LKMP – PCI and USB devices

To find PCI and USB devices the easiest way is to use respectively:

- lspci (reference: https://github.com/pciutils/pciutils)
- lsusb (reference: https://github.com/gregkh/usbutils)

```
sergio@laptop:~/repos$ lsusb -h
Usage: lsusb [options]...
List USB devices
  -v, --verbose
      Increase verbosity (show descriptors)
  -s [[bus]:][devnum]
      Show only devices with specified device and/or
      bus numbers (in decimal)
  -d vendor:[product]
      Show only devices with the specified vendor and
      product ID numbers (in hexadecimal)
  -D device
      Selects which device lsusb will examine
  -t, --tree
      Dump the physical USB device hierarchy as a tree
  -V, --version
      Show version of program
  -h, --help
      Show usage and help
```

```
sergio@laptop:~/repos$ lspci -h
lspci: invalid option -- 'h'
Usage: lspci [<switches>]

Basic display modes:
-mm             Produce machine-readable output (single -m for an obsolete format)
-t              Show bus tree

Display options:
-v              Be verbose (-vv or -vvv for higher verbosity)
-k              Show kernel drivers handling each device
-x              Show hex-dump of the standard part of the config space
-xxx            Show hex-dump of the whole config space (dangerous; root only)
-xxxx           Show hex-dump of the 4096-byte extended config space (root only)
-b              Bus-centric view (addresses and IRQ's as seen by the bus)
-D              Always show domain numbers
-P              Display bridge path in addition to bus and device number
-PP             Display bus path in addition to bus and device number

Resolving of device ID's to names:
-n              Show numeric ID's
-nn             Show both textual and numeric ID's (names & numbers)
-q              Query the PCI ID database for unknown ID's via DNS
-qq             As above, but re-query locally cached entries
-Q              Query the PCI ID database for all ID's via DNS

Selection of devices:
-s [[[[<domain>]:]<bus>]:][<slot>][.[<func>]]   Show only devices in selected slots
-d [<vendor>]:[<device>][:<class>]              Show only devices with specified ID's

Other options:
-i <file>       Use specified ID database instead of /usr/share/misc/pci.ids.gz
-p <file>       Look up kernel modules in a given file instead of default modules.pcimap
-M              Enable `bus mapping' mode (dangerous; root only)
```

In case those commands don’t exists, there are other options:

For PCI;

- spci
- cat /proc/bus/pci/devices
- browse in /sys/bus/pci (reference: https://www.kernel.org/doc/html/latest/PCI/sysfs-pci.html)

For USB:

- usb-devices (reference: https://linux.die.net/man/1/usb-devices)
- usbview (reference: https://linux.die.net/man/8/usbview)
- /sys/bus/usb/devices/usb*
- /proc/bus/usb/devices
- /sys/kernel/debug/usb/devices

```
sergio@laptop:~/repos$ lsusb
Bus 004 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 003 Device 003: ID 0e8d:0608 MediaTek Inc. Wireless_Device
Bus 003 Device 006: ID 046d:c52f Logitech, Inc. Unifying Receiver
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

```
sergio@laptop:~/repos$ lspci
00:00.0 Host bridge: Advanced Micro Devices, Inc. [AMD] Renoir/Cezanne Root Complex
00:00.2 IOMMU: Advanced Micro Devices, Inc. [AMD] Renoir/Cezanne IOMMU
00:01.0 Host bridge: Advanced Micro Devices, Inc. [AMD] Renoir PCIe Dummy Host Bridge
00:02.0 Host bridge: Advanced Micro Devices, Inc. [AMD] Renoir PCIe Dummy Host Bridge
00:02.1 PCI bridge: Advanced Micro Devices, Inc. [AMD] Renoir/Cezanne PCIe GPP Bridge
00:02.2 PCI bridge: Advanced Micro Devices, Inc. [AMD] Renoir/Cezanne PCIe GPP Bridge
00:02.3 PCI bridge: Advanced Micro Devices, Inc. [AMD] Renoir/Cezanne PCIe GPP Bridge
00:08.0 Host bridge: Advanced Micro Devices, Inc. [AMD] Renoir PCIe Dummy Host Bridge
00:08.1 PCI bridge: Advanced Micro Devices, Inc. [AMD] Renoir Internal PCIe GPP Bridge to Bus
00:08.2 PCI bridge: Advanced Micro Devices, Inc. [AMD] Renoir Internal PCIe GPP Bridge to Bus
00:14.0 SMBus: Advanced Micro Devices, Inc. [AMD] FCH SMBus Controller (rev 51)
00:14.3 ISA bridge: Advanced Micro Devices, Inc. [AMD] FCH LPC Bridge (rev 51)
00:18.0 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 0
00:18.1 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 1
00:18.2 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 2
00:18.3 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 3
00:18.4 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 4
00:18.5 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 5
00:18.6 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 6
00:18.7 Host bridge: Advanced Micro Devices, Inc. [AMD] Cezanne Data Fabric; Function 7
01:00.0 Ethernet controller: Realtek Semiconductor Co., Ltd. RTL8111/8168/8411 PCI Express Gigabit Ethernet Controller (rev 15)
02:00.0 Network controller: MEDIATEK Corp. MT7921K (RZ608) Wi-Fi 6E 80MHz
03:00.0 Non-Volatile memory controller: Intel Corporation Device f1aa (rev 03)
04:00.0 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI] Cezanne [Radeon Vega Series / Radeon Vega Mobile Series] (rev c6)
04:00.1 Audio device: Advanced Micro Devices, Inc. [AMD/ATI] Renoir Radeon High Definition Audio Controller
04:00.2 Encryption controller: Advanced Micro Devices, Inc. [AMD] Family 17h (Models 10h-1fh) Platform Security Processor
04:00.3 USB controller: Advanced Micro Devices, Inc. [AMD] Renoir/Cezanne USB 3.1
04:00.4 USB controller: Advanced Micro Devices, Inc. [AMD] Renoir/Cezanne USB 3.1
04:00.5 Multimedia controller: Advanced Micro Devices, Inc. [AMD] ACP/ACP3X/ACP6x Audio Coprocessor (rev 01)
04:00.6 Audio device: Advanced Micro Devices, Inc. [AMD] Family 17h/19h HD Audio Controller
05:00.0 SATA controller: Advanced Micro Devices, Inc. [AMD] FCH SATA Controller [AHCI mode] (rev 81)
05:00.1 SATA controller: Advanced Micro Devices, Inc. [AMD] FCH SATA Controller [AHCI mode] (rev 81)
```