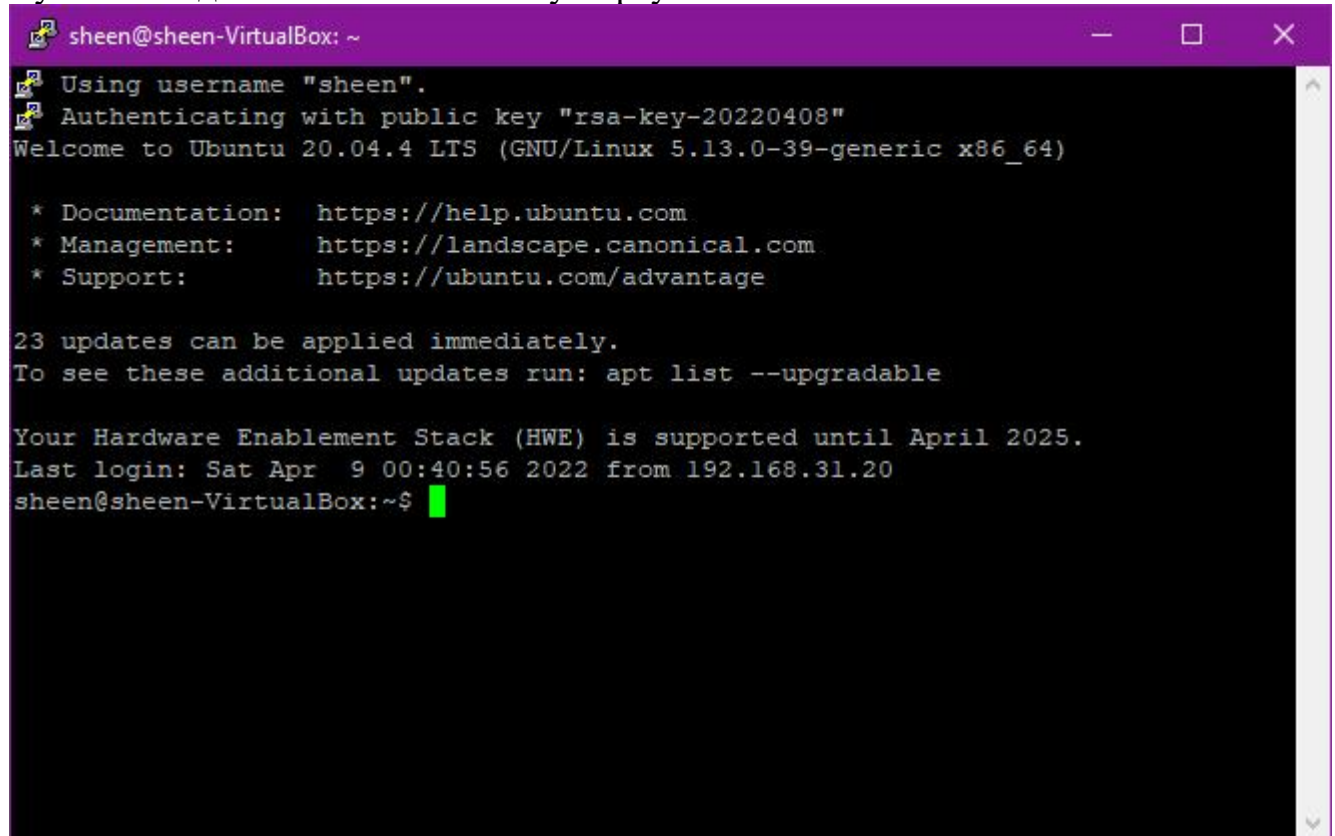
Використані команди

Завантажуємо створену раніше сесію, прописуємо потрібний порт у відповідному полі, зберігаємо сесію і відкриваємо її.



Конфігурація PuTTY

Вуаля ми підключилися по новому порту

A terminal window titled 'sheen@sheen-VirtualBox: ~' with standard window controls. It displays the output of an SSH connection, including authentication messages, a welcome message for Ubuntu 20.04.4 LTS, system information, update notifications, and a prompt for the user 'sheen' at the home directory. The prompt is followed by a green cursor.

```
sheen@sheen-VirtualBox: ~
Using username "sheen".
Authenticating with public key "rsa-key-20220408"
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-39-generic x86_64)

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

23 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

Your Hardware Enablement Stack (HWE) is supported until April 2025.
Last login: Sat Apr  9 00:40:56 2022 from 192.168.31.20
sheen@sheen-VirtualBox:~$
```

Результат підключення по новому порту

Завдання ***

Опишу корисність SSH на прикладі з інтернетів:

Скажімо, ви розробляєте веб-додаток на локальній машині і хочете показати попередній перегляд своєму колезі-розробнику. У вас немає загальнодоступної IP-адреси, тому інший розробник не може отримати доступ до програми через Інтернет.

Якщо у вас є доступ до віддаленого SSH-сервера, ви можете налаштувати переадресацію віддаленого порту наступним чином:

```
$ ssh -R 8080:127.0.0.1:3000 -N -f user@remote.host
```

Наведена вище команда змусить сервер ssh прослуховувати порт 8080 і тунелювати весь трафік з цього порту на вашу локальну машину на порту 3000.

Тепер ваш колега-розробник може ввести текст `the_ssh_server_ip:8080` у своєму браузері та попередньо переглянути вашу чудову програму.