# Linux Skills Notes[1]

Glory to God the Creator of the Universe

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Dedicated to God the heavenly father who created all,
and the Lord Jesus Christ my savior.

# Contents

# Preface

The website[1] for this file contains:

## Acknowledgements


- A special word of thanks goes to Jesus Christ.
- I'll also like to thank my parents and my brother.

Amber Jain
http://amberj.devio.us/


[1] https://github.com/amberj/latex-book-template

# Chapter 1

# Notice

## 1.1 Ideas

- Sometimes couldn’t find word in dictionary, want to create by myself. I need such a dictionary app, that allows edit word entry, like maybe what Liongo could do

## 1.2 Remained problems

## 1.3 Solution

- python2.7 matplotlib does work for some reason (20200404)
- Thinkpad X220 touchpad sometimes fail, logout restore to normal. Replace non maintenanted driver. (202005)

# Chapter 2

# File

## 2.1 List command

### 2.1.1 Check Size

`$ du -sh` check folder size, in human readable unit
`$ du -csh --block-size=1G` size in GB
`$ ls -sh` list contents in size, not folder size, in human readable unit
`$ ls -i` list contents in size, machine readable unit

### 2.1.2 Counting

`$ ls -1 | wc -l` list file in 1 line and count lines, i.e. count files number
`$ echo */ | wc` count folder number current directory

### 2.1.3 Date

`$ ls -ltr` give you the recent to the end of the list
`$ ll -thr` give you the recent to the end of the list

## 2.2 Terminal bash

### 2.2.1 Print Screen

`$ cat file.txt > new.txt` print screen to new file, equivalently to copy a file.
`$ ./rns -q poly -N 1 -t static -e 0.061 -l 1.469 -n 10 > HW3.dat` run a program and to print screen to local file.

### 2.2.2 Run bash commands in files

`$ bash example.txt` run commands in the text file.

## 2.3 Find

- `$ find . ! -empty -type f -exec md5sum  + | sort | uniq -w32 -dD` Find Duplicate Files

- `$ find . -name 'filename'` Find file by name
- `$ ,3ls -lsa | grep -E "[d-](([rw-]2)x)1"` Find the executable file
- `$ find . -name "*.bak" -exec rm -rf  ;` find *.bak in current directory and delete
- `$ find . -name '*test*' -exec rm -rf -i  ;` find *test* files and dirs and delete with confirmaton from user, answer y or n (default)
- `-name "FILE-TO-FIND"` : File pattern
- `-exec rm -rf {} \;` or simply `-delete`: Delete all files matched by file pattern. `-exec` must be end with `\;` for once per file or `+` for once multiple files
- `-type f` : for files and do not include directory names.
- `-type d` : for dirs
- `$ find /PATH/TO/FILES -type f -printf 'size: %s bytes, modified at: %t, path : %h/, file name: %fn' | sort -k15 | uniq -f14 --all-repeated=prepend` find duplicates with same names
- `$ find -name '*.m4a' -print0 | xargs -0 md5sum | sort | uniq -Dw 32` find duplicates files with different names!

## 2.4 grep find word inside files

- `$ grep -e 'texts' ./*.dat` search ’ texts’ in certain files
- `$ grep -rnw 'path' -e 'keyword'` search ’ keyword’ in the files contained in ’ path’
- `$ grep --include=*.{c,h} -rnw 'path' -e 'keyword'` include .c and .h files
- `$ grep --exclude-dir={dir1,dir2,*.dst} -rnw '/path/to/somewhere/' -e "pattern "` exclude dir1, dir2 and .dst files
- `-r` is recursive
- `-n` line number
- `-w` match the word
- `grep -vf a.dat b.dat` show duplicates lines
- `grep -vf a.dat b.dat > b_new.dat` b file remove duplicates of a

## 2.5 Find and change the multiple figs

```
$ mkdir figs
```

## 2.6 AWK

- `awk -v RS= -v ORS='\n\n' '!seen[$0]++' file(s)` print out contents of file(s) without duplicated paragraphs
- code in /awk folder: show a.bib b.bib files duplicated paragraphs

## 2.7 Compress Files

Table 2.1: unzip

| File name | untar | compile | notes |
|---|---|---|---|
| *.tgz *tar.gz | tar zxvf | tar zcvf | compressing |
| *.tar | tar xvf filename | tar cvf out.tar filename | no compress, arxiv source |
| *.rar | unrar x filename | | |
| *.7z | 7za e filename | u7za a outname.7z file | |
| *.iso | 7z x *.iso -oMydir | | |
| *.zip | 7z x *.zip -oMydir | | |
| | unzip *.zip | zip -r out.zip files | |
| | unzip -O cp936 *.zip | | if Chinese font problem |
| | unzip -O GBK *.zip | | if Chinese font problem |

## 2.8 Rsync transfer file

- $ cp will copy without comparing differences
- $ cp -n copy without overwritting
- $ rsync will compare difference then copy necesseary files
- $ rsync sourcedir/ destinationdir sync files in directory
- $ rsync sourcedir destinationdir sync directory
- $ destinationdir/ and $ destinationdir are the same
- $ --ignore-existing skip updating files that exist on receiver
- $ -a attributes, preserving all filesystem attributes
- $ -v verbosely, list the files
- $ -u update, ignore newer versions in the destination
- $ -n not, equiv $ --dry-run test run without actual changes
- $ --progress show progress

### 2.8.1 Rsync SSH

- `$ rsync -azP ~/Documents chen@ssh.camk.edu.pl:~ --delete` this will sync ~/Document of Laptop to the Desktop, and delete the extra files.

- `$ rsync -azP chen@ssh.camk.edu.pl:~/Documents /home/jesuslovesme`, sync Documents dir from Desktop to laptop

- `$ rsync -azP ~/Documents/latex chen@ssh.camk.edu.pl:~Document/latex` sync localdir to ~/Document of Desktop

### 2.8.2 Rsync Excluding

- `$ rsync --exclude 'data' --exclude 'figs' -avz harris1/ harris2` exclude directory

- `$ rsync --exclude '*.dat' --exclude '*.png' -avz harris1/ harris2` exclude files

### 2.8.3 scp

- `$ scp chen@ssh.camk.edu.pl:/home/chen/Documents/file.txt ~/Documents` cp from server to local computer

## 2.9 Chmod

- `$ ls -la` show all with permission
- `$ ls -la filename` show file with permission
- `$ ls -ld folder` show folder permission
- `$ chmod u+rx,go-w folder` authorized in visiting the folder
- `$ chmod u+rw folder` authorized in visiting the folder

| Number | Permission Type | Symbol |
|---|---|---|
| 0 | No Permission | — |
| 1 | Execute | –x |
| 2 | Write | -w- |
| 3 | Execute + Write | -wx |
| 4 | Read | r– |
| 5 | Read + Execute | r-x |
| 6 | Read + Write | rw- |
| 7 | Read + Write +Execute | rwx |

- the permission request are from user(u), group(g), others(o), or all(a)
- `$ chmod 764 filename`, assign permissions to user, group and others at the same time
- `$ chmod g+wr filename`, assign permission to the group

## 2.10 Link a document

- `$ ln link source` create a hard link of sourc
- `$ ln -s link source` create a soft link of source, edit link will change source

# Chapter 3

# Text

## 3.1 Compare

`$ cmp 1.tex 2.tex` compare two similar files

## 3.2 Print to screen

`$ head 1.tex` show top 10 lines
`$ less 1.tex` show in segments

## 3.3 Spell Checking

`$ aspell -t -c file.tex` , t option is for TEX or LATEX format.
`$ aspell -t -c file.tex && pdflatex file.tex` checking and compiling at the same time.
`$ cat file.tex | aspell list -t | sort |uniq` get a list of misspelled words non-interactively.

# Chapter 4

# Fcitx

## 4.1 小技巧

- $ ; + aphabet print digital emotions: a - amazing, b- bear, bye, e - effort, l-love,
- $ llll 中文大号圆圈“一九九〇”（Cjk 无法显示）
- $ lklu 中文日期圆圈号 “二〇二〇”（Cjk 下可使用这个）
- $ Ctrl+. 中文下为中英标点切换，英文下为符号表情。
- 输入框选字翻頁：-/=
- $ ctrl+; clipboard history

## 4.2 词库

### 4.2.1 编辑或查询自定义词库

$ sudo apt install fcitx-tools 安装编辑字库的工具
fcitx 自带的五笔词库： /usr/share/fcitx/table/wbx.mb 或 /.config/fcitx/table/里。
转换词库为可编辑文本：
$ mb2txt wbx.mb >> wbx.txt
上面生成的 wbx.txt 是纯文本文件，修改完后，用下面的命令转换成二进制词库：
$ txt2mb wbx.txt wbx.mb
$ fcitx -r 重启输入法

### 4.2.2 自动造词和删减

- $ ctrl +8 选最近的字造词。方法二，先单字打字，再连续打，即造词成功
- $ ctrl +7 在有输入框的时候，可以从词库中删词，不会用
- $ ctrl +6 修改频率，不会用

## 4.3 五笔

- 凸 hgmg •

## 4.4 二笔

`$ sudo apt install fcitx-table-erbi` 安装青松二笔（二笔标版）。青松二笔、纯净二笔属于原二笔。超强二笔采用了末笔。青松二笔、纯净二笔和超强二笔均采用原版二笔的键盘图。

`$ sudo dpkg -i ~/Apps/fcitx-table-cqlb.deb` 安装离线的超强二笔

青松二笔一级简码

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 起Q | 为W | 而E | 人R | 他T | 一Y | 大U | 有I | 我O | 平P |
| 安A | 是S | 的D | 分F | 个G | 和H | 就J | 可K | 了L | * |
| 在Z | 学X | 成C | 这V | 不B | 你N | 们M | * | * | * |

超强二笔（或超强音形）一级简码

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 起Q | 为W | 而E | 人R | 他T | 一Y | 以U | 有I | 我O | 平P |
| 安A | 是S | 的D | 分F | 个G | 和H | 就J | 可K | 了L | * |
| 在Z | 学X | 成C | 这V | 不B | 你N | 们M | * | * | * |

### 4.4.1 超强二笔打字规则

- 独体字:拼音首字母 + 前两笔 + 末笔
  如： 雨 YJV = Y（首音）+ J（一 | ）+ V（丶）
- 合体字 后半是合体结构：拼音首字母 + 前半前两笔 + 后半首部前两笔 + 后半次部前两笔
  如： 撕 SUJE = S（首音）+ U（扌）+ J（一 | ）+ E（ノノ）
- 合体字 后半是独体结构：拼音首字母 + 前半前两笔 + 后半前两笔 + 后半末笔
  如： 铺 PZJV = P（首音）+ Z（钅）+ J（一 | ）+ V（丶）
- 字根：Z钅 X木C氵 V土B⁺⁺S日D月F亻 L口U扌
  口诀：金木水土草，日月人口手。
  注：金=钅 水=氵 曰=日 人=亻 手=扌
  字根整体取码，不能拆分为笔画。
  如字根有其它笔画穿过，则不再视为字根。
  如：土 TV = T（首音）+ V（字根）
  如：教 JJQV = J（首音）+ J（二）+ Q（ノ一）+ D（丶）
- 打词：
  二字词：取每字前两码。
  如： 教程 JJCQ
  三字词：取第一字前两码和后两字第一码。
  如： 输入法 S;RF
  四字词：取每字第一码。
  如：超强二笔 CQEB
  多字词：取前三字和末字第一码。
  如： 中华人民共和国 ZHRG
- 全形输入与拼音输入 全形可以输入偏旁
  不会读的字可选择全形方式，方法是“i+单字全形”。
  如：癵 IYG,
  如：首 SIWZ，IIWZ 难道“首”字是上下结构的合体字?
  不会写的字可选择拼音方式，方法是“i+单字拼音”。
  如：睿 IRUI

## 4.5 latex

`$ sudo apt install fcitx-table-latex` 用于在非LaTeX环境下输入各种字符

# Chapter 5

# Dictionary

## 5.1 GoldenDict

$ ctr+c+c 在 GoldenDict 在启动的情况下（比如设置开机启动），选中词汇即可自动查询

- 我把词典库文件放在了 /usr/share/goldendict_dict/下

# Chapter 6

# PDF

> "Wisdom is supreme. Get wisdom. Yes, though it costs all your possessions, get understanding."
>
> – Proverbs 4:7, ASV Bible

## 6.1 Crack password

PDF user password is authority in even reading, ower password is authority in editing. e.g. Worship Music for Guitar.pdf has ower password as ' WMfG'

- `$ sudo apt install pdfcrack`
- `$ pdfcrack` to see funtions options,
- `$ pdfcrack -f testpdf.pdf`
- `$ pdfcrack -f testpdf.pdf -o` -o means owner password
- `$ qpdf --password=yourpassword --decrypt in.pdf out.pdf` remove a known password of a book

## 6.2 Edit index

1. `$ ./jpdfbookmarks` start app

## 6.3 jPDF Tweak

jPDF Tweak is a Java Swing application that can combine, split, rotate, reorder, watermark, encrypt, sign, and otherwise tweak PDF files.

You can use it to make printable booklets from your PDFs, to add PDF bookmarks, effects (page transitions), to combine multiple PDF files, to watermark them, to rotate pages that do not fit, to attach files to your PDF, to encrypt and sign your PDFs, to change metadata (like author or keywords), and much more.

## 6.4 Add OCR layer

- $ ocrmypdf --deskew --clean-final --remove-background -l ell+heb+eng+chi_sim input.pdf output.pdf

ell is Greek language support. heb is Hebrew, pol is Polish, fra is French

## 6.5 Change Page Size

由于各种不同全开纸张的幅面大小差异，故同开数的书籍幅面因所用全开纸张不同而有大小差异，如书籍版权页上“787x1092 1/16”是指该书籍是用787x1092mm规格尺寸的全开纸张切成的16开本书籍。

- A4 (210x297 mm)
- A5 (148x210 mm)
- $ pdfinfo in.pdf to check size information.
- $ pdfjam --outfile out.pdf --paper a4paper in.pdf change into a4 size.

## 6.6 Add text to PDF

1. $ xournal good
2. $ okular
3. $ libreoffice -draw in.pdf add text

## 6.7 Scantailor-Advanced

制作电子书，Input files must be figure formats.

## 6.8 Merge multiple files into one

- $ pdftk in1.pdf in2.pdf cat output out.pdf merge pdfs while keeps the hyperlinks
- $ pdfunite in1.pdf in2.pdf out.pdf merge to one
- $ pdfjoin *.pdf join selected files (Ubuntu 18.04 and later may miss)

## 6.9 Extract figures

- $ pdfimages -list input.pdf list embedded figures, not work with pdf or eps figures!
- $ pdfimages -all input.pdf outdir/img extract figures with all default formatsinto outdir with prefix ’ img’
- $ pdfimages -png input.pdf outdir/img extract figures and convert in png format

## 6.10 Crop PDF

1. $ pdfcrop -margins '-80 -370 -60 -50' in.pdf out.pdf margins parameter: left, top, right, bottom. The OCR are original and not cropped.
2. $ pdfjam --trim "35mm 45mm 65mm 180mm" --suffix "1" --papersize '{10cm, 6cm }' 3.pdf hard to use!

## 6.11 Extract pages

- $ qpdf input.pdf --pages . 1-10 -- output.pdf extrac 1-10 pages keep metadata, keep bookmarks, keep size, (17/9/2021 CAMK not work)
- $ qpdf input.pdf --replace-input --pages . 1-2,4-379 -- remove page 3 from a book with 379 pages
- $ pdftk in.pdf cat 2-5 output out.pdf extract 2-5 pages, original size, keep hyperlinks, annotations, ect. Bookmarks lost (IFPILM 20/7/2022)
- $ pdfjam input.pdf 2-5 -o out.pdf --noautoscale true extract 2-5 pages，not autoscale to A4 (17/9/2021 CAMK not work), default output A4.
- $ qpdf --empty input.pdf --pages . 1-10 -- output.pdf extrac 1-10 pages, remove metadata, keep size
- $ qpdf --split-pages infile.pdf output.pdf would split into single pages, keep size

Listing 6.1: Split PDF using pdfjam and Python

```
import os

NTMIN = 0
NTMAX = 400
DT = 1
for i in range((NTMAX-NTMIN)/DT+1):
  os.system('pdfjam input.pdf '+('%04d'%i)+' -o '+('%04d'%i)+'.pdf' )
```

## 6.12 Reverse page order

- $ pdftk in.pdf cat end-1 output out.pdf reverse order
- $ qpdf --empty --pages in.pdf z-1 -- out.pdf reverse order
- $ pdfjam in.pdf 'last-1' --outfile out.pdf the out scale default is A4!

## 6.13 Rotate

- $ pdf90 input.pdf or $ pdfjam --landscape --angle==90 input.pdf rotate 90 degree anti-clockwise, output file ’ input-ratate90.pdf’
- $ pdf180 input.pdf or $ pdfjam --angle==180 input.pdf
- $ pdf270 input.pdf or $ pdfjam --landscape --angle==270 input.pdf

## 6.14 Combine mutiple pages to one

- $ pdftk in1.pdf in2.pdf cat output out.pdf comine files into one, keeps the hyperlinks, notes
- $ pdfjam input.pdf --nup 2x1 --landscape --outfile output.pdf 2x1 is side by side, landscape is the output horizontal
- $ pdfjam input.pdf --nup 1x2 --no-landscape --outfile output.pdf 1x2 is bottom by top, vertically combine 2 pages into 1

## 6.15 Pdfshuffler

- pdfshuffler is easy to use as rotate, extract and add pages
- Pdfarranger is the new active version

## 6.16 Okular

- F3, search
- F5, refresh
- F6, reviews (anomations)
- F7, show side bar
- ctrl+shift+f, full screen
- $ Ctrl+M hide toolbar
- $ Alt+Space window size settings, i.e. fullscreen

## 6.17 Convert format

1. $ pdfjam example.jpg convert jpg to PDF
2. $ rsvg-convert -f pdf -o out.pdf in.svg convert svg to PDF, nice

## 6.18 Signature

- Create .svg signature by Inkskape
- Or create .svg signature by online Google Drive>New>More>Drawing>Insert>Line>Scribble
- Attach signature to PDF, can use qpdf, pdftk, xournal (harm the bookmark), okular (easy remove, but don' t support pdf stamp)
- $ Xournal import .svg signature, export to PDF
- okular>F6>7> Attach Stamp also does similar work
- Xournal texts supports Polish or Chinese letters
- Xournal annotations cannot change after exported to PDF

### 6.18.1 Overlay a figure

1. `$ pdfjam --paper 'a4paper' --scale 0.3 --offset '7cm -12cm' image.pdf` make image.pdf to the bottom right corner, or upper left (-7cm, 12cm)
2. `$ qpdf in.pdf --overlay --to=4 stamp.pdf --out.pdf` overlay stamp to page 4
3. How can remove a watermark overlayer?

# Chapter 7

# Figure

## 7.1 Convert format

- `$ convert -resize 50% source.png dest.jpg` reduce figure size
- flag `-sDEVICE` declare the png format
- flag `-r` is the dpi
- `$ gs -dNOPAUSE -sDEVICE=jpeg -r144 -sOutputFile=p%03d.jpg file.pdf` convert pdf to jpeg
- `$ gs -sDEVICE=pngalpha -o output.png input.pdf`

| | |
|---|---|
| pngalpha | alpha background |
| png16m | colorful background |
| png256 | colorful with 256 bit |
| png16 | colorful low quality |
| pnggray | gray |

- `$ gs -sDEVICE=pngalpha -dFirstPage=10 -dLastPage=20 -o out-%03d.png -r500 input.pdf` convert PDF from 10 to 20 pages to png
- `$ gs -dNOPAUSE -dBATCH -sDEVICE=pdfwrite -dCompatibilityLevel=1.4 -dPDFSETTINGS =/ebook -sOutputFile=output.pdf input.pdf` compress pdf size. PDFSETTINGS options are dpi in decreasing sequence as default, prepress, printer, ebook and screen.
- `$ tiff2pdf -o out.pdf in.tif` convert tif figure into PDF
- `$ mogrify -format jpg *.bmp` convert bmp to jpg
- `$ mogrify -format png *.jpg` convert jpg to png
- `$ mogrify -resize 320x240 *.jpg` resize

### 7.1.1 Convert PDF to YouTube ratio PNG and crop

- `$ convert -density 150 book.pdf[0] -quality 90 out.png` convert pdf page 1 to png format
- `$ identify fig.png` check the size of the figure

- $ convert fig.png -crop 1600x900+0+150 out.png crop YouTube ratio
- $ convert fig.png -crop 1920x1080+0+150 out.png crop YouTube ratio

## 7.2 Crop

- $ convert input.png -trim output.png trim all the margins
- $ convert input.png -trim info: print the margin (edge) infomation
- $ convert test.png -trim -format '%[fx:w]x%[fx:h]+%[fx:page.x]+%[fx:page.y]' info: print trimed size and starting coordinate
- $ convert test.png -trim -format '%[fx:w+20]x%[fx:h+20]+%[fx:page.x-10]+%[fx:page.y-10]' info: print a expanded trimmed figure size
- $ convert fig.png -crop 1600x900+0+150 out.png rm margin wxh+x0+y0
- $ display example.jpg render image on the screen, left click > ” Transform” > crop.

## 7.3 Append

- $ convert image1.png image2.png image3.png -append result.png vertical append
- $ convert image1.png image2.png image3.png +append result.png horizontal append

## 7.4 Rotate image

- $ convert input.jpg -rotate 90 output.jpg rotate image 90 degree

## 7.5 Change DPI

我有点迷糊DPI 与resolution的含义关系。现更改resolution吧

- $ identify -format '%x,%yn' imagefile resolution in ppi (pixels per inch)
- $ gimp imagefile, alt+enter check resolution by GIMP
- $ identify -verbose fig_in 查看resolution
- $ convert fig_in -density 610 fig_out 改变resolution
- $ convert -units PixelsPerInch fig_in -density 610 fig_out
- 爲什麼改了DPI圖片大小不變？

## 7.6 Resize

- $ convert -resize 20% fig_in fig_out reduce to 20 percent

## 7.7 Anomation

```
$ convert -delay 20 -loop 0 input*.png out.gif
```

- `-delay {time}` unit in 1/100th of a second
- `-loop {number}` play how many times. But 0 means non stop.

## 7.8 Background

1. `$ convert image1.jpg -fuzz 20%% -transparent White image2.png`
2. `$ convert image1.png -threshold 10%% image2.png`
3. `$ backgroundremover -i "/path/to/file.jpg" -o "out.png"`
4. `$ backgroundremover -i "/path/to/video.mp4" -tg -o "output.gif"` video source

## 7.9 Screeshot

1. `$ screengrab -a` screenshot active window
2. `$ screengrab -r` screenshot region
3. `$ sleep 2 && screengrab -a` launch screengrab after 2 seconds

# Chapter 8

# Multimedia

## 8.1 Youtube-dl

1. `$ pip3 install --upgrade youtube-dl` upgrade
2. `$ youtube-dl URL` download the largest option mdirectly, video and audio
3. `$ youtube-dl -F URL` list available format of video
4. `$ youtube-dl -f number` download above option by number
5. `$ youtube-dl -x URL` download audio
6. `$ youtube-dl -x --audio-format mp3 URL` download as mp3
7. `$ youtube-dl -x --audio-format mp3 --playlist-start 1 --playlist-end 5 URL` download 5 mp3 from playlist

## 8.2 You-get

- `$ sudo pip3 install you-get` without sudo produce cannot find command error
- `$ you-get URL` download video
- `$ you-get -p vlc URL` 将视频喂进VLC观看
- `$ you-get -p chromium URL` 将视频无广告在浏览器播放

## 8.3 YouKu DownLoader

1. `$ sudo pip3 install -U ykdl`
2. `$ ykdl URL`

## 8.4 annie

Listing 8.1: Download and Install Annie

```
curl -s https://api.github.com/repos/iawia002/annie/releases/latest \
   | grep browser_download_url \
   | grep Linux_64-bit \
   | cut -d '"' -f 4 \
   | wget -qi -
tar xvf annie_*_Linux_64-bit.tar.gz
sudo mv annie /usr/local/bin
annie -v
```

`$ annie URL` download video

## 8.5 视频合成

1. `$ mkvmerge -o output.mp4 input1.mp4 + input2.mp4 + input3.mp4`

### 8.5.1 VOB file

- `$ cat VTS_01_*.vob > output.vob` combine .VOB files
- `$ cat VTS_01_*.VOB | pv | dd of=output.vob` Improved version (this will show a progress bar)
- `$ pv VTS_01_*.vob > output.vob` similar to above
- `$ ffmpeg -i "concat:VTS_01_1.VOB|VTS_01_2.VOB|VTS_01_3.VOB|VTS_01_4.VOB" -f mpeg -c copy output.mpeg`

## 8.6 音频

### 8.6.1 微信音频提取

1. Google Play : Voice Exporter for wechat

### 8.6.2 音频拼接

- `$ mp3wrap output.mp3 *.mp3`

## 8.7 Poster

- `$ lodraw` Libre office draw make poster.

## 8.8 字幕制作

- 法一，pyTranscriber 语音识别生成字幕srt 文件
- 文字另外可以用 google drive 文档 AI 语音识别文字
- 法二，ArcTime[1] 字幕制作软件
- 法三，免安装 jubler 进行手写生成 ass 文件（不推薦）

[1] https://arctime.org/

- 已经有 srt 文件后，FFmpeg 渲染字幕

# Chapter 9

# FFmpeg

## 9.1 Flags

- $ h, H input height and output height
- $ -vf "setpts=5*PTS" Presenting Time Stamp slow 5 times
- $ -r 23.976 Frame rate per second, can be integer or float
- $ -start_number 100 figure start number at 100
- $ -frames:v 80 total frame number 80
- $ -ss seek within the input, if put ahead the -i input is input seeking, will bypass the decoding before -ss, fast; Ohterwise is output seeking, decode from initial, until seek the time at -ss, so is very slow.
- $ -t is the duration. timestamp expressed in seconds, NAN if the input timestamp is unknown
- $ -to is the end of the video
- $ -c copy will not re-encode, finish instantly
- $ -map 0 From input index #0 (the 1st input) select all streams.
- $ -map 1:a From input index #1 (the 2nd input) select all audio streams.
- $ -map 3:s:4 From input index #3 (the 4th input) select subtitle stream index #4 (the fifth subtitle stream).
- $ -map 0 -map -0:s Will select all streams from input index #0 (the 1st input) except subtitles. The - indicates negative mapping.

## 9.2 Convert format

- $ ffmpeg -i video.webm -strict experimental video.mp4 Convert webm to mp4

## 9.3 Reduce Video Size

- `$ ffmpeg -i input.mp4 -vf scale="iw/1.125:ih/1.125" output.mp4` reduce ratio by factor 1.125, slightly less. This method quality is bad, please rather check bash lines in /Documents/editor/ffmpeg.
- `$ ffmpeg -i input.mp4 -vf "scale=iw*0.9:ih*0.9" output.mp4` better with multiply
- `$ ffmpeg -i input.mp4 -filter:v "setpts=2*PTS" output.mp4` speed of video
- `$ ffmpeg -i input.mp4 -filter:a "atempo=2.0" -vn output.mp4` speed of audio
- `$ ffmpeg -i input.mp4 -filter_complex "[0:v]setpts=0.5*PTS[v];[0:a]atempo=2.0[a]" -map "[v]" -map "[a]" output.mp4` speed up both video and audio at the same time

## 9.4 Hard Subtitle

- ffmpeg subtitle audo change lines need space, if Chinese should add space behind signs
- `$ gedit example.srt` hours:minutes:seconds,milliseconds:

```
1
00:00:00,000 --> 00:00:20,400
主耶稣

2
00:00:20,100 --> 00:00:28, 800
我感谢你
```

- `$ ffmpeg -i input.mp4 -vf subtitles=input.srt output.mp4`
- `$ ffmpeg -i input.mp4 -vf "subtitles=input.srt:force_style='Fontsize=36'" -c:a copy output.mp4` define fontsize

## 9.5 Cut video

- `$ ffmpeg -ss 00:00:03 -i input.mp4 -t 00:00:08 -async 1 output.mp4` cut with duration
- `$ ffmpeg -ss 00:01:00 -i input.mp4 -to 00:02:00 -c copy output.mp4` cut with end time

## 9.6 Combine audio to video

```
$ ffmpeg -i INPUT.mp4 -i AUDIO.wav -shortest -c:v copy -c:a aac -b:a 256k OUTPUT.mp4
```

## 9.7 Contact Videos

Listing 9.1: Create source list: input.txt

```
file '/home/jenia/input1.mp4'
file '/home/jenia/input2.mp4'
file '/home/jenia/input3.mp4'
```

2. `$ ffmpeg -f concat -i input.txt -codec copy output.mp4`

## 9.8 Extract audio

- 法一 `$ ffmpeg -i video.mp4 audio.mp3`
- 法二 `$ sudo apt-get install ffmpeg libavcodec-extra libav-tools`
  `$ avconv -i in.mp4 out.mp3`
- 法三 `$ sudo apt-get install ffmpeg libavcodec-unstripped-52`
  `$ ffmpeg -i video.mp4 -f mp3 -ab 192000 -vn music.mp3`
- 法四 use VLC

## 9.9 Replace audio

```
$ ffmpeg -i video.mp4 -i audio.wav -c:v copy -map 0:v:0 -map 1:a:0 new.mp4
```

## 9.10 Picture make Video

- `$ ffmpeg -loop 1 -y -i pic.jpg -i sound.amr -shortest video.mp4` cellphone black screen, upload to YouTube and download back, so can share with phone!
- `$ ffmpeg -i ep1.png -i ep1.wav ep1.flv` produce with smaller size, but YouTube don't accept it.
- `$ ffmpeg -loop 1 -y -i image8.jpg -i sound11.amr -shortest -acodec copy -vcodec mjpeg result.avi` but video from png too big (jpg not sure)

## 9.11 Multi fig plus audio

Listing 9.2: Multi fig plus audio

```
ffmpeg -i figduration.ffconcat -i g.mp4 \
-vf "scale='min(1280,iw)':-2,format=yuv420p" \
-c:v libx264 -preset veryslow -profile:v main \
-c:a aac -shortest -movflags +faststart g1.mp4

# Set different duration of each figure in figduration.ffconcat as:
ffconcat version 1.0
file g1.png
duration 36
```

```
file g2.png
duration 15.5
file g2.png
```

## 9.12 Speed up part of the video

Listing 9.3: Speed up a fraction of the video

```
ffmpeg -framerate 5 -i mapBz_com_fig%01d.png -vframes 40 part_1.mp4

ffmpeg -start_number 41 -framerate 20 -i mapBz_com_fig%01d.png part_2.mp4

ffmpeg -f concat -safe 0 -i <(for f in ./part_*.mp4; \
do echo "file '$PWD/$f'"; done) -c copy Bz_map_com.mp4

rm part_*.mp4
```

## 9.13 GIF

Listing 9.4: convert video to GIF

```
#ffmpeg -i video.webm -f gif test.gif # convert all
ffmpeg -ss 5 -t 2 -i video.webm -f gif test.gif # convert a part
# -ss 5 # start from 5 sec
# -t 2 # duration 2 sec
```

## 9.14 Text

Listing 9.5: add text

```
ffmpeg -i mapBz_com_fig%01d.png \
 -vf drawtext="text='Hello': fontcolor=white: fontsize=100: x=w*0.85: y=h*.1"
    \
 part_6.mp4
```

## 9.15 Example video

Listing 9.6: Make an example video

```
# make example figures and produce video
ffmpeg -f lavfi -i testsrc=d=2000:r=1 %04d.png
ffmpeg -start_number 100 -i %04d.png -frames:v 900 output.webm

# check frame
ffprobe -v error -count_frames -select_streams v:0 -show_entries stream=
   nb_read_frames \
  -of default=nokey=1:noprint_wrappers=1 output.webm
```

## 9.16 Expression Evaluation

The reference is `https://ffmpeg.org/ffmpeg-utils.html`

- $ eq(x,y) Return 1 if x and y are quivalent, 0 otherwise

- $ ceil(expr) Return the value of x clipped between min and max.
- $ floor(expr) Round the value of expression expr downwards to the nearest integer. For example, ” floor(-1.5)” is ” -2.0” .
- $ if(x, y, z) Evaluate x, and if the result is non-zero return the evaluation result of y, otherwise the evaluation result of z.
- $ ifnot(x, y) Evaluate x, and if the result is zero return the result of the evaluation of y, return 0 otherwise.
- $ mod(x, y) Compute the remainder of division of x by y.
- $ gt(x, y) Return 1 if x is greater than y, 0 otherwise.
- $ gte(x, y) Return 1 if x is greater than or equal to y, 0 otherwise.
- $ cos(x) Compute cosine of x.
- $ max(x, y) Return the maximum between x and y.

# Chapter 10

# System

## 10.1 Check version

- $ cat /etc/*-release or $ cat /etc/os-release check your Linux distribution
- $ neofetch check distribution once you installed neofetch

## 10.2 Mirror

- Software & Update mirror better to choose the main server, otherwise always couldn't find some packages

## 10.3 Update system

- $ sudo apt update && sudo apt upgrade && sudo apt dist-upgrade && sudo do-release-upgrade
- $ sudo do-release-upgrade -d -d means include not offcially version

## 10.4 Autostart

### 10.4.1 Network Indicator

$ sudo -H gedit /etc/xdg/autostart/nm-applet.desktop

Listing 10.1: replace Exec line nm-applet with dbus-launch nm-applet

```
1 Exec dbus-launch nm-applet
```

### 10.4.2 Bluetooth Autostart

- For ubuntu 20.10+ edit $ /etc/bluetooth/main.conf and find the line $ AutoEnable=true

## 10.5 User

$ sudo pkill -u username user logout

## 10.6 System Problem

### 10.6.1 Touchpad click don' t work occasionaly

Next time, try this $ gsettings set org.gnome.desktop.peripherals.touchpad tap-to-click true does' t work, 20200109

$ xinput list-props 11 to see which userspace driver is used (libinput, or synaptics). 11 is the touchpad id from xinput list.

For LxQt, driver libinput settings are in $ /usr/share/X11/xorg.conf.d/40-libinput.conf

Listing 10.2: /usr/share/X11/xorg.conf.d/40-libinput.conf

```
1 Section "InputClass"
2   Identifier "touchpad"
3   Driver "libinput"
4   MatchIsTouchpad "on"
5   Option "Tapping" "on"
6   Option "TappingButtonMap" "lmr"
7 EndSection
```

### 10.6.2 Restart the touchpad driver

$ sudo modprobe -r psmouse to close the touchpad driver

$ sudo modprobe psmouse to restart the driver dosen' t solve the sleeping touchpad click

### 10.6.3 Check the touchpad driver

$ xinput list list all the driver index, e.g. SynPS/2 Synaptics TouchPad id=11 [slave pointer (2)]

$ xinput list-props 11 list the id = 11 detail

$ xinput set-prop 11 165 1 set id=11, thread 165 to value 1 (or 0)

### 10.6.4 Replace touchpad driver

xf86-input-synaptics is no longer actively updated. If possible, use libinput

$ mkdir /etc/X11/xorg.conf.d $ cp /usr/share/X11/xorg.conf.d/50-synaptics.conf /etc/X11/xorg.conf.d/50-libinput.conf

Remove the xserver-xorg-input-synaptics package. (important)

$ apt remove xserver-xorg-input-synaptics $ apt install xserver-xorg-input-libinput

restart your DM; e,g: $ systemctl restart sddm

through the UI mouse&Curser setting, touchpad, choose two-finger

Hope this time the touchpad works longer

## 10.7 Time and Date

- $ sudo date -s "$(wget -qSO- --max-redirect=0 google.com 2>&1 | grep Date: | cut -d' ' -f5-8)Z" set Local time and Universal time to sync internet
- $ timedatectl set-local-rtc 1 set Real Time to Local time

# Chapter 11

# CPU

## 11.1 CPU always busy around 100 percent

$ grep . -r /sys/firmware/acpi/interrupts/ check which gpe is high
$ sudo crontab -e edit crontab
$ @reboot echo "disable" > /sys/firmware/acpi/interrupts/gpe11 add a line to turn-down gpe11 when start.

## 11.2 CPU state

$ lscpu check cpu information

## 11.3 Kill stuck process

$ ps -x show running processes
$ top show running processes
$ htop show running processes
$ pgrep appname ps+grep, check PID of an app
$ ps +x | grep appname ps+grep, check PID of an app
$ kill -9 PID kill process by PID

# Chapter 12

# Font

## 12.1 Install Fonts for OS

下载chenfont.ttf并移到文件夹，

```
$ sudo mv chenfont.ttf /usr/share/fonts/truetype/chen/
```

再刷新字体缓存，

```
$ sudo mkfontscale
$ sudo mkfontdir
$ sudo fc-cache -fv
$ fc-list list installed fonts with paths
$ fc-list| grep CJK list CJK fonts
$ fc-list :lang=zh list Chinese fonts
```

Listing 12.1: show the installed package size

```
dpkg-query -Wf '${Installed-Size}\t${Package}\n' | sort -n
```

## 12.2 System Language

Listing 12.2: Change System Language

```
$sudoedit /etc/default/locale:

LANG="en_US.UTF-8"
LANGUAGE="en_US:en.UTF-8"

$sudoedit ~/.pam_environment:

LANG=en_US.UTF-8
LANGUAGE=en_US.UTF-8
```

# Chapter 13

# Package

## 13.1 Useful Apps

Table 13.1: App lists

| Name | example | notes |
|---|---|---|
| wc | wc 1.dat | word count of line, word, bytes |
| paste | paste -sd+ timestep.dat \| bc | print the sum of one column data |
| sed | sed -i.bak -e ' 5,10d;12d' file | delete 5 to 10 and 12 line. |
| expr | expr 14 % 9 | 整数运算 14-9 = 5 |
| expr | expr 14 - 9 | 整数运算 14-9 = |
| cat | cat 3.dat » 1.dat | combine 2.dat to 1.dat. |

## 13.2 Install and Remove

- $ apt-cache showpkg appname show available package versions
- $ apt-mark hold appname on hold app prevent upgrading
- $ apt-cache rdepends packagename show package dependance
- $ sudo apt-get install <package-name>=<package-version-number> install according to version
- $ sudo apt install appname
- $ sudo apt remove appname
- $ sudo apt-get purge nvidia-* purge nvidia
- $ sudo apt-get autoclean to clean up partial pakages
- $ sudo apt-get autoremove to clean up apt cache
- $ sudo apt-get clean to remove any unused dependencies
- $ man apt-get to get more info on apt-get and how to use it.
- $ /var/log/apt/history.log is the history of apt

### 13.2.1 Upgrade upgradable

- $ apt list --upgradable
- $ sudo apt-get dist-upgrade upgrade upgradable with denpendencies

## 13.3 Install from local file

$ sudo dpkg -i example.deb install
$ sudo dpkg -r linuxqq Remove

Listing 13.1: Purge Xfce

```
1 $dpkg -l | grep .xfce. | awk '{print $2}' |
2 xargs sudo apt-get purge -V --auto-remove -yy
```

## 13.4 Check installed

- $ dpkg -s mplayer check if mplayer is installed
- $ which mplayer check the path of mplayer

## 13.5 Personal Package Archive (PPA)

- $ /etc/apt/sources.list is the main PPA list
- $ /etc/apt/sources.list.d/ is the folder for personal PPA list
- $ sudo apt-add-repository ppa:whatever/ppa install ppa
- $ sudo add-apt-repository --remove ppa:whatever/ppa remove ppa
- Alternative, $ ls /etc/apt/sources.list.d
- $ sudo rm -i /etc/apt/sources.list.d/myppa.list

### 13.5.1 public key

- if $ Err:1 http://ftp.agh.edu.pl/ubuntu bionic-updates InRelease The following signatures couldn't be verified because the public key is not available: NO_PUBKEY 3B4FE6ACC0B21F32
- then $ sudo apt-key adv --keyserver keyserver.ubuntu.com --recv-keys 3B4FE6ACC0B21F32

### 13.5.2 Default Repository

- $ sudo mv /etc/apt/sources.list ~ backup your current source list
- $ sudo touch /etc/apt/sources.list create an empty list
- $ software-properties-gtk Open Software & Updates, and choose the canonical source and main server

## 13.6 Packages Broken

1. $ Errors were encountered while processing: /var/cache/apt/archives/libglx-mesa0_18.0.5-0ubuntu0~18.04.1_amd64.deb
   when errors happen, then
2. $ sudo apt --force-overwrite /var/cache/apt/archives/libglx-mesa0_18.0.5-0ubuntu0~18.04.1_amd64.deb
   force install when have depended packages
3. $ dpkg -P --force-depends App to remove depended packages

### 13.6.1 apt –fix-broken install

1. $ sudo apt -o Dpkg::Options::="--force-overwrite" --fix-broken install[1]

## 13.7 Install without sudo

Listing 13.2: dpkg install from deb

```
apt download appname   # download the package
dpkg -x package.deb dir # install to dir
```

Listing 13.3: manually install from deb

```
cd ~/chen_install
apt download mupdf # dowmlad mupdf package
ar x mupdf*.deb
tar xvf data.tar.gz
PATH="$PATH":~/chen_install/usr/bin
```

Listing 13.4: run appimage

```
chmod a+x example.AppImage
./example.AppImage
```

### 13.7.1 install from source

Listing 13.5: install from source

```
apt-get source package # doesn't work???
cd package
./configure --prefix=$HOME/chen_install # install to chen_install
make
make install
```

## 13.8 PATH

- Shell PATH 变量用于系统查找命令的路径
- echo $PATH 查询当前 PATH 环境变量
- cp my_app.sh /bin/ 可以把自己的脚本复制到 PATH 变量定义的路径（比如/bin/），不用自己再写PATH

[1] https://unix.stackexchange.com/a/624842/266769

- PATH="$PATH":~/chen_install/usr/bin 通过变量叠加的方式临时加入我自己的路径，注销后失效
- ~/.bash_aliases is a sub file of ~/.bashrc, and is dedicated for the client to define PATH

### 13.8.1 temperary client

- 以添加mongodb server为列
- export PATH=/usr/local/mongodb/bin:$PATH
- 生效方法：立即生效
- 有效期限：临时改变，只能在当前的终端窗口中有效，当前窗口关闭后就会恢复原有的path配置
- 用户局限：仅对当前用户

### 13.8.2 .bashrc permanent client

- $ vim ~/.bashrc
- 在最后一行添上： $ export PATH=/usr/local/mongodb/bin:$PATH
- 生效方法：
  - 1、对新终端窗口生效
  - 2、之前打开的窗口可刷新$ source ~/.bashrc 生效
- 有效期限：永久有效
- 用户局限：仅对当前用户

### 13.8.3 profile All clinets permanant

- $ vim /etc/profile
- 找到设置PATH的行，添加$ export PATH=/usr/local/mongodb/bin:$PATH
- 生效方法：系统重启
- 有效期限：永久有效
- 用户局限：对所有用户

### 13.8.4 environment permanent

- $ vim /etc/environment
- 原路径 $ PATH="/usr/local/sbin:/usr/local/bin:..."
- 在其后添加新路径 $ ":/usr/local/mongodb/bin"
- 生效方法：系统重启
- 有效期限：永久有效
- 用户局限如何？

## 13.9 SVN

Listing 13.6: Download source files of PDFsandwich

```
1 svn checkout svn://svn.code.sf.net/p/pdfsandwich/code/trunk/src pdfsandwich
```

# Chapter 14

# Lubuntu

## 14.1 Autostart

” Menu > Preferences > LXQt settings > Session Settings”

## 14.2 Shortcut

1. $ SUPER + R in LXQT is the same with $ ALT + F2 in other Ubuntu even including LXQt: run a command

## 14.3 Bluetooth disable autostart

1. $ /etc/bluetooth/main.conf set AutoEnable=False (Lubuntu 22.04 LTS)[1]
2. $ gsettings set org.blueman.plugins.powermanager auto-power-on false to prevent Blueman’ s power-manager plugin from auto powering the adapter.

## 14.4 Default apps

1. $ File Associations change default applications

[1] https://askubuntu.com/a/1251512/1286546

# Chapter 15

# Xubuntu

## 15.1 Add application to menu

Listing 15.1: Add JabRef to menu

```
vi ~/.local/share/application/JabRef.desktop # create new file as below

#!/usr/bin/env xdg-open
[Desktop Entry]
Version=1.0
Terminal=false
Type=Application
Name=JabRef
Exec=/home/chen/chen_install/bin/JabRef
Icon=/home/chen/chen_install/lib/JabRef.png
Type=Application
StartupNotify=true
Comment=library for documents and papers
Path=/home/chen/chen_install/bin # what's the purpose?
Categories=Education;
```

## 15.2 Delete

Listing 15.2: delete Xubuntu desktop I (2013)

```
sudo apt-get remove abiword abiword-common abiword-plugin-grammar abiword-
    plugin-mathview alacarte bison blueman brltty-x11 catfish docbook-xml exo-
    utils flex fonts-droid gigolo gimp gimp-data gmusicbrowser gnome-desktop-
    data gnome-system-tools gnome-time-admin gnumeric gnumeric-common gnumeric-
    doc gstreamer0.10-gnomevfs gthumb gthumb-data gtk2-engines-pixbuf indicator
    -application-gtk2 indicator-messages-gtk2 indicator-sound-gtk2 indicator-
    status-provider-pidgin leafpad libabiword-2.9 libao-common libao4 libaudio-
    scrobbler-perl libbabl-0.0-0 libbison-dev libcolamd2.7.1 libconfig-inifiles
    -perl libdigest-crc-perl libencode-locale-perl libept1.4.12 libexo-1-0
    libexo-common libexo-helpers libfile-listing-perl libfl-dev libfont-afm-
    perl libgarcon-1-0 libgarcon-common libgdome2-0 libgdome2-cpp-smart0c2a
    libgegl-0.0-0 libgimp2.0 libglade2-0 libgnomevfs2-0 libgnomevfs2-common
    libgnomevfs2-extra libgoffice-0.8-8 libgoffice-0.8-8-common libgsf-1-114
    libgsf-1-common libgstreamer-perl libgtk2-notify-perl libgtk2-trayicon-perl
     libgtkmathview0c2a libgtkspell0 libhtml-form-perl libhtml-format-perl
```

```
    libhtml-parser-perl libhtml-tagset-perl libhtml-tree-perl libhttp-cookies-
    perl libhttp-daemon-perl libhttp-date-perl libhttp-message-perl libhttp-
    negotiate-perl libid3tag0 libido-0.1-0 libilmbase6 libio-socket-inet6-perl
    libio-socket-ssl-perl libjavascriptcoregtk-1.0-0 libjpeg-progs libjpeg-
    turbo-progs libkeybinder0 liblaunchpad-integration1 liblink-grammar4
    libloudmouth1-0 liblwp-mediatypes-perl liblwp-protocol-https-perl libmad0
    libmailtools-perl libnet-dbus-perl libnet-http-perl libnet-ssleay-perl
    liboobs-1-5 libopenexr6 libotr2 libots0 librarian0 libsexy2 libsocket6-perl
     libtagc0 libthunarx-2-0
```

Listing 15.3: delete Xubuntu desktop II (2013)

```
1 sudo apt remove libtidy-0.99-0 libtie-ixhash-perl libtimedate-perl libtumbler
    -1-0 libunique-1.0-0 liburi-perl libvte-common libvte9 libwebkitgtk-1.0-0
    libwebkitgtk-1.0-common libwv-1.2-4 libwww-perl libwww-robotrules-perl
    libxfce4ui-1-0 libxfce4util-bin libxfce4util-common libxfce4util4
    libxfcegui4-4 libxfconf-0-2 libxml-parser-perl libxml-twig-perl libxml-
    xpath-perl libxss1 lightdm-gtk-greeter link-grammar-dictionaries-en linux-
    headers-3.2.0-24 linux-headers-3.2.0-24-generic linux-headers-generic lp-
    solve m4 mpg321 orage parole pastebinit pavucontrol pidgin pidgin-data
    pidgin-libnotify pidgin-microblog pidgin-otr plymouth-theme-xubuntu-logo
    plymouth-theme-xubuntu-text python-configobj python-glade2 python-gmenu
    rarian-compat ristretto screensaver-default-images sgml-data shimmer-themes
     synaptic system-tools-backends tcl8.5 thunar thunar-archive-plugin thunar-
    data thunar-media-tags-plugin thunar-volman ttf-droid ttf-lyx tumbler
    tumbler-common xchat xchat-common xfburn xfce-keyboard-shortcuts xfce4-
    appfinder xfce4-cpugraph-plugin xfce4-datetime-plugin xfce4-dict xfce4-
    indicator-plugin xfce4-mailwatch-plugin xfce4-netload-plugin xfce4-notes
    xfce4-notes-plugin xfce4-notifyd xfce4-panel xfce4-places-plugin xfce4-
    power-manager xfce4-power-manager-data xfce4-quicklauncher-plugin xfce4-
    screenshooter xfce4-session xfce4-settings xfce4-systemload-plugin xfce4-
    taskmanager xfce4-terminal xfce4-utils xfce4-verve-plugin xfce4-volumed
    xfce4-weather-plugin xfce4-xkb-plugin xfconf xfdesktop4 xfdesktop4-data
    xfwm4 xscreensaver xscreensaver-data xscreensaver-gl xubuntu-artwork
    xubuntu-default-settings xubuntu-desktop xubuntu-docs xubuntu-icon-theme
    xubuntu-wallpapers
```

# Chapter 16

# Hardware

## 16.1 Mouse 鼠标

- 我的有线鼠标摔了几次，从此偶尔开始出现比较严重的延迟。我又买了无线鼠标，但因为电池电量不足，也出现了延迟。换了新电池就好了一个多月，再次延迟，重启电脑也没用。用手按了下电池，就恢复了。这说明，电源接触不良，鼠标会有严重延迟。（15/07/2021）

# Chapter 17

# Troubleshoot

## 17.1 Blackscreen with failed to idel channel

1. `$ vim /var/log/syslog`

Listing 17.1: cat /var/log/syslog

```
1 Sep 23 09:42:50 joy kernel: [89212.492173] nouveau 0000:07:00.0: Xorg
    [1250]: failed to idle channel 8 [Xorg[1250]]
```

2. `$ software-properties-gtk --open-tab=4` and change X.org driver to NVIDIA driver

# Chapter 18

# Shortcuts

## 18.1 Lubuntu LxQt

```
$ gedit ~/.config/openbox/lubuntu-rc.xml edit the shortcuts files
   $ openbox --reconfigure reset the figuration
```

# Chapter 19

# Network

## 19.1 Basic

1. LAN: local area network 局域網
2. ping: ping（呼）是一种计算机网络工具，用來測試数据包能否透過IP协议到達特定主機。因為這個程式的運作原理与潛水艇的主动声纳相似，他便用聲納的聲音來為程式取名。网络管理员之间也常将ping用作动词，如“ping一下计算机XXX，看它是否开着。”
3. DNS: domain name system, 網域名稱系統，是互聯網的一項服務。它作为将域名和IP地址相互映射的一个分布式数据库，能够使人更方便地访问互联网。

## 19.2 IP

1. `$ hostname -I` check IP
2. `$ ip addr` show IP informations
3. `$ ip addr | grep eth0` show eth0 IP information
4. `$ ping 172.25.32.1` ping my IFPiLM desktop win11 IP to check if open

## 19.3 SSH

1. SSH (secure shell) 是一种加密的网络传输协议，可在不安全的网络中为网络服务提供安全的传输环境.
2. `$ sudo systemctl restart ssh.serivce`

### 19.3.1 Make Linux as server in the local area network

1. `$ sudo apt install openssh-server` install openssh-server[1]
2. `$ ssh localhost` check if SSH is installed
3. `$ ps -e | grep ssh` check SSH services started or not
4. `$ ifconig` check IP (in wlp3s0, e.g. 10.0.0.140)

[1] https://blog.csdn.net/Xiao_DANDAN110/article/details/115385088

Listing 19.1: ifconig (wi-fi connected)

```
chen@4-726:~$ ifconfig
enp2s0: flags=4099<UP,BROADCAST,MULTICAST>  mtu 1500
        ether 10:7d:1a:47:a8:b9  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 0  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 5313867  bytes 28095323793 (28.0 GB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 5313867  bytes 28095323793 (28.0 GB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlp3s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.0.140  netmask 255.255.255.0  broadcast 10.0.0.255
        inet6 fe80::e482:8042:b2f1:8724  prefixlen 64  scopeid 0x20<link>
        ether d4:6a:6a:65:33:85  txqueuelen 1000  (Ethernet)
        RX packets 20568393  bytes 29189561323 (29.1 GB)
        RX errors 0  dropped 48614  overruns 0  frame 0
        TX packets 2325362  bytes 217116170 (217.1 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Listing 19.2: ifconig (wired connected)

```
chen@4-726:~$ ifconfig
enp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.0.0.140  netmask 255.255.255.0  broadcast 10.0.0.255
        inet6 fe80::e88a:c3c0:d7b1:60bf  prefixlen 64  scopeid 0x20<link>
        ether 10:7d:1a:47:a8:b9  txqueuelen 1000  (Ethernet)
        RX packets 1103501  bytes 1332761045 (1.3 GB)
        RX errors 0  dropped 26680  overruns 0  frame 0
        TX packets 310128  bytes 77010654 (77.0 MB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0x10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 5334803  bytes 28203353224 (28.2 GB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 5334803  bytes 28203353224 (28.2 GB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlp3s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 10.42.0.1  netmask 255.255.255.0  broadcast 10.42.0.255
        inet6 fe80::2957:3940:18bd:8b63  prefixlen 64  scopeid 0x20<link>
        ether d4:6a:6a:65:33:85  txqueuelen 1000  (Ethernet)
```

```
        RX packets 20926168  bytes 29324993951 (29.3 GB)
        RX errors 0  dropped 84130  overruns 0  frame 0
        TX packets 3249623  bytes 1446235048 (1.4 GB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

5. other local area network computers can visit above host by $ ssh chen@10.0.0.140 (enp2s0 for wired and wlp3s0 for wi-fi both have this IP)

### 19.3.2 screen

$ screen installed in server, in ssh to initilize multipul terminal
   $ ctrl+a, | split vertically
   $ ctrl+a, S split horizontally
   $ ctrl+a, Q unsplit
   $ ctrl+a, tab switch terminal
   $ ctrl+a, c to use new region
   $ ctrl+a, space next terminal
   $ ctrl+a, backspace, previous terminal
   $ ctrl+a, number choose terminal
   $ ctrl+a, " choose terminal
   $ ctrl+a, a to the underlying terminal

## 19.4 hosts

$ /etc/hosts
   $ hostname show your name
   $ hostid

## 19.5 Network

- $ nmcli connection show $connection_uuid show the connections
- $ nmcli connection modify BlackBerry BBB100-2 2219 1 connection.metered no set NAME of the connection as not metered

## 19.6 WIFI

1. $ nm-connection-editor the Wifi connection lists
2. $ sudo vim /etc/NetworkManager/system-connections/somename.nmconnection edit connection ' somename'
3. $ autoconnect-priority=10 higher number means higher priority, can negative the unwanted connection

### 19.6.1 Eduroam

Listing 19.3: /home/chen/.ssh/eduroam.txt

```
## This is your eduroam credentials
Username: chen@eduroam.camk.edu.pl
Password: hHvZEFlqYDiEYXK2
Certificate on https://eduroam.camk.edu.pl/
## You can also use https://cat.eduroam.org/, search for CAMK
```

### 19.6.2 Passwords memo

- $ sudo vim /etc/NetworkManager/system-connections/somename.nmconnection check already restored passwords
- $ CAMK wifi password $ a w sercu maj
- $ ifpilm-wlan wifi password $ B**.

### 19.6.3 WIFI card 無線網卡

1. managed mode: 被管理模式，作爲客戶端，與 Access Point (AP) 相聯，比如筆記本的WIFI卡與路由器相聯
2. master mode: 作爲 AP，即分享熱點
3. ad hoc mode: 對等模式，兩個設備互聯
4. monitor mode: 監聽模式，監聽無線網內部流量。比如我猜，筆記本作爲監聽者，瞭解手機和路由器之間的流量。

### 19.6.4 TP-link TL-WN722N V3 Monitor Mode

1. $ lsusb show usb

Listing 19.4: lsusb

```
Bus 001 Device 002: ID 2357:010c TP-Link TL-WN722N v2/v3 [Realtek
    RTL8188EUS]
```

2. $ iwconfig show wireless networks

Listing 19.5: iwconfig

```
wlx503eaa6e7140  unassociated  ESSID:""  Nickname:"<WIFI@REALTEK>"
          Mode:Managed  Frequency=2.412 GHz  Access Point: Not-Associated
          Sensitivity:0/0
          Retry:off   RTS thr:off   Fragment thr:off
          Power Management:off
          Link Quality=0/100  Signal level=0 dBm  Noise level=0 dBm
          Rx invalid nwid:0  Rx invalid crypt:0  Rx invalid frag:0
          Tx excessive retries:0  Invalid misc:0   Missed beacon:0
```

3. $ sudo iwconfig wlx503eaa6e7140 mode monitor

Listing 19.6: sudo iwconfig wlx503eaa6e7140 mode monitor

```
Error for wireless request "Set Mode" (8B06) :
    SET failed on device wlx503eaa6e7140 ; Invalid argument.
```

4. Install driver[2]

Listing 19.7: install driver rtl8188eus

```
sudo apt install bc
sudo rmmod r8188eu.ko # rm module from kernel
git clone https://github.com/aircrack-ng/rtl8188eus
cd rtl8188eus
sudo -i
echo "blacklist r8188eu" > "/etc/modprobe.d/realtek.conf"
exit
make
sudo make install
sudo modprobe 8188eu #add module to kernel
```

5. `$ iwconfig wlx503eaa6e7140 mode monitor` change mode to monitor

[2] https://www.hackster.io/thatiotguy/enable-monitor-mode-in-tp-link-tl-wn722n-v2-v3-128fc6

# Chapter 20

# Laptop

## 20.1 BIOS

- $ power>F2>Application Menu>Setup>Security>I/O Port Access>Bluetooth>Enabled >F10 Lenovo Thinkpad X220 BIOS setting of Bluetooth

# Chapter 21

# Desktop

## 21.1 Display

$ export DISPLAY=:0 or $ export DISPLAY=:0.0 allow terminal launch graphical application

## 21.2 Display Manager (DM)

$ cat /etc/X11/default-display-manager check default display manager in Ubuntu, me returns /usr/bin/sddm

Ubuntu and luxary version Kubuntu use lightdm. Gnome use gdm3. Xubuntu is lightweight. Lubuntu is lightest x11 desktop, use Simple Desktop Display Manager, SDDM.

$ sudo apt remove lightdm gdm3

## 21.3 Install desktop use Tasksel

$ sudo tasksel to choose desktop version.

$ apt-cache search ubuntu-desktop to check what available in your comupter.

$ sudo apt install lubuntu-desktop

### 21.3.1 Change splash screen

$ sudo update-alternatives --config default.plymouth choose the right number.

$ sudo update-initramfs -u to update configuration.

## 21.4 X sever

$ echo $DISPLAY echo command in linux is used to display line of text/string that are passed as an argument . This is a built in command that is mostly used in shell scripts and batch files to output status text to the screen or a file.

[host]:<display>[.screen] localhost:18.0 localhost means the X server runs on local computer. An omitted hostname means the localhost. 18 is a sequence number (usually 0). It can be varied if there are multiple displays connected to one computer. 0 is the screen number. A display can actually have multiple screens. Usually there' s only one screen though where 0 is the default.

## 21.5 SDDM SSH graph

- Open Xserver tcp port。为了安全起见，部分发行版在启动X Server的时候，没有对外开启 X Server 服务，关闭了相应tcp端口，只使用本地unix socket的方式。如果需要远程，还是需要打开tcp port，修改文件 /etc/X11/xinit/xserverrc，删除-nolisten tcp参数
- SDDM listen tcp. 对于 mint 或 LXQt 使用 sddm 作为 display manager，需要同时修改/etc/sddm.conf $ ServerArguments=-listen tcp
- restart
- check $ sudo netstat -plunt

  tcp 0 0 0.0.0.0:6000 0.0.0.0:* LISTEN 1613/Xorg

# Chapter 22

# CAMK

## 22.1 Connect to Networks

- $ ssh chen@ssh.camk.edu.pl connect to camk server
- $ ssh -X -J chen@ssh.camk.edu.pl chen@chen connect wo camk server and connect to machine ' chen'
- $ ssh chuck when connected with camk server, this connect further to cluster chuck

### 22.1.1 Remote desktop

1. The admian Staszek installed $ vnc on the computer ' chen'
2. $ ssh chen@ssh.camk.edu.pl chen@chen connect to computer ' chen'
3. $ vncpasswd to set the password for vnc-viewer. ' b*****g'
4. $ sudo apt install tigervnc-viewer install vnc-viewer on the remote computer
5. $ vncviewer -via chen@ssh.camk.edu.pl chen remotely connect to the computer desktop ' chen'

### 22.1.2 Laptop

Laptop to connect to networks: $ ssh -X chen@ssh.camk.edu.pl, optional -X or -Y flag enable client X11 open figures in the server

### 22.1.3 Office Desktop

Office computer connection: $ ssh chen@chen
The first chen is my camk account, the second chen is my computer name.

## 22.2 Printer

- $ 73691945 To jest mój password. lp3c(only scan), lp4c (new printer), lp5c (no need of password)
- $ /scratch/1m/chen/lp3-scanner is the storage folder of my scanned material

## 22.3 Storage

1. $ /work/archive/Lectures lectures video recorded.

## 22.4 Cluster Chuck and SLURM

Formerly the cluster name is PSK. From 2018, CAMK has new cluster chuck, using SLURM to allocate jobs

- $ ssh chuck login
- $ sinfo --help read tips
- $ sinfo -N -l node-oriented fashion, and more informatoin
- $ sbatch example.sh submit the job
- $ squeue see current job queue
- $ squeue -u USER see jobs of specific user
- $ scontrol show job JOBID check detail of the job
- $ scancel JOBID kill the job
- Job States: PD pending, R running, CD completed, CA canceled, F failed
- MPI jobs

### 22.4.1 Disk quota

- $ quota check my disk quota
- $ quota -vs check my disk quota in human readable unit
- $ quota -u USER check disk quota

### 22.4.2 Time limit

- $ sacct -e check elements list
- $ sacct --format="Timelimit" check time limit of runing job
- $ scontrol update jobid=<JOBID> TimeLimit=<newtimelimit> adding time to running job, requires admin privileges on some machines. CAMK max is 7 days.

## 22.5 chuck example with Zeltron code

### 22.5.1 Log in

- $ ssh chen@chuck login the CAMK local cluster chuck

### 22.5.2 Setting simulation configuration and SLURM job bash script

- $ vi mod_input.f90 setting simulation parameters
- $ vi submit_zeltron_chuck.sh edit the SLURM bash script before submitting the job
  - time limit, chuck upper limit is 7 days
  - data storaging path
  - CPUs and nodes, the number of processors n should be the same as NPX*NPY in Zetron setting by mod_input.f90. In Harris layer simulation, 1) Better to set NPY number as $4*$ times to allocate particles equally. 2) Better to increase NPX than NPY because anisotropic configuration
  - Number of nodes (N), one node in chuck has $N = 20$ processors.

### 22.5.3 Submiting and checking the job

- $ ssh chuck log into chuck cluster
- $ cd /work/chuck/chen/harris01 Go to the work folder
- $ ./run_zeltron.sh compile and submitting the job into the queue. Or manually as
  - $ module load mpi load the Message Passing Interface (MPI) module
  - $ make compile zeltron code
  - $ sbatch submit_zeltron_chuck.s submit the job into the queue
- $ squeue -u chen check the job status

### 22.5.4 Results Analysis

Quick plot in the server

- $ gnuplot start gnuplot to quick plot the map of magnetic field in the server
- $ gnuplot> plot 'spec_ele_t1000.dat' plot 1D data
- $ plot "data.txt" using 1:2 plot coloum 2 on 1
- $ gnuplot> plot 'Bx_t0.dat' matrix w image plot map

Check in local worksation

- $ python diagnose.py (this does not work on chuck, can be called at local workstation)
- parameters.dat shows some basic parameter values
- zeltron.log shows the current status of the program
- Eem.dat and similar files contain information on the total energy content, can be plotted with

### 22.5.5 Errors

- mpirun signal 9 (killed) problem: Memory overflow issue. Memery is per CPU ' SBATCH –mem-per-cpu=3GB' , so CUP number is important.

# Chapter 23

# Cluster

## 23.1 Prometheus

- The portals for clusters in Poland is PLGrid https://portal.plgrid.pl/, my login email is mailto:qchen.astro@gmail.com, my ID is plgqchen, my password is B**!
- $ ssh plgqchen@pro.cyfronet.pl login Prometheus
- $ pro-show-grants check available grants, like plgpic21
- $ pro-fs check disk quota, home and SCRATCH
- $ /net/archive/groups/plggknalew the location of group plggknalew
- $ /net/scratch/people/plgqchen/ my scratch folder, 2022 I got 93 TB quota
- $ pro-jobs check jobs
- time limit 72 hours
- QC tried biggest simulation is $54 \times 24 = 1296$ cores (25/9/2022).
- QC tried $96 \times 24 = 2304$ cores, but mem usage is zero, runs 2 hours and no data coming out, so canceled (25/9/2022).

They recently restricted compiling codes on the login node. The code should actually compile OK. Linking fails on a login node, but it will be OK on the worker nodes when the job is submitted. You can start an interactive job, e.g.:

- $ srun -p plgrid-testing -A plgpic21 --time=01:00:00 --pty /bin/bash -l

# Chapter 24

# GitHub

> "Wisdom is supreme. Get wisdom. Yes, though it costs all your possessions, get understanding."
>
> – Proverbs 4:7, ASV Bible

## 24.1 About

1. Linus created Git in 2005 for Linux development.
2. Git是分佈式版本控制系統

## 24.2 Create reposites

1. `$ git init` Initial folder as 工作區
2. `$ git add filename` add filename to the 暫存區 stage (index) in `.git`
3. `$ git add .` Add all files to 暫存區.
4. `$ git commit -m "description for this commit"` add description to this commit, 暫存區內容提交到 master (head) 分支
5. `$ git push origin master` push file to github.

## 24.3 Versions

### 24.3.1 Files

1. `$ git status` check status
2. `$ git diff filename` check difference of filename
3. `$ git checkout -- filename` 撤銷filename 到最後的狀態
4. `$ git reset HEAD filename` 把暫存區的修改撤銷掉(unstage)，重新放回工作區
5. `$ git rm filename` remove file in the 暫存區, and commit it

### 24.3.2 Reposits

1. $ git log check 3 recent history entry
2. $ git reset --hard HEAD^ retreat to last version
3. $ git reset --hard commitprefix reset head version according to coomitprefix (few digits)
4. $ git reflog check commands log

## 24.4 Upload

### 24.4.1 SSH Key

1. $ ssh-keygen -t rsa -C "c275633094@gmal.com" create SSH Key, password can be none. .ssh/id_rsa 爲私鑰，./ssh/id_rsa.pub 是公鑰
2. GitHub> Account settings> SSH Keys> Add SSH Key> paste contents in id_rsa.pub, 每個電腦單獨生成公鑰

### 24.4.2 Create a new repo

1. GitHub>Create a new repo>Create
2. $ git remote add origin git@github.com:JesusSave/mGRB_afterglow.git 關聯本地與遠程的庫
3. $ git push -u origin master -u 把本地和遠程的master 分支關聯起來，一次之後就可以簡化這個標籤
4. $ git remote -v 查看遠程庫信息
5. $ git remote rm origin 刪除本地和遠程的綁定關係

### 24.4.3 Clone a reposite

1. $ git clone git@github.com:JesusSave/mGRB_afterglow.git 克隆遠程庫

## 24.5 Brance

1. $ git switch -c dev switch to new created branch ’ dev’
2. $ git branch check current branch
3. $ git switch master switching to branch ’ master’
4. $ git merge dev merge branch dev to current branch
5. $ git merge --no-ff dev merge without fast forward, 別人看不出合併信息
6. $ git branch -d dev delete branch ’ dev
7. 實際開發中，master 用於發布新版本，dev 用於平時開發，不同開發人員合並到 dev 上

### 24.5.1 Bug

1. `$ git stash` 把當前工作現場儲藏起來
2. `$ git stash list` 工作現場列表
3. `$ git stash apply` 恢復工作現場
4. `$ git stash drop` 刪除儲藏的工作現場
5. `$ git stash pop` 恢復並同時把stash 內容刪除
6. `$ git cherry-pick 4c805e2` 複製 4c805e2 提交的變化到當前分支

### 24.5.2 Feature

1. 開發新功能，爲避免混亂，建議另建立一個分支，名爲 feature
2. `$ git branch -D feature-vulcan` 強行刪除 feature-vulcan 分支

### 24.5.3 Pull

1. `$ git branch --set-upstream-to=origin/dev dev` 將遠程origin/dev 與本地 dev 連接起來
2. `$ git pull` 抓遠程到本地

## 24.6 Tag

1. `$ git tag v1.0` 加入新標籤v1.0
2. `$ git tag v0.9 f52c633` 對某次commit id 打標籤
3. `$ git tag -a v0.9 -m "version 0.9 released" f52c633` 創建帶說明的標籤
4. `$ git tag` 查看所有標籤
5. `$ git push origin v1.0` 推送標籤到遠程
6. `$ git push origin --tags` 推送所有標籤到遠程
7. `$ git tag -d v0.9` 刪除本地標籤
8. `$ git push origin :refs/tags/v0.9` 刪除遠程標籤

# Chapter 25

# Android

> "Wisdom is supreme. Get wisdom. Yes, though it costs all your possessions, get understanding."
>
> – Proverbs 4:7, ASV Bible

## 25.1 Install ADB

```
$ sudo apt install android-tools-adb android-tools-fastboot
```

USB connect phone to computer, open Developer options (or equivalently tap build number 7 times), enable USB debugging.

`$ adb devices` to test connection

### 25.1.1 restart adb daemon

```
$ sudo adb kill-server $ sudo adb start-server
```

### 25.1.2 Change resolusion and ppi in Blackberry Priv

```
adb shell wm size 1080x1920
adb shell wm density 420
# or set even lower
#adb shell wm size 720x1280
#adb shell wm density 280
adb reboot  # restart the phone
adb shell wm size reset
adb shell wm density reset # to reset as default 2560x1440 @ 560ppi
```

## 25.2 Blackberry Keyone

- Tim file download directory: `$ Internal storage/tencent/TIMFILE_RECV/`
- Eudict 浮动取词設置：帐号>跨软件取词>显示浮动取词图标