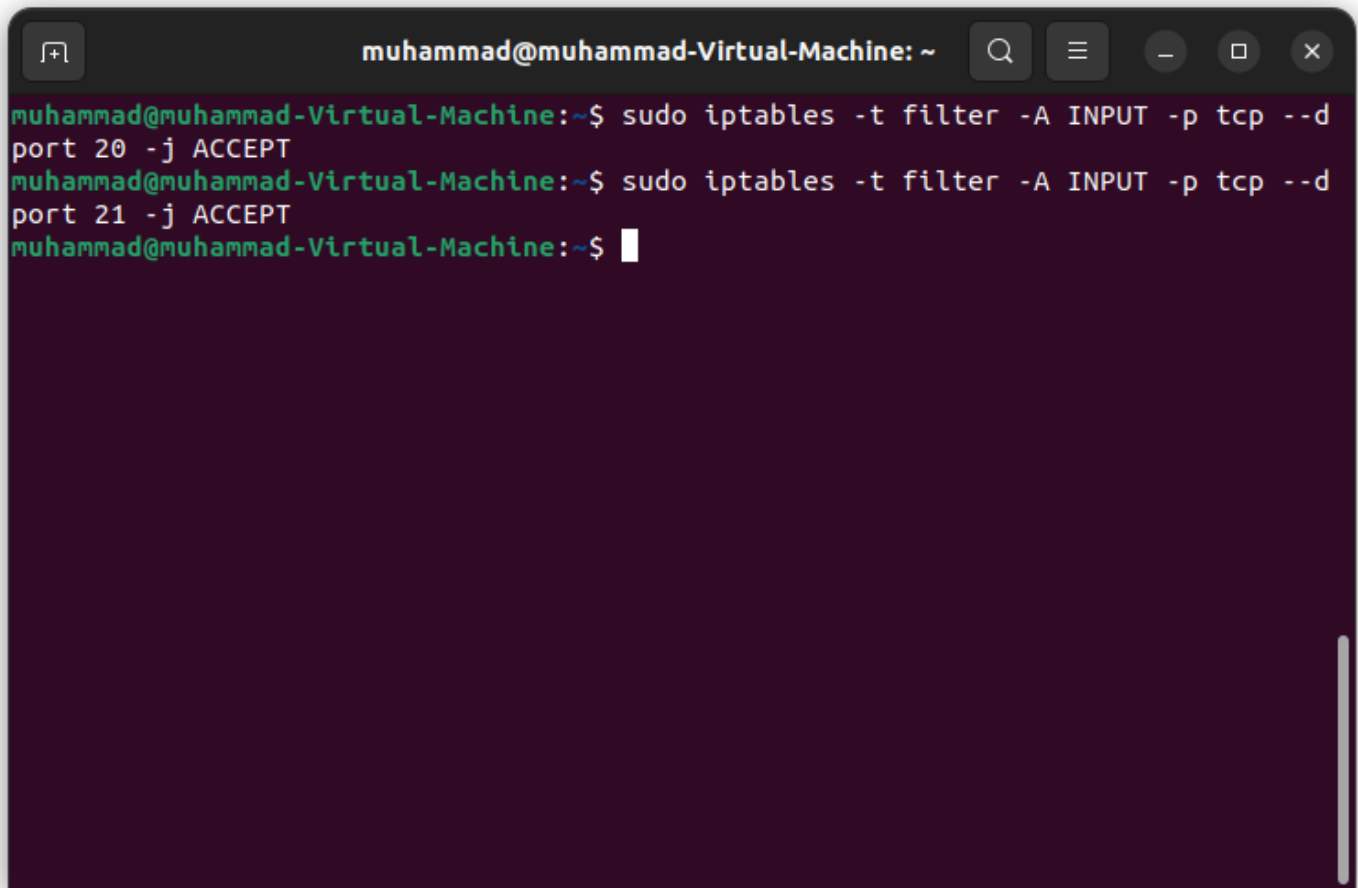


- Install `ftpd` service on your laptop

```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ sudo apt install ftpd  
[sudo] password for muhammad:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following packages were automatically installed and are no longer required:  
  dctrl-tools dmideventd dpkg-repack gir1.2-timezonemap-1.0 gir1.2-xkl-1.0  
  libaio1 libdebian-installer4 libdevmapper-event1.02.1 libdpkg-perl  
  libfile-fcntllock-perl libflashrom1 libftdi1-2 libllvm13 liblvm2cmd2.03  
  libqt5designer5 libqt5help5 libqt5positioning5 libqt5sensors5 libqt5test5  
  libqt5webchannel5 libqt5webkit5 libtimezonemap-data libtimezonemap1 lvm2  
  python3-dbus.mainloop.pyqt5 python3-icu python3-pam python3-pyqt5  
  python3-pyqt5.qtsvg python3-pyqt5.qtwebkit python3-pyqt5.sip rdate  
  thin-provisioning-tools  
Use 'sudo apt autoremove' to remove them.  
The following additional packages will be installed:  
  openbsd-inetd tcpd  
The following NEW packages will be installed:  
  ftpd openbsd-inetd tcpd  
0 upgraded, 3 newly installed, 0 to remove and 79 not upgraded.  
Need to get 99.0 kB of archives.  
After this operation, 339 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y  
Get:1 http://archive.ubuntu.com/ubuntu jammy/universe amd64 tcpd amd64 7.6.q-31b
```

- enable port 21 and 20 (tcp) using `iptables` command using `INPUT` chain

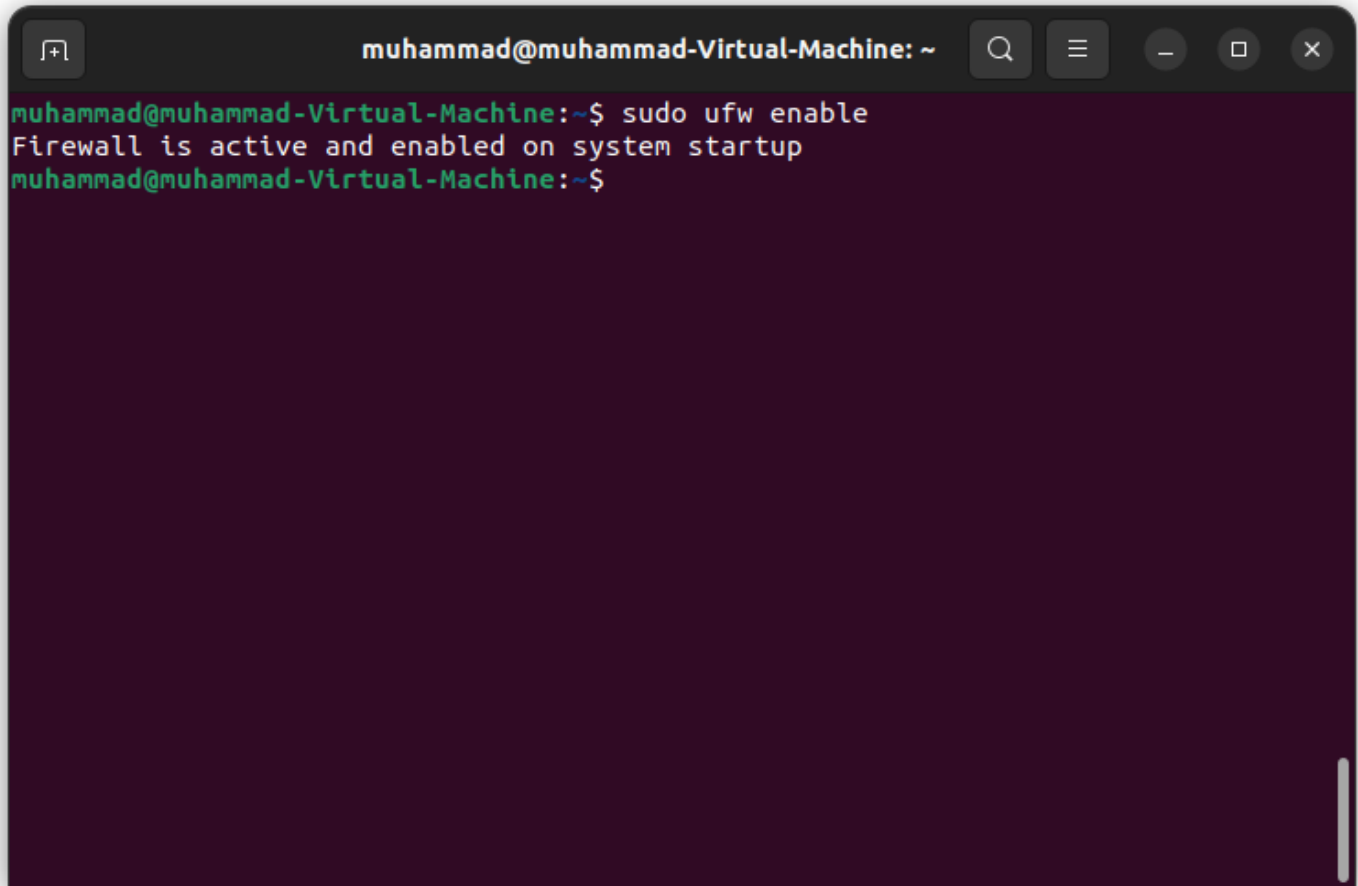


```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ sudo iptables -t filter -A INPUT -p tcp --d  
port 20 -j ACCEPT  
muhammad@muhammad-Virtual-Machine:~$ sudo iptables -t filter -A INPUT -p tcp --d  
port 21 -j ACCEPT  
muhammad@muhammad-Virtual-Machine:~$
```

- connect to ftp server (e.g: localhost) and browse the current directory

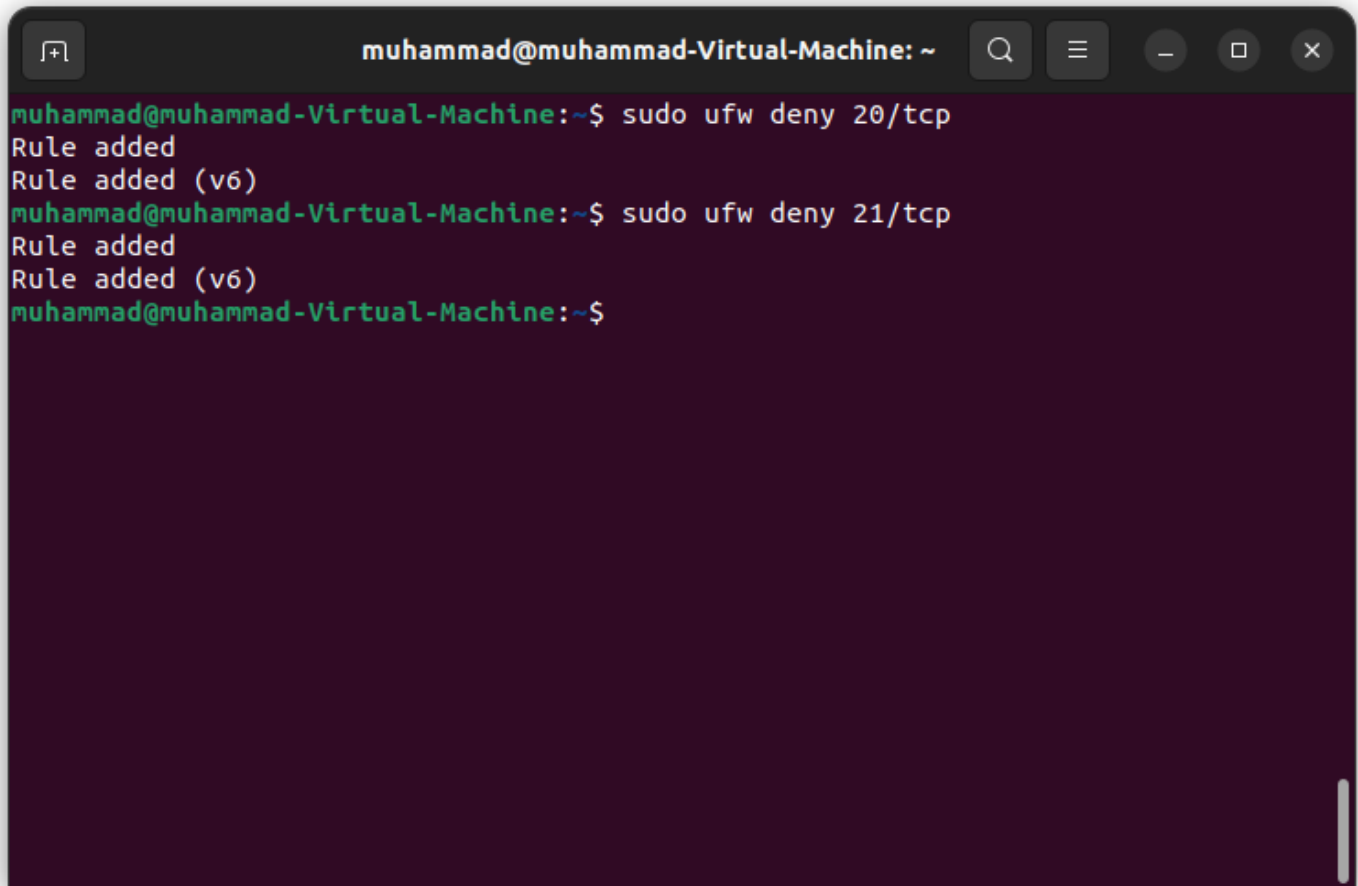
```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ ftp localhost  
Connected to localhost.  
220 muhammad-Virtual-Machine FTP server (Version 6.4/OpenBSD/Linux-ftpd-0.17) ready.  
Name (localhost:muhammad):  
331 Password required for muhammad.  
Password:  
230 User muhammad logged in.  
Remote system type is UNIX.  
Using binary mode to transfer files.  
ftp> ls  
229 Extended Passive Mode OK (|||45661|)  
150 Opening ASCII mode data connection for '/bin/ls'.  
total 140  
-rw----- 1 muhammad muhammad 3428 Apr 1 09:04 .bash_history  
-rw-r--r-- 1 muhammad muhammad 220 Mar 1 09:47 .bash_logout  
-rw-r--r-- 1 muhammad muhammad 3771 Mar 1 09:47 .bashrc  
drwx----- 13 muhammad muhammad 4096 Mar 1 11:29 .cache  
drwx----- 11 muhammad muhammad 4096 Mar 1 11:03 .config  
drwxr-xr-x 2 muhammad muhammad 4096 Mar 1 10:13 Desktop  
drwxr-xr-x 2 muhammad muhammad 4096 Mar 1 10:13 Documents  
drwxr-xr-x 2 muhammad muhammad 4096 Mar 1 10:13 Downloads
```

- enable `ufw` service



```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ sudo ufw enable  
Firewall is active and enabled on system startup  
muhammad@muhammad-Virtual-Machine:~$
```

- block port 20 and 21 (tcp) using ufw



```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ sudo ufw deny 20/tcp  
Rule added  
Rule added (v6)  
muhammad@muhammad-Virtual-Machine:~$ sudo ufw deny 21/tcp  
Rule added  
Rule added (v6)  
muhammad@muhammad-Virtual-Machine:~$
```

A terminal window titled "muhammad@muhammad-Virtual-Machine: ~" with standard window controls. The terminal shows the execution of two "sudo ufw deny" commands. The first command is "sudo ufw deny 20/tcp", which results in two lines of output: "Rule added" and "Rule added (v6)". The second command is "sudo ufw deny 21/tcp", which also results in two lines of output: "Rule added" and "Rule added (v6)". The prompt returns to "muhammad@muhammad-Virtual-Machine:~\$".

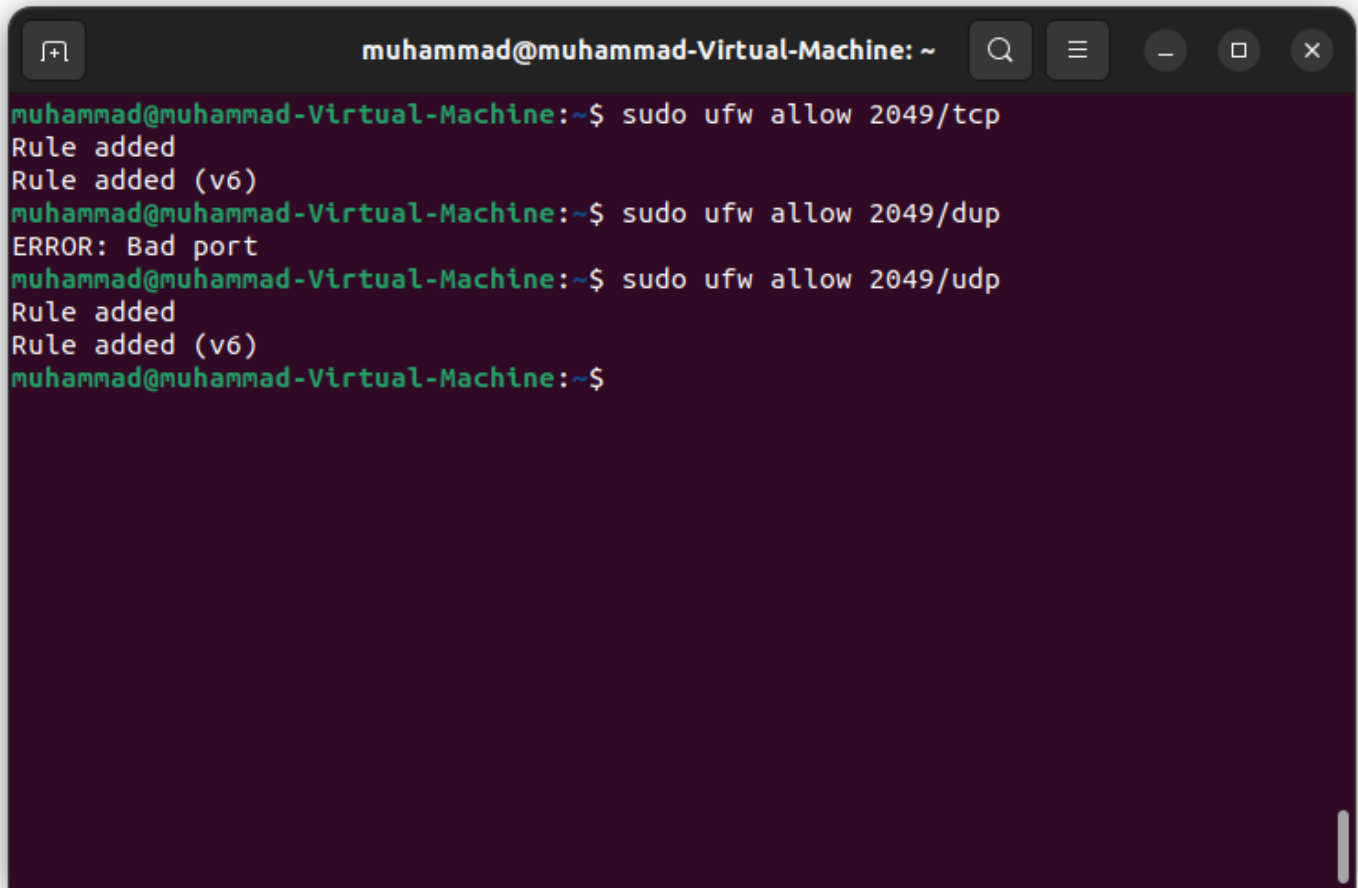
- capture the ufw log to detect the blocked operation

```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ tail /var/log/kern.log  
Apr  5 10:26:25 muhammad-Virtual-Machine kernel: [  49.972493] audit: type=1400  
audit(1680704785.794:49): apparmor="DENIED" operation="capable" profile="/snap/  
snapd/18596/usr/lib/snapd/snap-confine" pid=798 comm="snap-confine" capability=1  
2  capname="net_admin"  
Apr  5 10:26:25 muhammad-Virtual-Machine kernel: [  49.973348] audit: type=1400  
audit(1680704785.794:50): apparmor="DENIED" operation="capable" profile="/snap/  
snapd/18596/usr/lib/snapd/snap-confine" pid=798 comm="snap-confine" capability=3  
8  capname="perfmon"  
Apr  5 10:26:45 muhammad-Virtual-Machine kernel: [  68.391508] rfkill: input ha  
ndler disabled  
Apr  5 10:28:38 muhammad-Virtual-Machine kernel: [ 180.542313] audit: type=1326  
audit(1680704918.117:51): auid=1000 uid=1000 gid=1000 ses=2 subj=snap.snapd-des  
ktop-integration.snapd-desktop-integration pid=1547 comm="snapd-desktop-i" exe="  
/snap/snapd-desktop-integration/57/usr/bin/snapd-desktop-integration" sig=0 arch  
=c000003e syscall=314 compat=0 ip=0x7faa2132aa3d code=0x50000  
Apr  5 10:28:44 muhammad-Virtual-Machine kernel: [ 186.793212] audit: type=1326  
audit(1680704924.369:52): auid=1000 uid=1000 gid=1000 ses=2 subj=snap.snapd-des  
ktop-integration.snapd-desktop-integration pid=1827 comm="snapd-desktop-i" exe="  
/snap/snapd-desktop-integration/57/usr/bin/snapd-desktop-integration" sig=0 arch  
=c000003e syscall=314 compat=0 ip=0x7fc112a20a3d code=0x50000  
Apr  5 10:31:56 muhammad-Virtual-Machine kernel: [ 378.457438] loop16: detected  
capacity change from 0 to 149488  
Apr  5 10:33:47 muhammad-Virtual-Machine kernel: [ 490.181033] loop17: detected
```

- install `nfs` service on your system

```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ sudo apt install nfs-kernel-server  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following packages were automatically installed and are no longer required:  
  dctrl-tools dmideventd dpkg-repack gir1.2-timezonemap-1.0 gir1.2-xkl-1.0  
  libaio1 libdebian-installer4 libdevmapper-event1.02.1 libdpkg-perl  
  libfile-fcntllock-perl libflashrom1 libftdi1-2 libllvm13 liblvm2cmd2.03  
  libqt5designer5 libqt5help5 libqt5positioning5 libqt5sensors5 libqt5test5  
  libqt5webchannel5 libqt5webkit5 libtimezonemap-data libtimezonemap1 lvm2  
  python3-dbus.mainloop.pyqt5 python3-icu python3-pam python3-pyqt5  
  python3-pyqt5.qtsvg python3-pyqt5.qtwebkit python3-pyqt5.sip rdate  
  thin-provisioning-tools  
Use 'sudo apt autoremove' to remove them.  
The following additional packages will be installed:  
  keyutils libevent-core-2.1-7 nfs-common rpcbind  
Suggested packages:  
  open-iscsi watchdog  
The following NEW packages will be installed:  
  keyutils libevent-core-2.1-7 nfs-common nfs-kernel-server rpcbind  
0 upgraded, 5 newly installed, 0 to remove and 79 not upgraded.  
Need to get 572 kB of archives.  
After this operation, 2,017 kB of additional disk space will be used.  
Do you want to continue? [Y/n] y
```

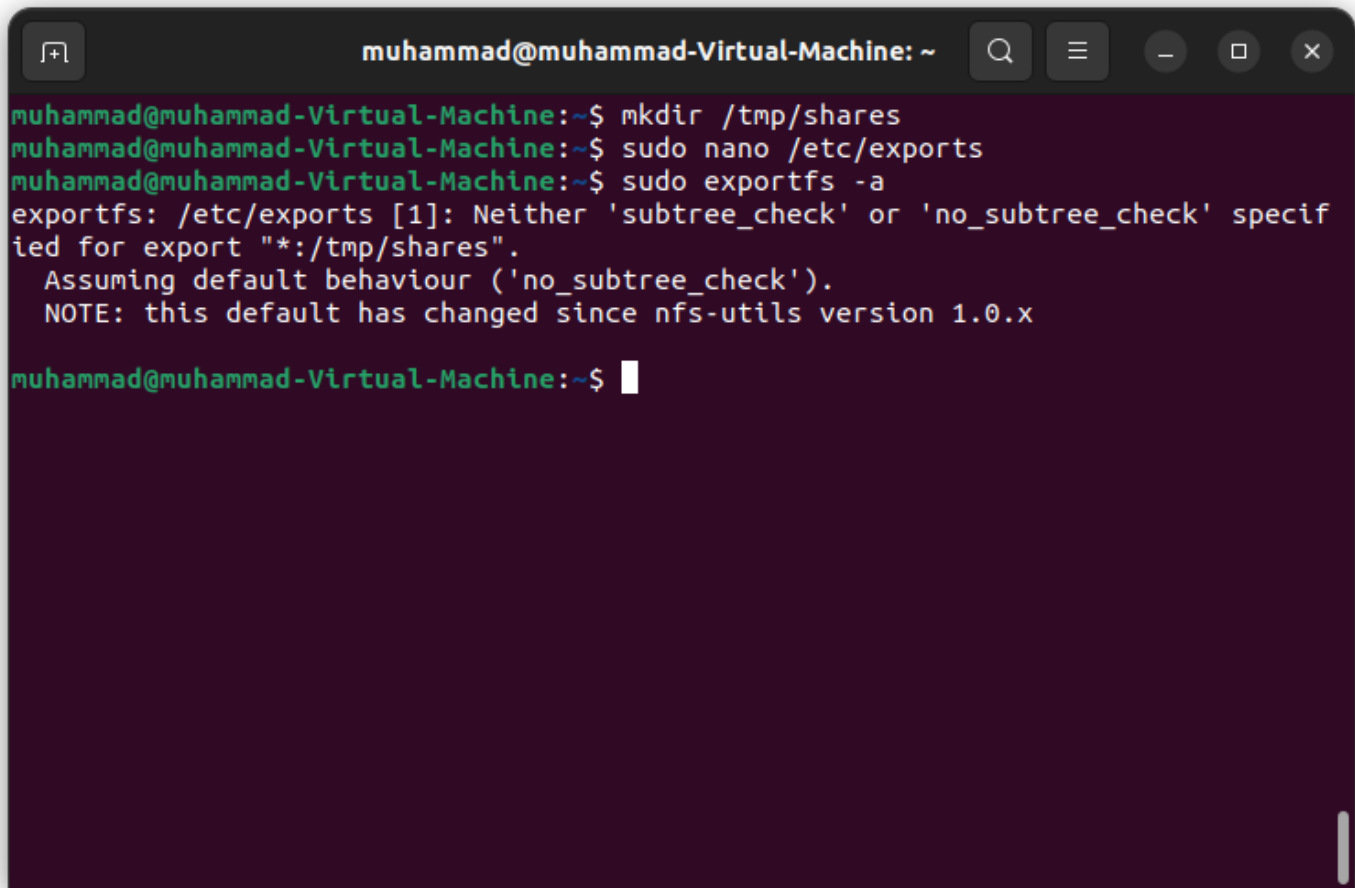
- enable nfs service on the firewall



```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ sudo ufw allow 2049/tcp  
Rule added  
Rule added (v6)  
muhammad@muhammad-Virtual-Machine:~$ sudo ufw allow 2049/dup  
ERROR: Bad port  
muhammad@muhammad-Virtual-Machine:~$ sudo ufw allow 2049/udp  
Rule added  
Rule added (v6)  
muhammad@muhammad-Virtual-Machine:~$
```



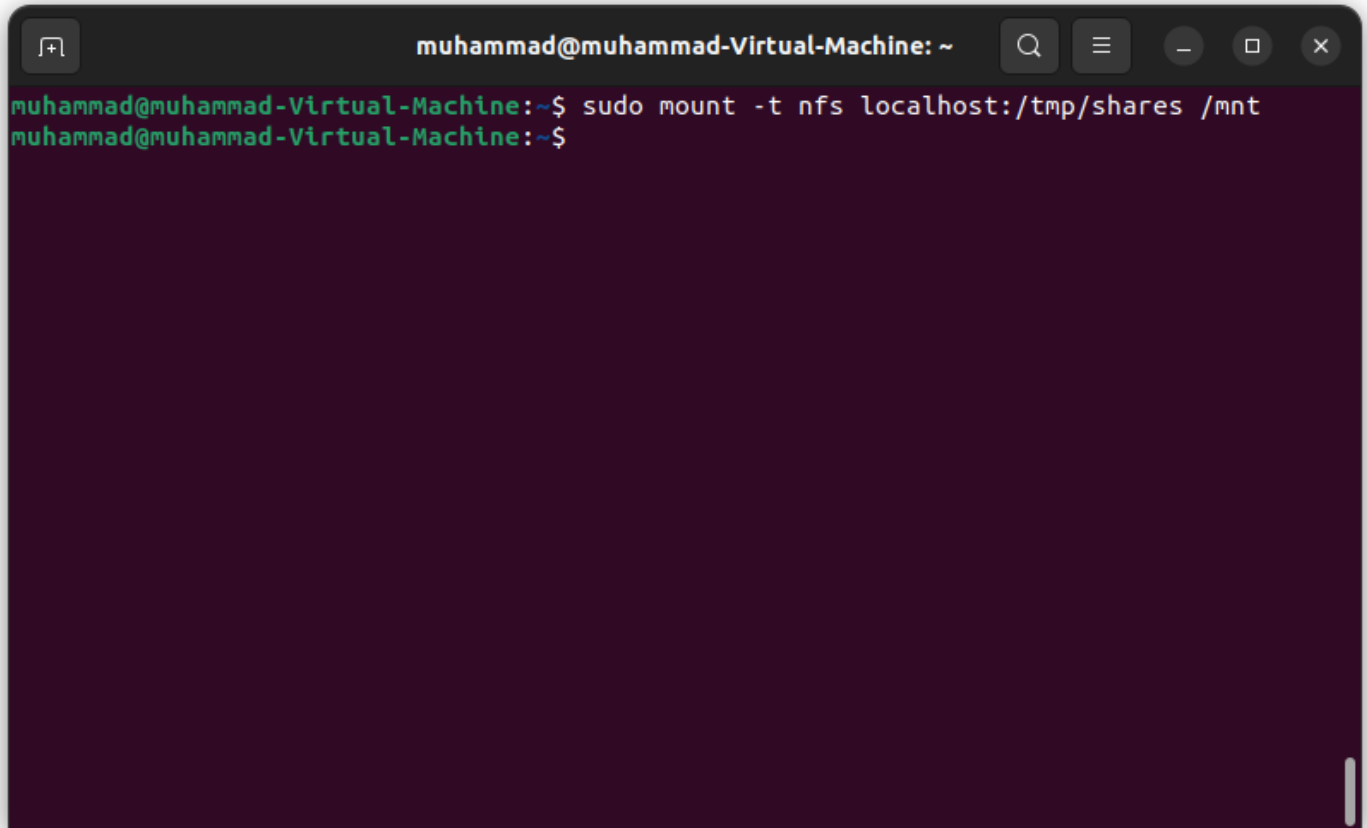
- create and share /tmp/shares folder using `exportfs` command and `/etc/exports` file



```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ mkdir /tmp/shares  
muhammad@muhammad-Virtual-Machine:~$ sudo nano /etc/exports  
muhammad@muhammad-Virtual-Machine:~$ sudo exportfs -a  
exportfs: /etc/exports [1]: Neither 'subtree_check' or 'no_subtree_check' specified for export "*/tmp/shares".  
    Assuming default behaviour ('no_subtree_check').  
    NOTE: this default has changed since nfs-utils version 1.0.x  
muhammad@muhammad-Virtual-Machine:~$
```

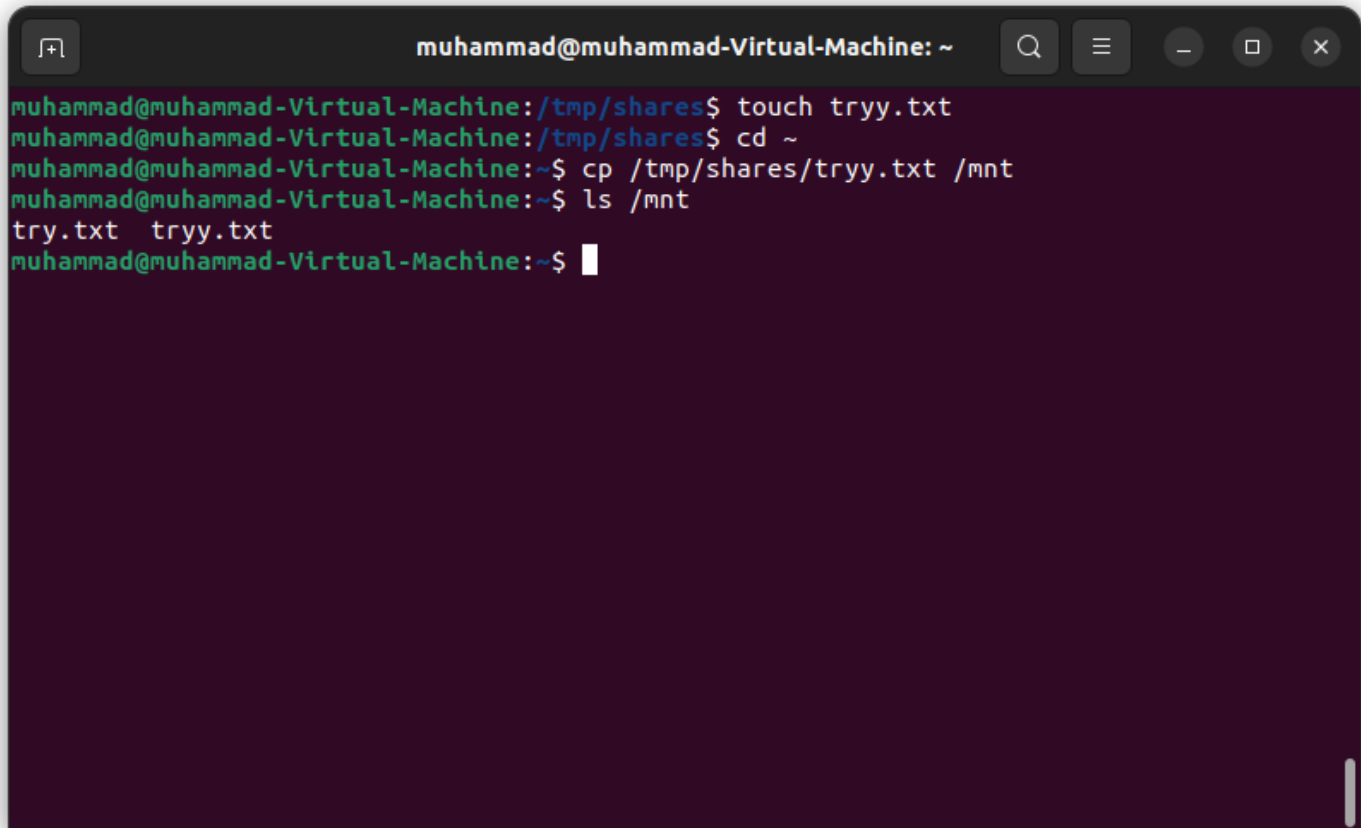
```
muhammad@muhammad-Virtual-Machine: ~  
GNU nano 6.2 /etc/exports *  
# /etc/exports: the access control list for filesystems which may be exported  
# to NFS clients. See exports(5).  
#  
# Example for NFSv2 and NFSv3:  
# /srv/homes hostname1(rw,sync,no_subtree_check) hostname2(ro,sync,no_sub>  
#  
# Example for NFSv4:  
# /srv/nfs4 gss/krb5i(rw,sync,fsid=0,crossmnt,no_subtree_check)  
# /srv/nfs4/homes gss/krb5i(rw,sync,no_subtree_check)  
#  
/tmp/shares *(rw)  
  
^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute   ^C Location  
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify   ^_ Go To Line
```

- mount the remote share on `/mnt` folder (you can using localhost as well)

A terminal window with a dark background and light green text. The window title is "muhammad@muhammad-Virtual-Machine: ~". The prompt is "muhammad@muhammad-Virtual-Machine:~\$". The command entered is "sudo mount -t nfs localhost:/tmp/shares /mnt". The output is "muhammad@muhammad-Virtual-Machine:~\$".

```
muhammad@muhammad-Virtual-Machine: ~
muhammad@muhammad-Virtual-Machine:~$ sudo mount -t nfs localhost:/tmp/shares /mnt
muhammad@muhammad-Virtual-Machine:~$
```

- copy some files to the remote share

A terminal window titled "muhammad@muhammad-Virtual-Machine: ~" with standard window controls. The terminal shows a sequence of commands: "touch tryy.txt", "cd ~", "cp /tmp/shares/tryy.txt /mnt", and "ls /mnt". The output of the last command is "try.txt tryy.txt".

```
muhammad@muhammad-Virtual-Machine: /tmp/shares$ touch tryy.txt
muhammad@muhammad-Virtual-Machine: /tmp/shares$ cd ~
muhammad@muhammad-Virtual-Machine: ~$ cp /tmp/shares/tryy.txt /mnt
muhammad@muhammad-Virtual-Machine: ~$ ls /mnt
try.txt  tryy.txt
muhammad@muhammad-Virtual-Machine: ~$
```

- save iptables rules to /tmp/iptables-backup file

```
muhammad@muhammad-Virtual-Machine: ~  
muhammad@muhammad-Virtual-Machine:~$ sudo iptables-save > /tmp/iptables-backup  
muhammad@muhammad-Virtual-Machine:~$ cat /tmp/iptables-backup  
# Generated by iptables-save v1.8.7 on Wed Apr  5 11:32:44 2023  
*filter  
:INPUT DROP [0:0]  
:FORWARD DROP [0:0]  
:OUTPUT ACCEPT [0:0]  
:ufw-after-forward - [0:0]  
:ufw-after-input - [0:0]  
:ufw-after-logging-forward - [0:0]  
:ufw-after-logging-input - [0:0]  
:ufw-after-logging-output - [0:0]  
:ufw-after-output - [0:0]  
:ufw-before-forward - [0:0]  
:ufw-before-input - [0:0]  
:ufw-before-logging-forward - [0:0]  
:ufw-before-logging-input - [0:0]  
:ufw-before-logging-output - [0:0]  
:ufw-before-output - [0:0]  
:ufw-logging-allow - [0:0]  
:ufw-logging-deny - [0:0]  
:ufw-not-local - [0:0]
```