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1. CMD in shell

1.1. `ls`

1. `ls -d`, `ls` and `ls -R`, **list content hierachically**.
2. `ls --sort=size/time`, **sort** by size/time. Sort files alphabetically by default.
    1. 细化 `ls --sort=time`：`ls --time=atime/ctime/mtime/birth`
    2. Secondary option, `-r`.
3. `ls --format=single-column/horizontal/vertical`, **display style**.
4. `ls --format=verbose`, `ls -s`, list **metadata** such as file size.
    1. Secondary option, `-r`, `-h`.

1.2. `eza`

`eza` = `ls` + `tree` + fancy-rendering + extended Feature (only list directories)

1.3. `du`

- Limitation: 只能到指定底部的子目录，无法到子目录文件

1. `du -h`, recurse into **root directories** (注意，它只是以diretory为显示统计对象，从金字塔顶端逐层到底端，逐层给出每个diretory层级的大小).
2. `du -h --max-depth 1`, 同上，但只这里截止到directory level=1层级。（`du -sh` = `du -h --max-depth`）
3. du -h *, 当前目录下所有files和子目录及根部目录（依然没有子目录和根目录的files).

External utilities

PDF manipulation: `pdftk`

1. Join (merge) "ace.pdf" and "yascondeman.pdf" into one "new.pdf": `pdf ace.pdf yascodeman.pdf cat output new.pdf`
2. Join "ace.pdf" with only page 1-3 and "yascodeman.pdf" into one "allinone.pdf" : `pdftk ace.pdf cat 1-3 output - | pdftk - yascodeman.pdf cat output allinone.pdf`
3. Burst (break down) a single PDF document into pages and dump its data to doc_data.txt: `pdftk in.pdf burst`
4. Remove page 13 from "in1.pdf" to create "out1.pdf": `pdftk in.pdf cat 1-12 14-end output out1.pdf`

Image to pdf: `img2pdf`

1. Convert two images into a PDF document: `img2pdf in1.png in2.jpg --output out.pdf`
2. Join two images into A4-size pdf page with page border size=2x2.4 cm: `img2pdf in1.png in2.png --pagesize A4 --border 2cm:2.5cm --ouptut out.pdf`
3. Join two images into A4-size pdf page with constrained image size: `img2pdf in1.png in2.png --pagesize A4 --imgsize 10cmx15cm --fit shrink --ouptut out.pdf`

Image manipulation: `magick.montage`

1. Identify pixel or resolution for image: `magick identify in1.png` ; `identify -verbose in1.png`
2. Convert format between image: `montage -geometry +0+0 in1.jpg out.png`
3. Resize image with low resolution with 50x50: `montage in1.png -geometry 50x50+0+0 out.png`
4. Join two images into one: `montage in1.png in2.png -geometry +5+5 out.png`
5. Tile multiple images on composie one: `montage in1.png in2.png in3.png -tile 2x geometry +2+2 -background green out.png` (**PS**: **2x** means **2 columns**).
6. Tile multiple images and label filename on composie one: magick montage -geometry +0+0 -label "%f" -pointsize 45 loss_4.png loss_6.png out.png` (**PS**: label不可以通过-gravity选项调整位置，只能是底部中心处)

7. Tile multiple images and annote caption on composie one: `magick montage -geometry +0+0 -annotate +0+0 "(a) This is caption" -gravity Northwest -pointsize 45 loss_4.png out23.png`