

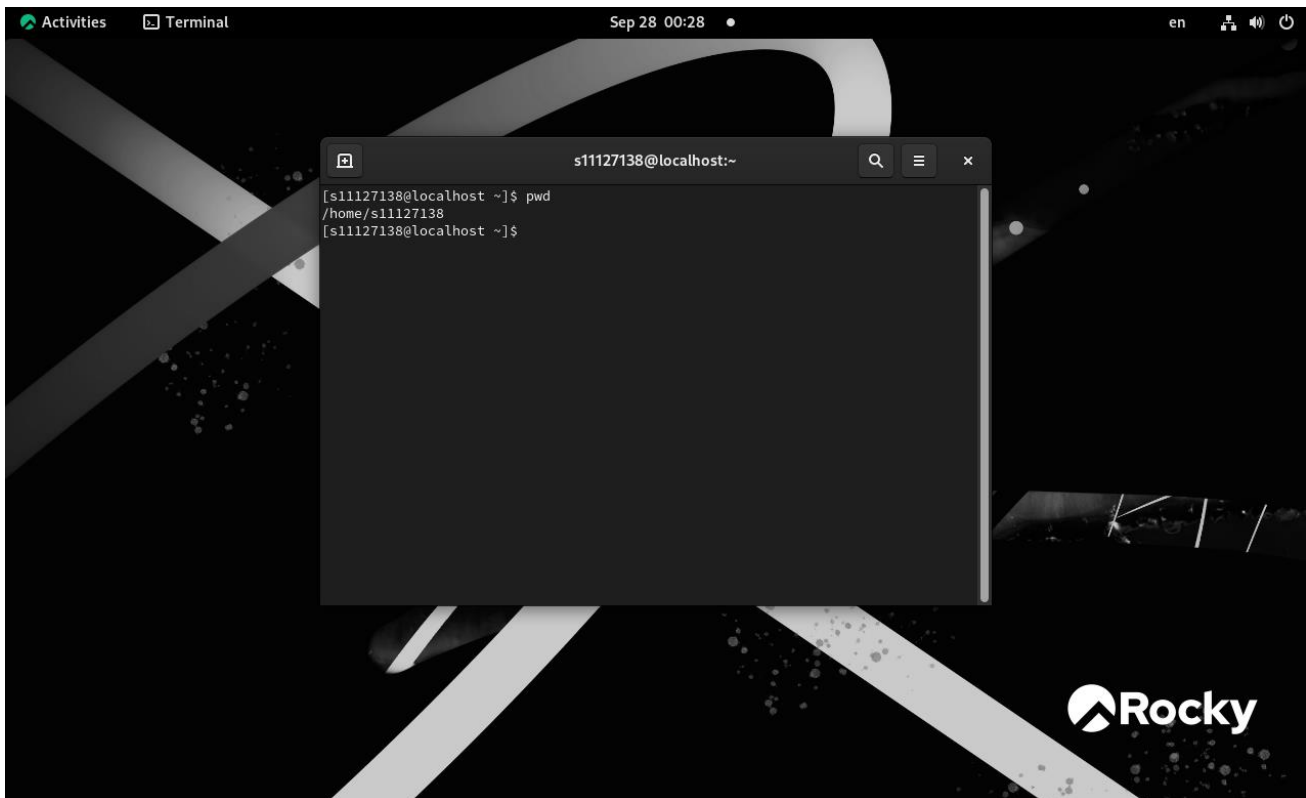
作業三-練習一

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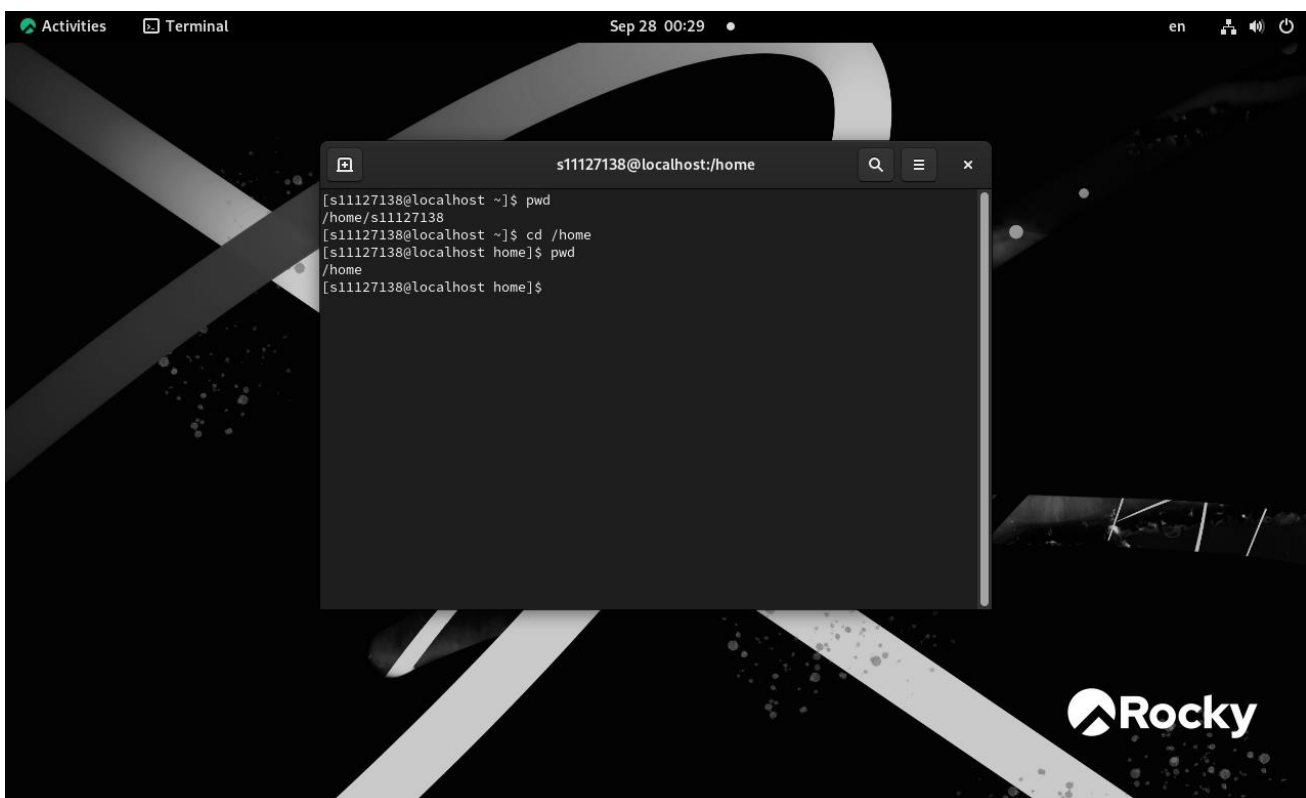
練習一：

執行 `pwd` 指令可以看到目前工作目錄。

A screenshot of a Linux terminal window titled 's11127138@localhost:~'. The terminal shows the execution of the 'pwd' command, which returns '/home/s11127138'. The background of the desktop is a dark theme with a 'Rocky' logo in the bottom right corner.

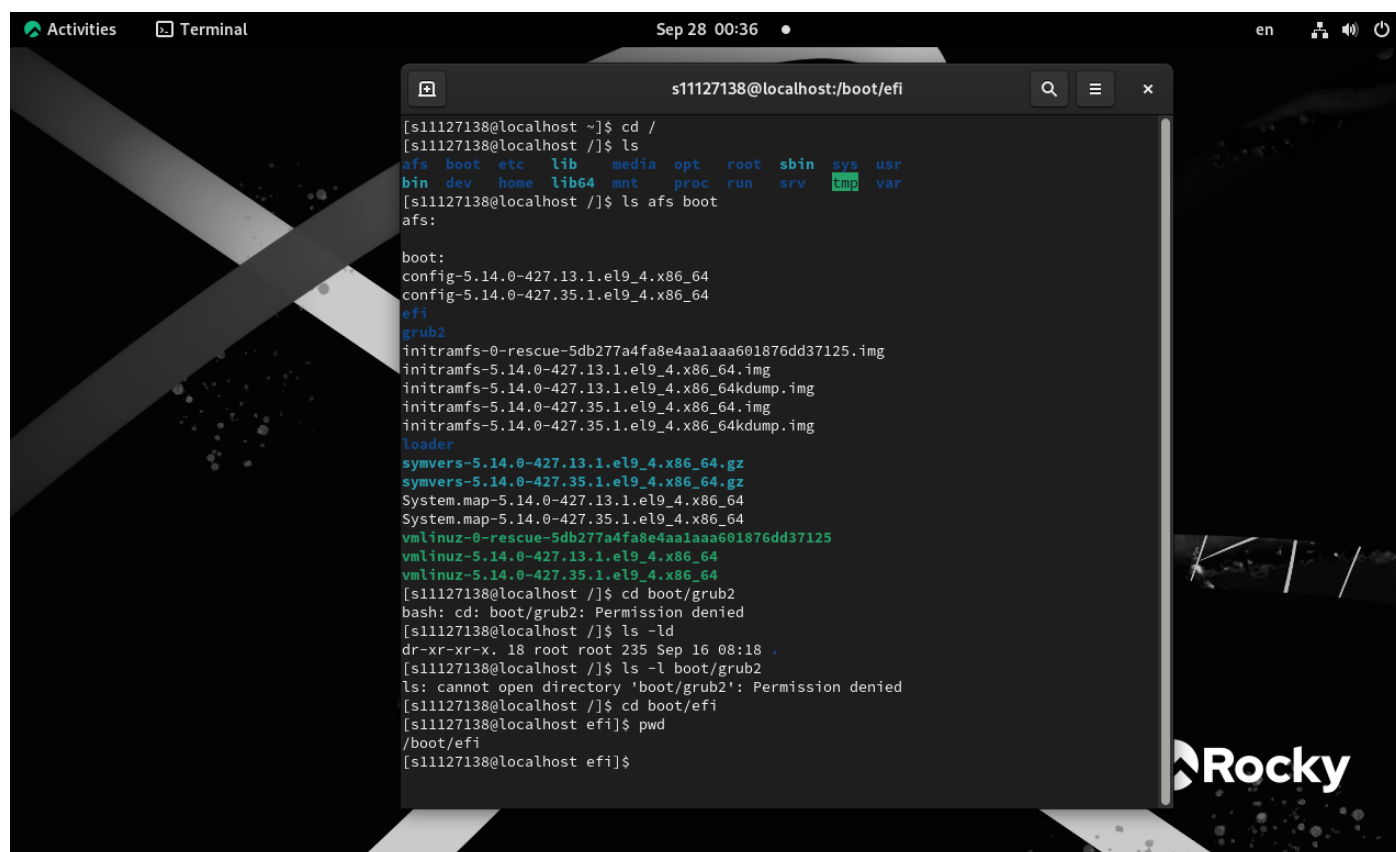
```
s11127138@localhost:~]$ pwd
/home/s11127138
s11127138@localhost:~]$
```

執行 `cd` 指令可以回到 home directory。

A screenshot of a Linux terminal window titled 's11127138@localhost:/home'. The terminal shows a sequence of commands: 'pwd' (returns '/home/s11127138'), 'cd /home' (returns to the home directory), and 'pwd' (returns '/home'). The background of the desktop is a dark theme with a 'Rocky' logo in the bottom right corner.

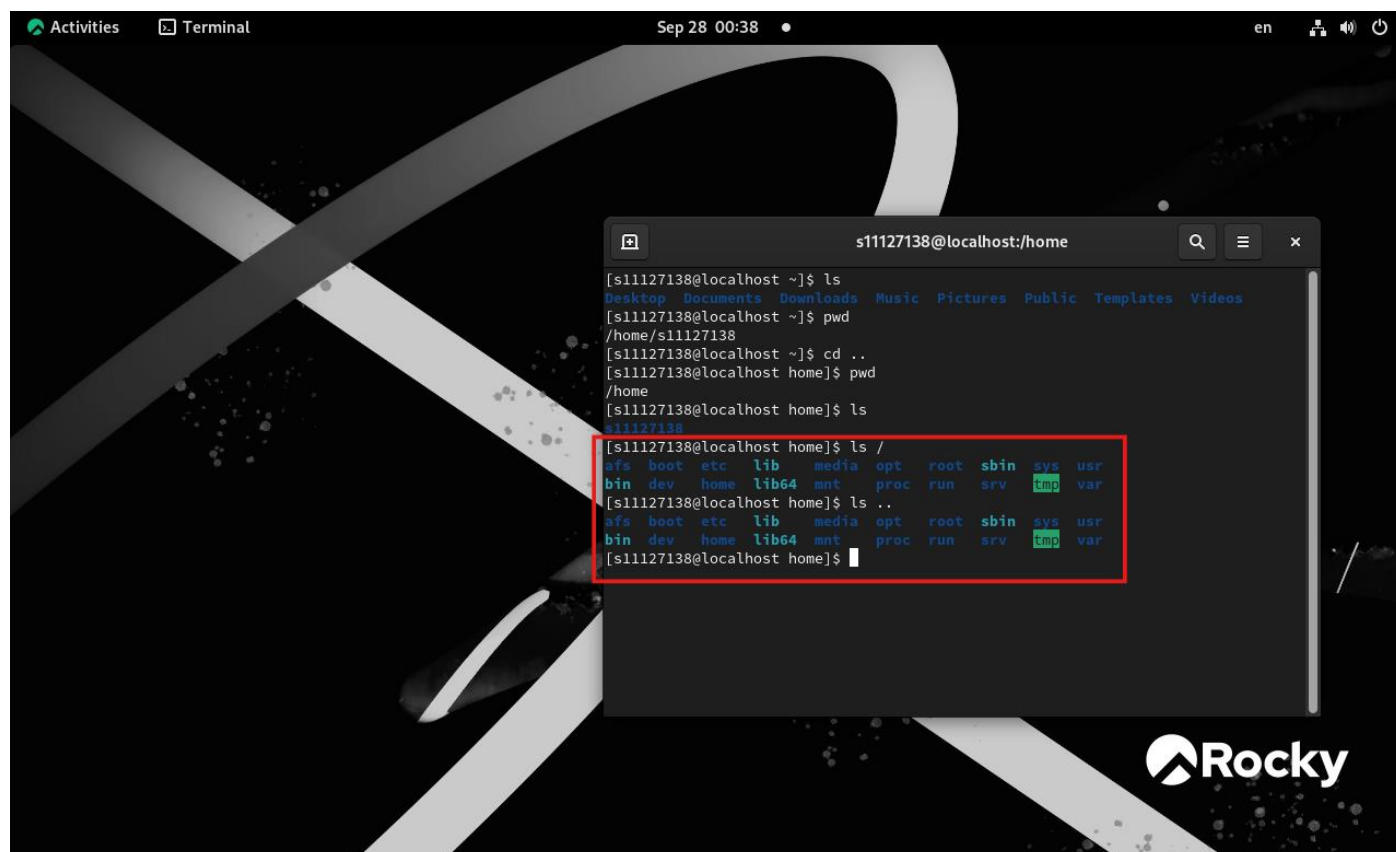
```
s11127138@localhost:~]$ pwd
/home/s11127138
s11127138@localhost:~]$ cd /home
s11127138@localhost:home]$ pwd
/home
s11127138@localhost:home]$
```

執行 `cd` 目錄路徑，目錄可以用絕對路徑或相對路徑描述，可以改變工作目錄到該指定目錄去。



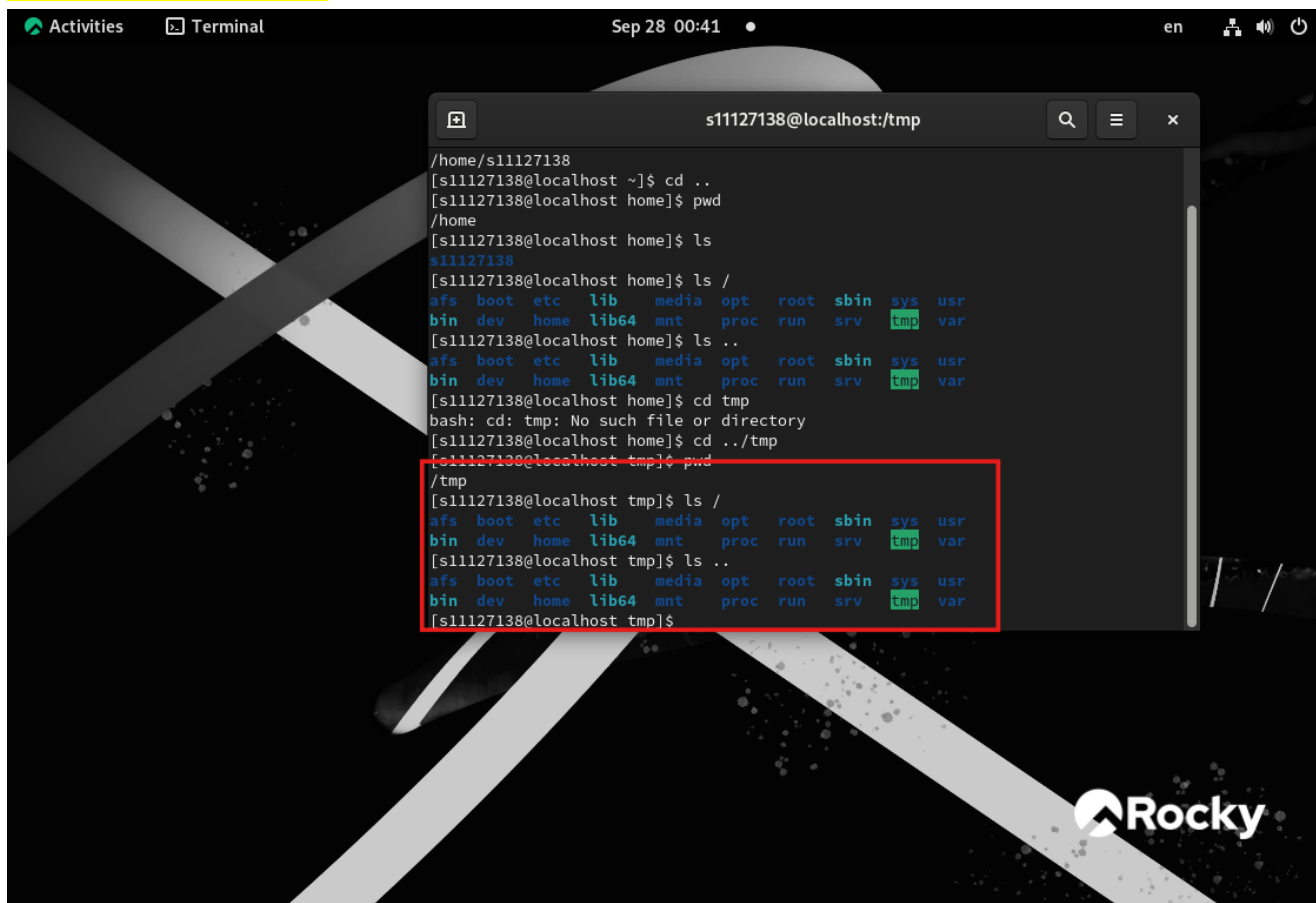
```
s11127138@localhost:~/boot/efi
[s11127138@localhost ~]$ cd /
[s11127138@localhost /]$ ls
afs  boot  etc  lib  media  opt  root  sbin  sys  usr
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
[s11127138@localhost /]$ ls afs boot
afs:
boot:
config-5.14.0-427.13.1.el9_4.x86_64
config-5.14.0-427.35.1.el9_4.x86_64
efi
grub2
initramfs-0-rescue-5db277a4fa8e4aa1aaa601876dd37125.img
initramfs-5.14.0-427.13.1.el9_4.x86_64.img
initramfs-5.14.0-427.13.1.el9_4.x86_64kdump.img
initramfs-5.14.0-427.35.1.el9_4.x86_64.img
initramfs-5.14.0-427.35.1.el9_4.x86_64kdump.img
loader
symvers-5.14.0-427.13.1.el9_4.x86_64.gz
symvers-5.14.0-427.35.1.el9_4.x86_64.gz
System.map-5.14.0-427.13.1.el9_4.x86_64
System.map-5.14.0-427.35.1.el9_4.x86_64
vmlinuz-0-rescue-5db277a4fa8e4aa1aaa601876dd37125
vmlinuz-5.14.0-427.13.1.el9_4.x86_64
vmlinuz-5.14.0-427.35.1.el9_4.x86_64
[s11127138@localhost /]$ cd boot/grub2
bash: cd: boot/grub2: Permission denied
[s11127138@localhost /]$ ls -ld
dr-xr-xr-x. 18 root root 235 Sep 16 08:18 .
[s11127138@localhost /]$ ls -l boot/grub2
ls: cannot open directory 'boot/grub2': Permission denied
[s11127138@localhost /]$ cd boot/efi
[s11127138@localhost efi]$ pwd
/boot/efi
[s11127138@localhost efi]$
```

1. 目前工作目錄在 `home` directory，不改變工作目錄，請列出根目錄下一層檔案名稱清單，只需要看見檔名。請使用絕對路徑、相對路徑各做一次。



```
s11127138@localhost:/home
[s11127138@localhost ~]$ ls
Desktop  Documents  Downloads  Music  Pictures  Public  Templates  Videos
[s11127138@localhost ~]$ pwd
/home/s11127138
[s11127138@localhost ~]$ cd ..
[s11127138@localhost home]$ pwd
/home
[s11127138@localhost home]$ ls
s11127138
[s11127138@localhost home]$ ls /
afs  boot  etc  lib  media  opt  root  sbin  sys  usr
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
[s11127138@localhost home]$ ls ..
afs  boot  etc  lib  media  opt  root  sbin  sys  usr
bin  dev  home  lib64  mnt  proc  run  srv  tmp  var
[s11127138@localhost home]$
```

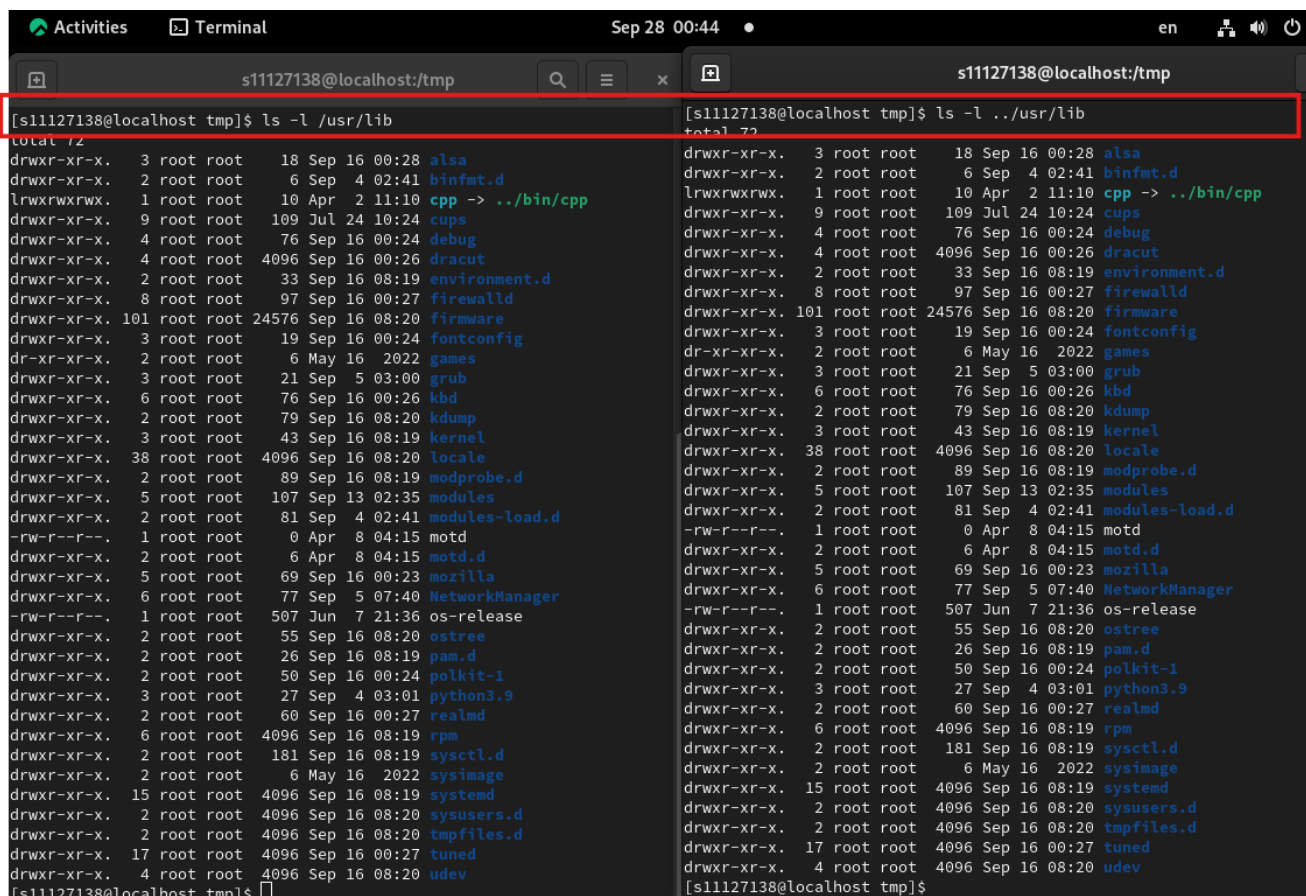
2. 請改變工作目錄到 /tmp，請列出根目錄下一層檔案名稱清單，只需要看見檔名。請使用絕對路徑、相對路徑各做一次。



```
Activities Terminal Sep 28 00:41 en
s11127138@localhost:tmp

/home/s11127138
[s11127138@localhost ~]$ cd ..
[s11127138@localhost home]$ pwd
/home
[s11127138@localhost home]$ ls
s11127138
[s11127138@localhost home]$ ls /
afs boot etc lib media opt root sbin sys usr
bin dev home lib64 mnt proc run srv tmp var
[s11127138@localhost home]$ ls ..
afs boot etc lib media opt root sbin sys usr
bin dev home lib64 mnt proc run srv tmp var
[s11127138@localhost home]$ cd tmp
bash: cd: tmp: No such file or directory
[s11127138@localhost home]$ cd ../tmp
[s11127138@localhost tmp]$ pwd
/tmp
[s11127138@localhost tmp]$ ls /
afs boot etc lib media opt root sbin sys usr
bin dev home lib64 mnt proc run srv tmp var
[s11127138@localhost tmp]$ ls ..
afs boot etc lib media opt root sbin sys usr
bin dev home lib64 mnt proc run srv tmp var
[s11127138@localhost tmp]$
```

3. 不改變工作目錄，請列出根目錄下 usr 目錄下 lib 目錄下一層檔案清單，要能看到檔案權限等資料，請使用絕對路徑、相對路徑各做一次。



```
Activities Terminal Sep 28 00:44 en
s11127138@localhost:tmp

[s11127138@localhost tmp]$ ls -l /usr/lib
total 72
drwxr-xr-x. 3 root root 18 Sep 16 00:28 alsa
drwxr-xr-x. 2 root root 6 Sep 4 02:41 binfmt.d
lrwxrwxrwx. 1 root root 10 Apr 2 11:10 cpp -> ../bin/cpp
drwxr-xr-x. 9 root root 109 Jul 24 10:24 cups
drwxr-xr-x. 4 root root 76 Sep 16 00:24 debug
drwxr-xr-x. 4 root root 4096 Sep 16 00:26 dracut
drwxr-xr-x. 2 root root 33 Sep 16 08:19 environment.d
drwxr-xr-x. 8 root root 97 Sep 16 00:27 firewallld
drwxr-xr-x. 101 root root 24576 Sep 16 08:20 firmware
drwxr-xr-x. 3 root root 19 Sep 16 00:24 fontconfig
dr-xr-xr-x. 2 root root 6 May 16 2022 games
drwxr-xr-x. 3 root root 21 Sep 5 03:00 grub
drwxr-xr-x. 6 root root 76 Sep 16 00:26 kbd
drwxr-xr-x. 2 root root 79 Sep 16 08:20 kdump
drwxr-xr-x. 3 root root 43 Sep 16 08:19 kernel
drwxr-xr-x. 38 root root 4096 Sep 16 08:20 locale
drwxr-xr-x. 2 root root 89 Sep 16 08:19 modprobe.d
drwxr-xr-x. 5 root root 107 Sep 13 02:35 modules
drwxr-xr-x. 2 root root 81 Sep 4 02:41 modules-load.d
-rw-r--r--. 1 root root 0 Apr 8 04:15 motd
drwxr-xr-x. 2 root root 6 Apr 8 04:15 motd.d
drwxr-xr-x. 5 root root 69 Sep 16 00:23 mozilla
drwxr-xr-x. 6 root root 77 Sep 5 07:40 NetworkManager
-rw-r--r--. 1 root root 507 Jun 7 21:36 os-release
drwxr-xr-x. 2 root root 55 Sep 16 08:20 ostree
drwxr-xr-x. 2 root root 26 Sep 16 08:19 pam.d
drwxr-xr-x. 2 root root 50 Sep 16 00:24 polkit-1
drwxr-xr-x. 3 root root 27 Sep 4 03:01 python3.9
drwxr-xr-x. 2 root root 60 Sep 16 00:27 realmd
drwxr-xr-x. 6 root root 4096 Sep 16 08:19 rpm
drwxr-xr-x. 2 root root 181 Sep 16 08:19 sysctl.d
drwxr-xr-x. 2 root root 6 May 16 2022 sysimage
drwxr-xr-x. 15 root root 4096 Sep 16 08:19 systemd
drwxr-xr-x. 2 root root 4096 Sep 16 08:20 sysusers.d
drwxr-xr-x. 2 root root 4096 Sep 16 08:20 tmpfiles.d
drwxr-xr-x. 17 root root 4096 Sep 16 00:27 tuned
drwxr-xr-x. 4 root root 4096 Sep 16 08:20 udev
[s11127138@localhost tmp]$

[s11127138@localhost tmp]$ ls -l ../usr/lib
total 72
drwxr-xr-x. 3 root root 18 Sep 16 00:28 alsa
drwxr-xr-x. 2 root root 6 Sep 4 02:41 binfmt.d
lrwxrwxrwx. 1 root root 10 Apr 2 11:10 cpp -> ../bin/cpp
drwxr-xr-x. 9 root root 109 Jul 24 10:24 cups
drwxr-xr-x. 4 root root 76 Sep 16 00:24 debug
drwxr-xr-x. 4 root root 4096 Sep 16 00:26 dracut
drwxr-xr-x. 2 root root 33 Sep 16 08:19 environment.d
drwxr-xr-x. 8 root root 97 Sep 16 00:27 firewallld
drwxr-xr-x. 101 root root 24576 Sep 16 08:20 firmware
drwxr-xr-x. 3 root root 19 Sep 16 00:24 fontconfig
dr-xr-xr-x. 2 root root 6 May 16 2022 games
drwxr-xr-x. 3 root root 21 Sep 5 03:00 grub
drwxr-xr-x. 6 root root 76 Sep 16 00:26 kbd
drwxr-xr-x. 2 root root 79 Sep 16 08:20 kdump
drwxr-xr-x. 3 root root 43 Sep 16 08:19 kernel
drwxr-xr-x. 38 root root 4096 Sep 16 08:20 locale
drwxr-xr-x. 2 root root 89 Sep 16 08:19 modprobe.d
drwxr-xr-x. 5 root root 107 Sep 13 02:35 modules
drwxr-xr-x. 2 root root 81 Sep 4 02:41 modules-load.d
-rw-r--r--. 1 root root 0 Apr 8 04:15 motd
drwxr-xr-x. 2 root root 6 Apr 8 04:15 motd.d
drwxr-xr-x. 5 root root 69 Sep 16 00:23 mozilla
drwxr-xr-x. 6 root root 77 Sep 5 07:40 NetworkManager
-rw-r--r--. 1 root root 507 Jun 7 21:36 os-release
drwxr-xr-x. 2 root root 55 Sep 16 08:20 ostree
drwxr-xr-x. 2 root root 26 Sep 16 08:19 pam.d
drwxr-xr-x. 2 root root 50 Sep 16 00:24 polkit-1
drwxr-xr-x. 3 root root 27 Sep 4 03:01 python3.9
drwxr-xr-x. 2 root root 60 Sep 16 00:27 realmd
drwxr-xr-x. 6 root root 4096 Sep 16 08:19 rpm
drwxr-xr-x. 2 root root 181 Sep 16 08:19 sysctl.d
drwxr-xr-x. 2 root root 6 May 16 2022 sysimage
drwxr-xr-x. 15 root root 4096 Sep 16 08:19 systemd
drwxr-xr-x. 2 root root 4096 Sep 16 08:20 sysusers.d
drwxr-xr-x. 2 root root 4096 Sep 16 08:20 tmpfiles.d
drwxr-xr-x. 17 root root 4096 Sep 16 00:27 tuned
drwxr-xr-x. 4 root root 4096 Sep 16 08:20 udev
[s11127138@localhost tmp]$
```

4. 請改變工作目錄到 `/usr`，請列出目前目錄下 `lib` 目錄下整個目錄分枝檔案清單，請使用絕對路徑、相對路徑各做一次。
※輸出太多，因此指令行在輸出之外。

1. 絕對路徑：`ls -R /usr/lib`
2. 相對路徑：`ls -R lib`

```
s11127138@localhost:/usr
/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/cisco/enic:
enic.ko.xz

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/dlink:
d12k.ko.xz

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/emulex:
benet

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/emulex/benet:
be2net.ko.xz

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/google:
gve

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/google/gve:
gve.ko.xz

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/huawei/hinic:
hinic

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/huawei/hinic:
hinic.ko.xz

/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/intel:
e1000 fm10k iavf idpf igbvf ixgbe
e1000e i40e ice igb igc ixgbev

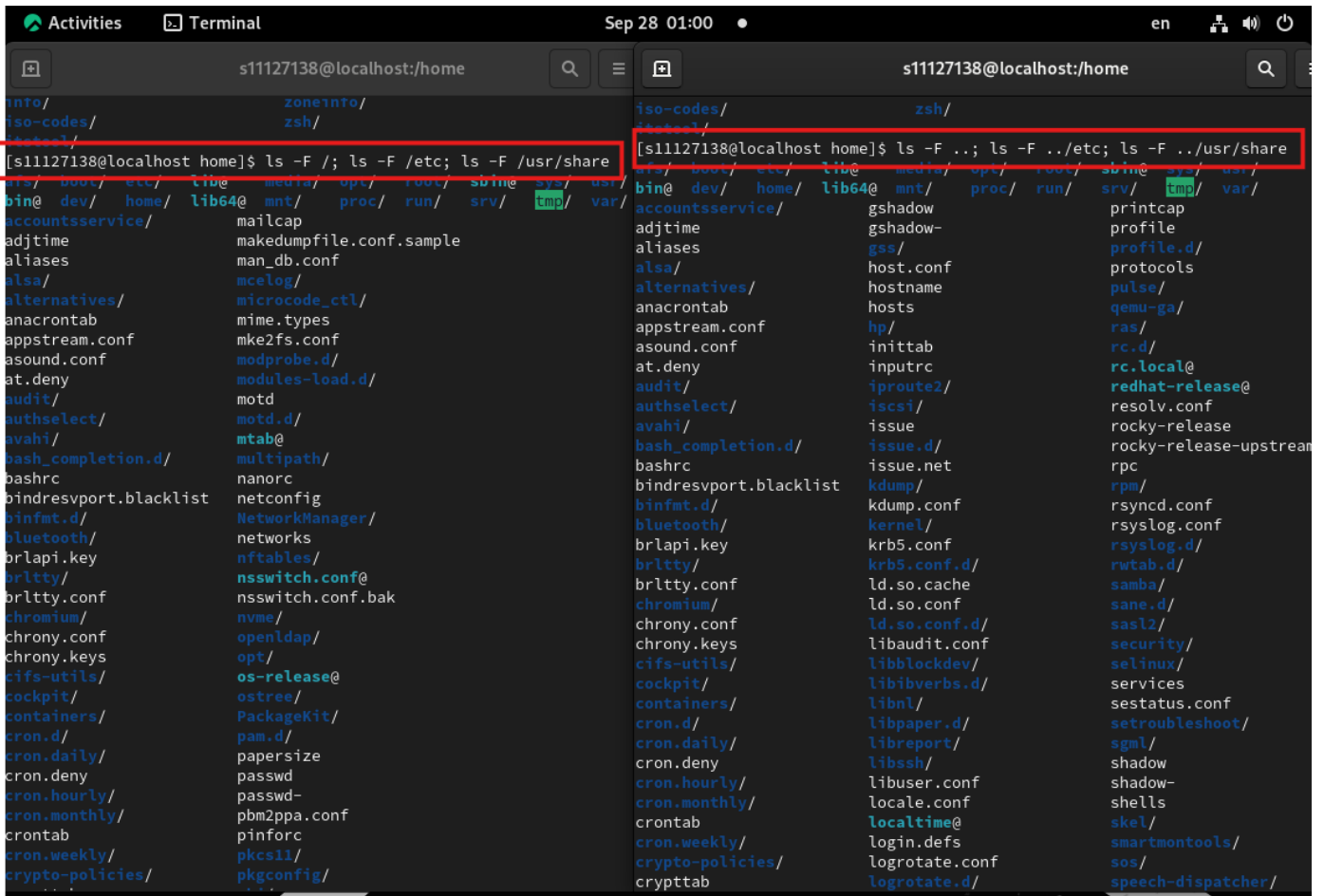
/usr/lib/modules/5.14.0-427.13.1.el9_4.x86_64/kernel/drivers/net/ethernet/intel/e1000:
e1000.ko.xz
```

5. 請改變工作目錄到 `home` directory，請列出根目錄、`/etc` 及 `/usr/share` 目錄下一層檔案清單，`ls` 指令並標示出是子目錄、可執行檔或連結檔，請使用絕對路徑、相對路徑各做一次。

```
s11127138@localhost:/home
[s11127138@localhost ~]$ cd ..
[s11127138@localhost home]$ ls -F /etc /usr/share

/etc:
accountsservice/ gshadow printcap
aditime gshadow- profile
aliases gss/ protocols
alsa/ host.conf pulse/
alternatives/ hostname qemu-ga/
anacrontab hosts ras/
appstream.conf hp/
asound.conf inittab rc.d/
at.deny inputrc rc.local@
audit/ iproute2/ redhat-release@
authselect/ iscsi/ resolv.conf
avahi/ issue rocky-release
bash_completion.d/ issue.d/ rocky-release-upstream
bashrc issue.net rpc
bindresvport.blacklist kdump/ rpm/
binfmt.d/ kdump.conf rsyncd.conf
bluetooth/ kernel/ rsyslog.conf
brlapi.key krb5.conf rsyslog.d/
brltty/ krb5.conf.d/ rwtab.d/
brltty.conf ld.so.cache samba/
chromium/ ld.so.conf sane.d/
chrony.conf ld.so.conf.d/ sasl2/
chrony.keys libaudit.conf security/
cifs-utils/ libblockdev/ selinux/
cockpit/ libibverbs.d/ services
containers/ libnl/ sestatus.conf
cron.d/ libpaper.d/ setroubleshoot/
cron.daily/ libreport/ sgml/
cron.deny libssh/ shadow
cron.hourly/ libuser.conf shadow-
cron.monthly/ locale.conf shells
crontab localtime@ skel/
cron.weekly/ login.defs smartmontools/
```

6. 上題請以 multiple command 執行。

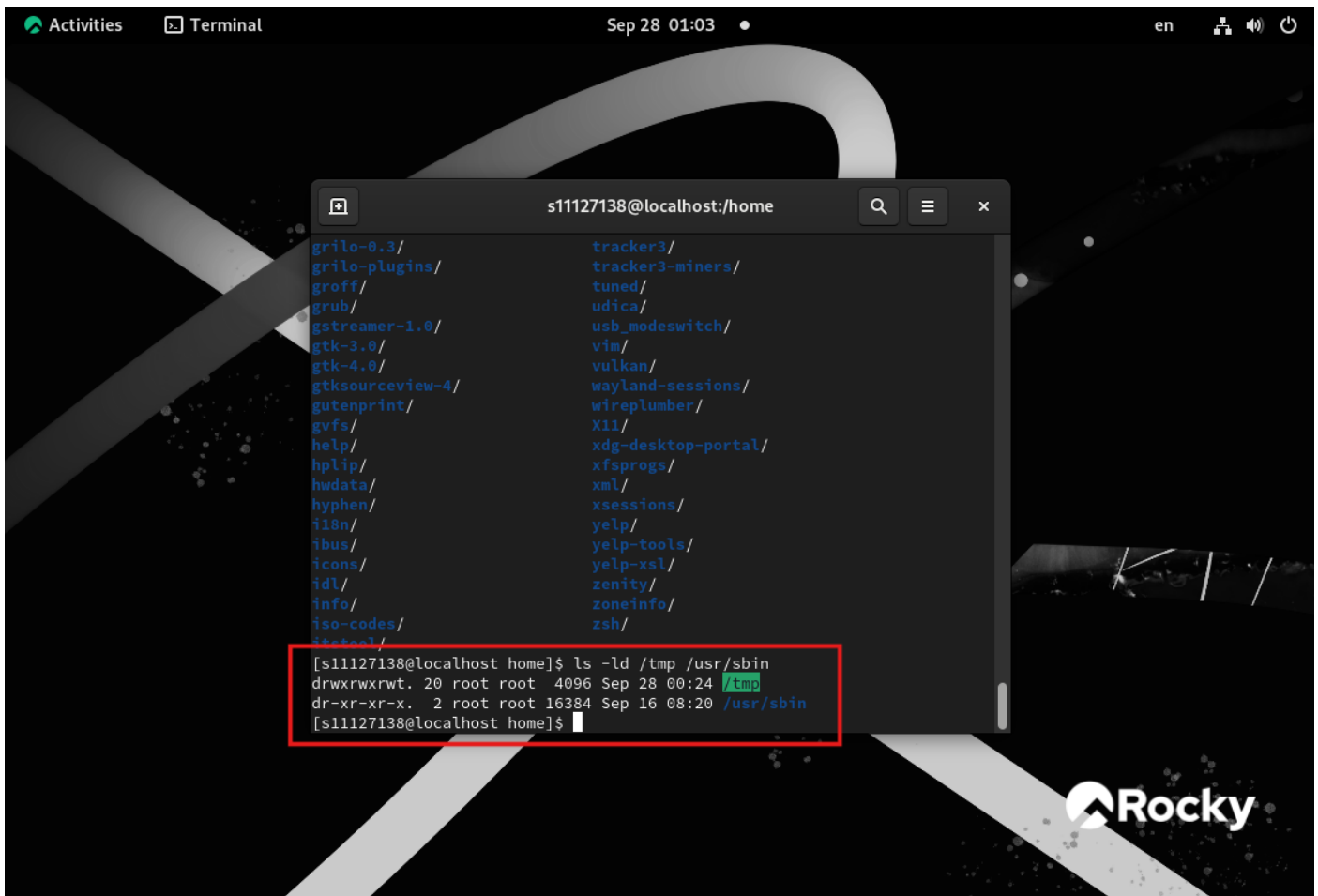


The image shows two terminal windows side-by-side. Both windows are titled 's11127138@localhost:/home'. The left window shows the command `ls -F /; ls -F /etc; ls -F /usr/share` and its output, which lists the contents of these three directories. The right window shows the command `ls -F ../; ls -F ../etc; ls -F ../usr/share` and its output, which lists the contents of the parent directory and its subdirectories. Both windows have a red box highlighting the command line.

```
[s11127138@localhost home]$ ls -F /; ls -F /etc; ls -F /usr/share
bin/ boot/ etc/ lib64/ media/ opt/ root/ sbin/ sys/ usr/
accounts-service/ mailcap makedumpfile.conf.sample man_db.conf
adjtime aliases mcelog/ alternatives/ anacrontab appstream.conf
asound.conf at.deny audit/ authselect/ avahi/ bash_completion.d/
bashrc bindresvport.blacklist binfmt.d/ bluetooth/ brlapi.key
brltty/ brltty.conf chromium/ chrony.conf cifs-utils/ cockpit/
containers/ cron.d/ cron.daily/ cron.deny/ cron.hourly/ cron.monthly/
crontab cron.weekly/ crypto-policies/
iso-codes/ zsh/

[s11127138@localhost home]$ ls -F ../; ls -F ../etc; ls -F ../usr/share
bin/ boot/ etc/ lib64/ media/ opt/ root/ sbin/ sys/ usr/
accounts-service/ mailcap makedumpfile.conf.sample man_db.conf
adjtime aliases mcelog/ alternatives/ anacrontab appstream.conf
asound.conf at.deny audit/ authselect/ avahi/ bash_completion.d/
bashrc bindresvport.blacklist binfmt.d/ bluetooth/ brlapi.key
brltty/ brltty.conf chromium/ chrony.conf cifs-utils/ cockpit/
containers/ cron.d/ cron.daily/ cron.deny/ cron.hourly/ cron.monthly/
crontab cron.weekly/ crypto-policies/
iso-codes/ zsh/
```

7. 請列出 /tmp、/usr/sbin 兩個子目錄本身的權限相關資料，不列子目錄下的檔案。



The image shows a terminal window titled 's11127138@localhost:/home'. It displays a directory listing of the root directory, showing various system and user directories. A red box highlights the command `ls -ld /tmp /usr/sbin` and its output, which shows the permissions and ownership of these two directories.

```
[s11127138@localhost home]$ ls -ld /tmp /usr/sbin
drwxrwxrwt. 20 root root 4096 Sep 28 00:24 /tmp
dr-xr-xr-x. 2 root root 16384 Sep 16 08:20 /usr/sbin
```