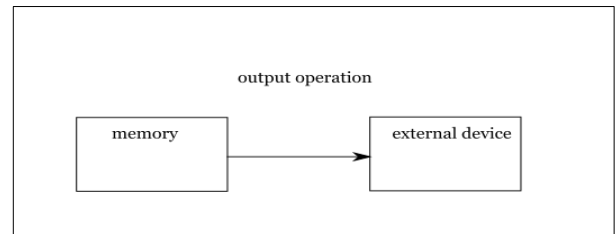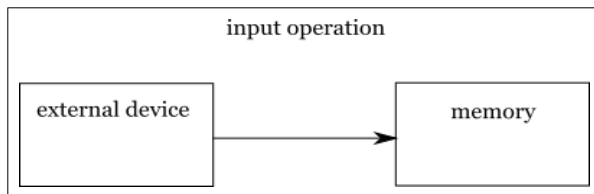# INPUT/OUTPUT & FILE

Input/Output (I/O)
What is Input/Output
Input/Output (I/O) is the process of copying data between memory and external devices such as disk drivers, termials and networks.
Input operation copies data from an external device to memory.
Output operation copies data from memory to external device.

File
What is File
File is a sequence of bytes.

File Category
To show file category, we use command: *ls -l*
The first column represents file category and permission. We call the first character of the column is prefix.
Linux has three basic types of files:

- *Regular File*
  Contains data, text or program instructions.
  Prefix: -

- *Directory*
  Contains a list of other files.
  Prefix: d

- *Device File*
  Used to interact with external devices.
  Prefix: b,c,p,s

Device File
What is Device File
All I/O devices, such as networks, disks, terminals are mapped and modeled as files. That is called device file.

Where is Device File
Device files are located in folder */dev*.

Device File Category

If the first character is **b**, **c**, **p**, or **s**, the file is a device.
The meaning of characters:
- *Character device (c)*
        Driver communicates with hardware by sending
and receiving characters (bytes, octets).

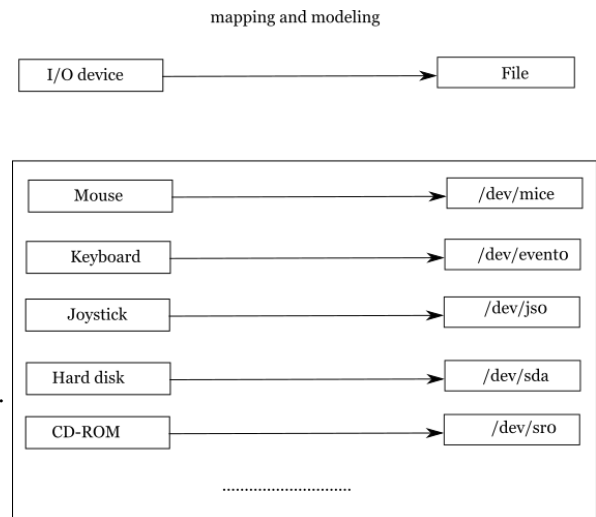- *Block device (b)*
        Driver communicates with hardware by sending
and receiving entire blocks of data.

- *Pipe device (p)*
        Like character device, pipe message is character.
But, its endpoint is an I/O stream instead of a kernal driver.

- *Socket device (s)*
        Speical interfaces that are used for interprocess
communication.

mapping and modeling

| I/O device | ⟶ | File |

Mouse	⟶	/dev/mice
Keyboard	⟶	/dev/evento
Joystick	⟶	/dev/jso
Hard disk	⟶	/dev/sda
CD-ROM	⟶	/dev/sro

....

//continue
Stream
Buffered/Unbuffered data
Low/High API