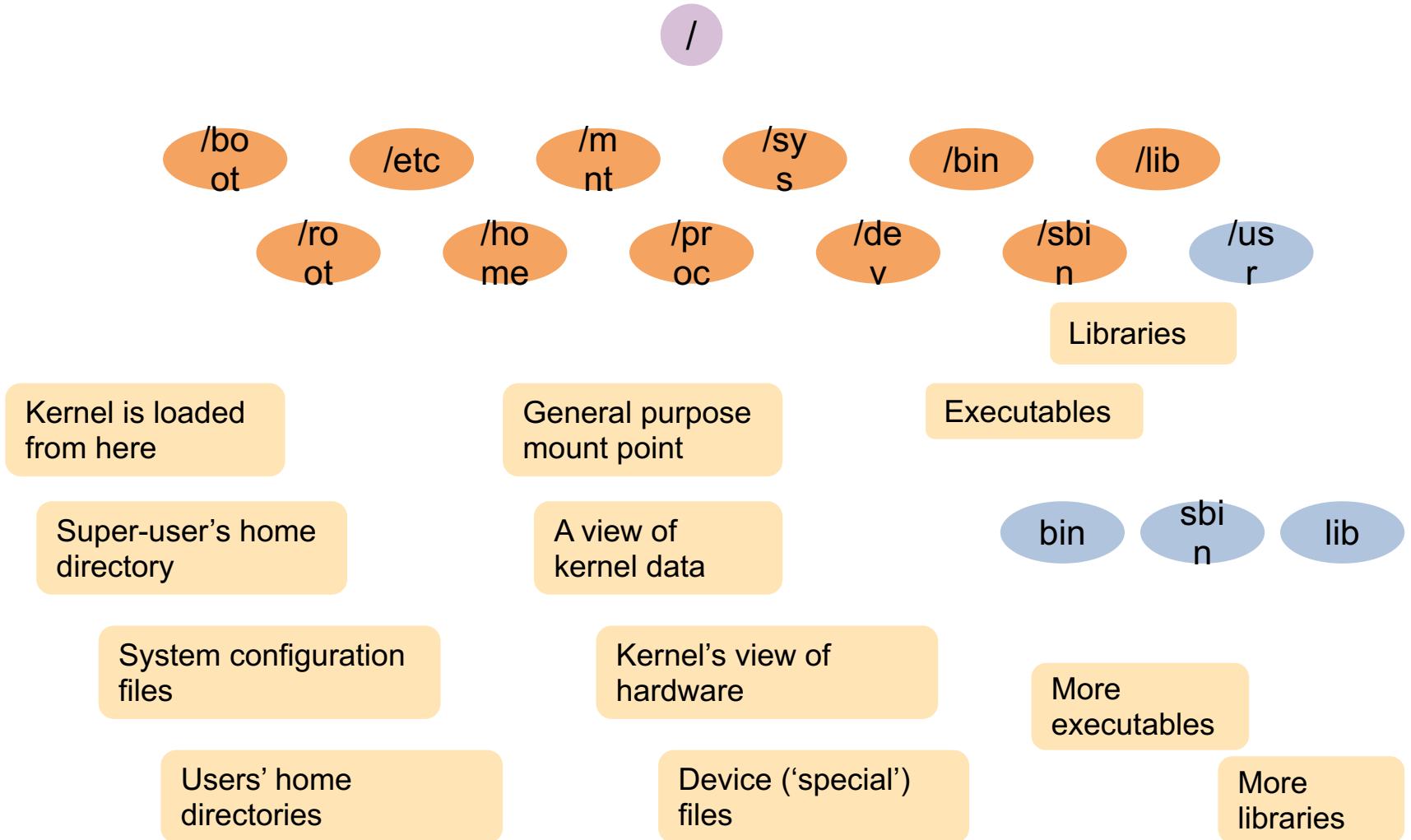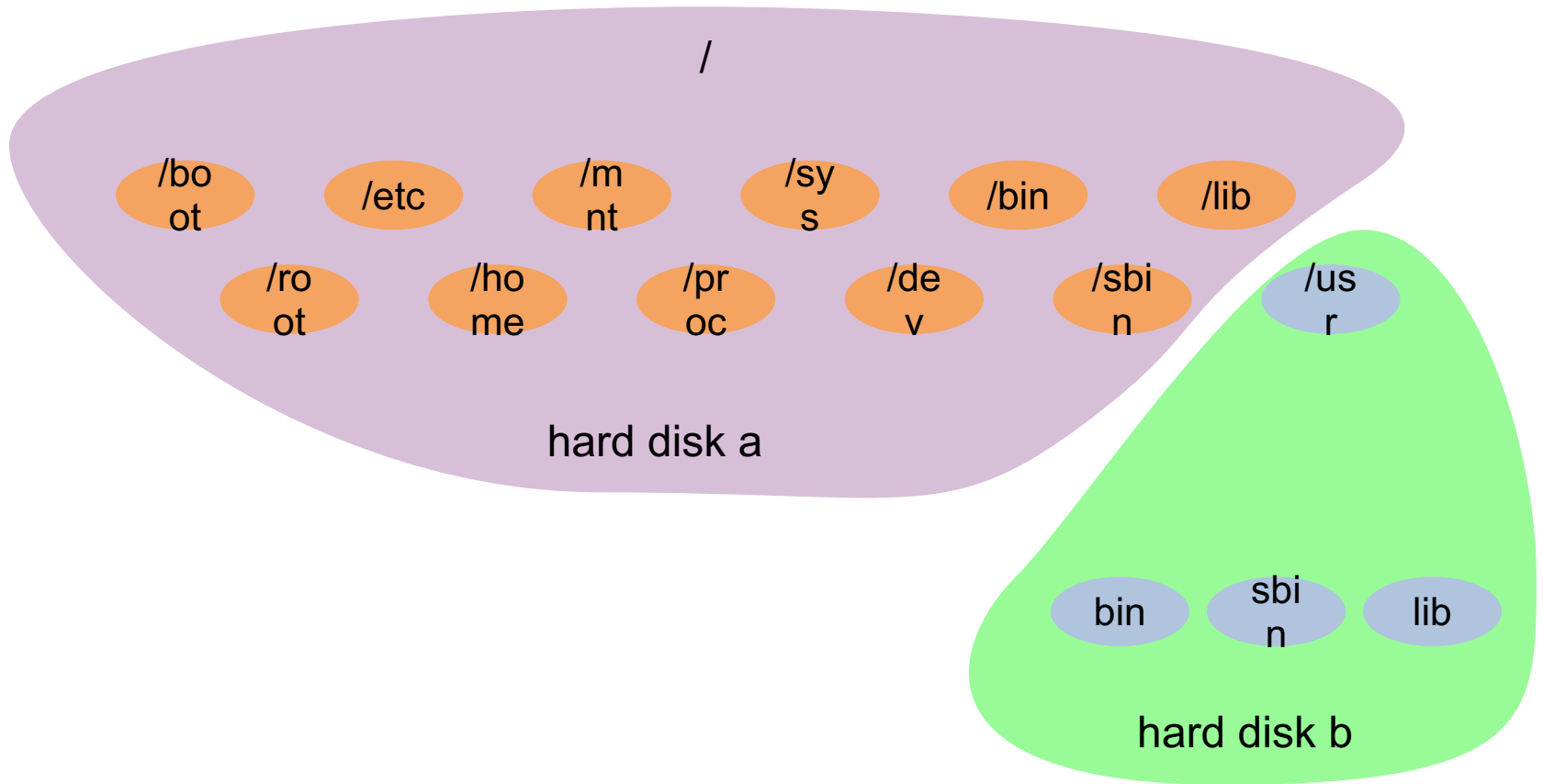# The Filesystem

Module 4

Overview

- In this module:

- Tour of the Filesystem

- File Names

- The directories '.' and '..'

- Absolute and Relative Pathnames

- Referring to Files and Directories

- Disk Space Free – df

Tour of the Filesystem

/

/boot   /etc   /mnt   /sys   /bin   /lib

/root   /home   /proc   /dev   /sbin   /usr

Libraries

Executables

Kernel is loaded from here

General purpose mount point

Super-user's home directory

A view of kernel data

bin   sbin   lib

System configuration files

Kernel's view of hardware

More executables

Users' home directories

Device ('special') files

More libraries

One Filesystem, Multiple Devices

/

/boot /etc /mnt /sys /bin /lib

/root /home /proc /dev /sbin

/usr

hard disk a

bin sbin lib

hard disk b

The Term "Filesystem"

- Filesystem can mean

- "the Linux Filesystem"

– the Linux directory hierarchy as a whole; or

- "a Filesystem"

– a complete directory hierarchy as stored on one device or partition

Filenames

- Filenames are:

- case-SENSITIVE!

- any character except a '/'

- limited to 255 characters (bytes)

– (full pathname can be up to 4096 characters)

- used to represent file and directory names

The directories '.' and '..'

- '.' refers to the **current** directory
- '..' refers to the **parent** directory
- These can appear anywhere in a pathname.

Absolute and Relative Pathnames

- Absolute Pathnames

- Start with a '/' and are relative to the **root directory ('/')**

```
/usr/bin
/etc/passwd
/
```

- Relative Pathnames

- Are rel dir1/file1
```
etc/passwd
myfile
```

Referring to Files or Directories

- All these refer to the same file:

```
[peter@server1 dir1]$ cd dir1
[peter@server1 dir1]$ ls -l file1 ./file1 ../dir1/file1
-rw-rw-r--. 1 peter peter 15 Apr 16 18:22 file1
-rw-rw-r--. 1 peter peter 15 Apr 16 18:22 ./file1
-rw-rw-r--. 1 peter peter 15 Apr 16 18:22 ../dir1/file1
[peter@server1 dir1]$
```

Disk Space Free - df

- To find out how much disk space is available:

```
[peter@server1 dir1]$ df -h
Filesystem              Size  Used Avail Use% Mounted on
/dev/sda2               145G   30G  109G  22% /
/dev/sda1               498M   86M  388M  19% /boot
/dev/sda6               145G  132G  5.0G  97% /home
/dev/sda7                83G   72G  6.7G  92% /opt
[peter@server1 dir1]$
```