

Compute System Administration

Homework 2: Shell Script

ZSWU

Requirements

- ❑ 2-1: Filesystem Statistics (20%)
- ❑ 2-2: Course Registration System (60%+20%)
 - Basic School Timetable Simulator ❤️
 - Bonus
- ❑ Modify code by yourself at demo (20%)
- ❑ Please write the scripts in Bourne Shell (sh)
 - No score if you use csh, bash or other languages.
- ❑ Due date: 2018/10/17 12:00
 - Upload `${student_ID}.tar` on New E3 (<http://e3new.nctu.edu.tw>)

2-1: Filesystem Statistics

```
$ wget https://github.com/Thomas-Tsai/partclone/archive/0.2.89.tar.gz -O - | tar jxf -
--2016-09-29 10:32:25-- https://github.com/Thomas-Tsai/partclone/archive/0.2.89.tar.gz
正在查找主機 github.com (github.com)... 192.30.253.113
正在連接 github.com (github.com)|192.30.253.113|:443... 連上了。
已送出 HTTP 要求，正在等候回應... 302 Found
位置: https://codeload.github.com/Thomas-Tsai/partclone/tar.gz/0.2.89 [跟隨至新的 URL]
--2016-09-29 10:32:26-- https://codeload.github.com/Thomas-Tsai/partclone/tar.gz/0.2.89
正在查找主機 codeload.github.com (codeload.github.com)... 192.30.253.120
正在連接 codeload.github.com (codeload.github.com)|192.30.253.120|:443... 連上了。
已送出 HTTP 要求，正在等候回應... 200 OK
長度: 1051296 (1.0M) [application/x-gzip]
Saving to: 'STDOUT'

-                               100%[=====]

2016-09-29 10:32:30 (362 KB/s) - written to stdout [1051296/1051296]

$ cd partclone-0.2.89/
$ ../../sahw2-1.sh
1:402607 Makefile.in
2:312642 configure
3:173953 xfs_bmap.c
4:118770 ChangeLog
5:111736 extent-tree.c
Dir num: 24
File num:428
Total: 4992643
```

2-1: Filesystem Statistics – Requirement (1/3)

- Inspect the current directory(“.”) and all sub-directory.
- Calculate the number of directories.
- Do not include ‘.’ and ‘..’
- Calculate the number of files.
- Calculate the sum of all file size.
- List the top 5 biggest files.
- Only consider the regular file. Do not count in the link, FIFO, block device... etc.

2-1: Filesystem Statistics – Requirement (2/3)

- Use **one-line** command
- No temporary file or shell variables.
- No “&&” “||” “>” “>>” “<” “;” “&”, but you can use them in the awk command. Actually, you don’t need them to finish this homework.
- Only pipes are allowed.
- Hint: ls(1) with -A and -R

2-1: Filesystem Statistics – Requirement (3/3)

❑ Grade

- File is executable. (4%)
- List top 5 file size and name. (4%)
- Dir num is correct. (4%)
- File num is correct. (4%)
- Total size is correct. (4%)

2-2: Course Registration System (CRS)

x	.Mon	.Tue	.Wed	.The	.Fri
A	x.	Service.Lear ing.II.	x.	x.	x.
.
.
.
=====					
B	x.	Digital.Syste ms.Design.	x.	x.	x.
.
.
.
=====					
C	x.	Introduction. to.Algorithms	x.	Calculus.(I).	x.
.
.
.
=====					
D	x.	Introduction. to.Algorithms	x.	Calculus.(I).	x.
.
.
.
=====					
E	x.	x.	x.	x.	Digital.Syste ms.Design.
.
.
.
=====					
F	x.	x.	x.	x.	Digital.Syste ms.Design.
.
.
.
=====					
G	Calculus.(I).	x.	x.	Introduction. to.Algorithms	x.
.
.
.
=====					
H	Calculus.(I).	x.	x.	x.	x.
.
.
.
=====					
I	x.	x.	x.	Network.Plann ing.and.Manag ement.Practic es.	x.
.
.
.
=====					
J	x.	x.	x.	Network.Plann ing.and.Manag ement.Practic es.	x.
.
.
.
=====					
K	x.	x.	x.	Network.Plann ing.and.Manag ement.Practic	x.
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	(+)				

Collision: 46
Introduction to Algorithms and Physics (I)

< OK >

Add Class

10H,4CD SC206 - Calculus (I)
10H,4CD SA214 - Calculus (II)
4CD SC207 - calculus (I)
10H,4CD SA320 - Calculus (I)
10H,4CD SC106 - calculus (I)
10H,4CD SC105 - Calculus (I)
10H,4CD EE105 - Calculus (I)
1CD,4GH SC110 - Physics(I)
1CD,4GH SA321 - Physics(I)
1CD,4GH SA320 - Physics (I)
1CD,4GH SC105 - Physics (I)
1CD,4GH SC109 - Physics (I)
1CD,4GH SC151 - Physics (I)
1CD,4GH SC152 - Physics (I)
4GH SC001 - Physics (I)
3GH AB101 - Career Planning and Mentor of Hours
51JK EC122 - Competitive Programming (II)
6EFG ED302 - Competitive Programming(III)
2EF,5B EC115 - LabVIEW Programming Language
2CD,4G ED302 - Mathematical Logic/r
10,4CD EC114 - Electrical Circuits and Electronics (I)
2EFG EC016 - Design and Implementation of IOT Applications
2G,SCD EC115 - Introduction to Cryptography
21JK,SCD EC114,EC220 - Digital Circuit Lab.
2EF,5B EC022 - Introduction to Multimedia Information System
2G,SCD ED302 - Introduction to Pattern Recognition
6EF ED305 - Cross-disciplinary Project (I)
2EF,5B ED117 - Introduction to Machine Learning
2EFG EC324 - Android Progr
10,4CD ED117 - Intro. to Network Programming

27%

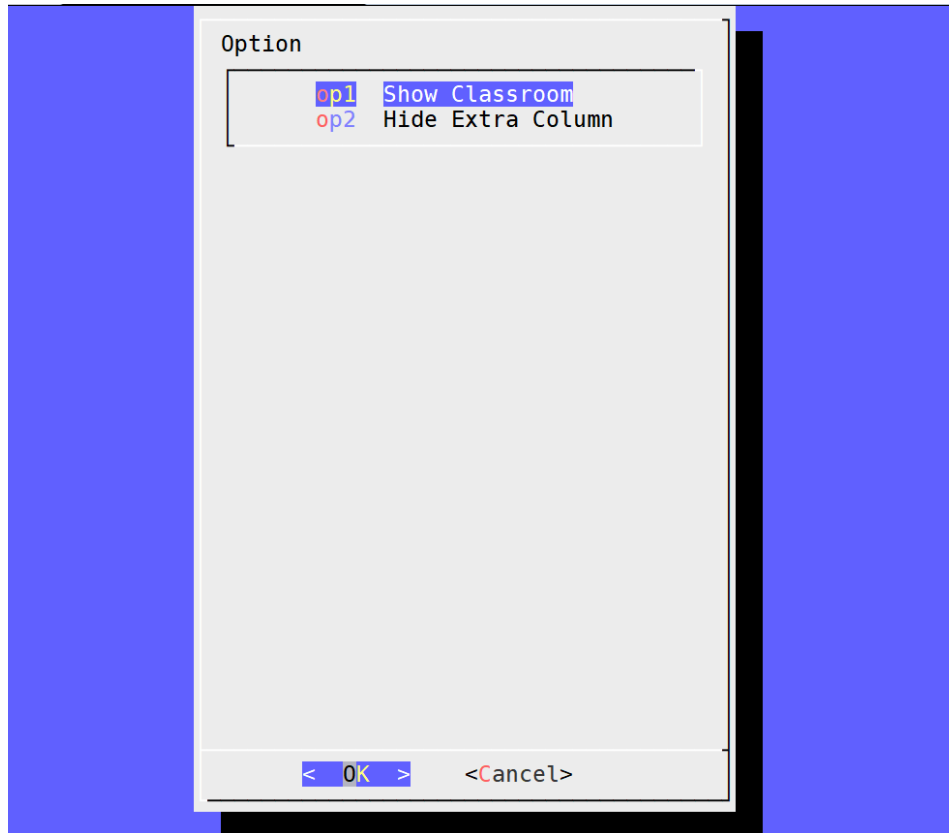
< Cancel >

2-2: CRS – Requirements

- ❑ Download timetable from `timetable.nctu.edu.tw` using `curl`, do this step only when no data kept at local. (15%)
- ❑ CRS needs to list all courses , Keep record of all selected courses and options (including after program restart) , no modification if user select cancel while saving. (15%)
- ❑ Check time conflict and ask user to solve the conflict by reselect courses. (15%)
- ❑ Options for display course title or classroom number / display Sat. 、 Sun. 、 NMXY ... less important time or not. (3%+3%)
- ❑ Output aligned chart(3%), can display multi-line per grid. (6%)
- ❑ Python ... all other language and Shell except `sh` are restricted. Available packages are based on Workstation(`bsd1~4`) ◦

2-2: CRS

- ❑ Option should at least contain these two functions ◦



2-2: CRS – Dialog

Dialog is a program that will let you to present a variety of questions or display messages using dialog boxes from a shell script.

These types of dialog boxes are implemented (though not all are necessarily compiled into dialog):

buildlist, calendar, checklist, dselect, editbox, form, fselect, gauge, infobox, inputbox, inputmenu, menu, mixedform, mixedgauge, msgbox (message), passwordbox, pause, prgbox, programbox, progressbox, radiolist, rangebox, passwordform, tailbox, tailboxbg, textbox, timebox, treeview, and yesno (yes/no).

2-2: CRS – Hint (1/2)

❑ JSON file of timetable can be download with :

❑ `curl 'https://timetable.nctu.edu.tw/?r=main/get_cos_list' --data 'm_acy=107&m_sem=1&m_degree=3&m_dep_id=17&m_group=*&m_grade=*&m_class=*&m_option=*&m_crsname=*&m_teaname=*&m_cos_id=*&m_cos_code=*&m_crstime=*&m_crsoutline=*&m_costype=**'`

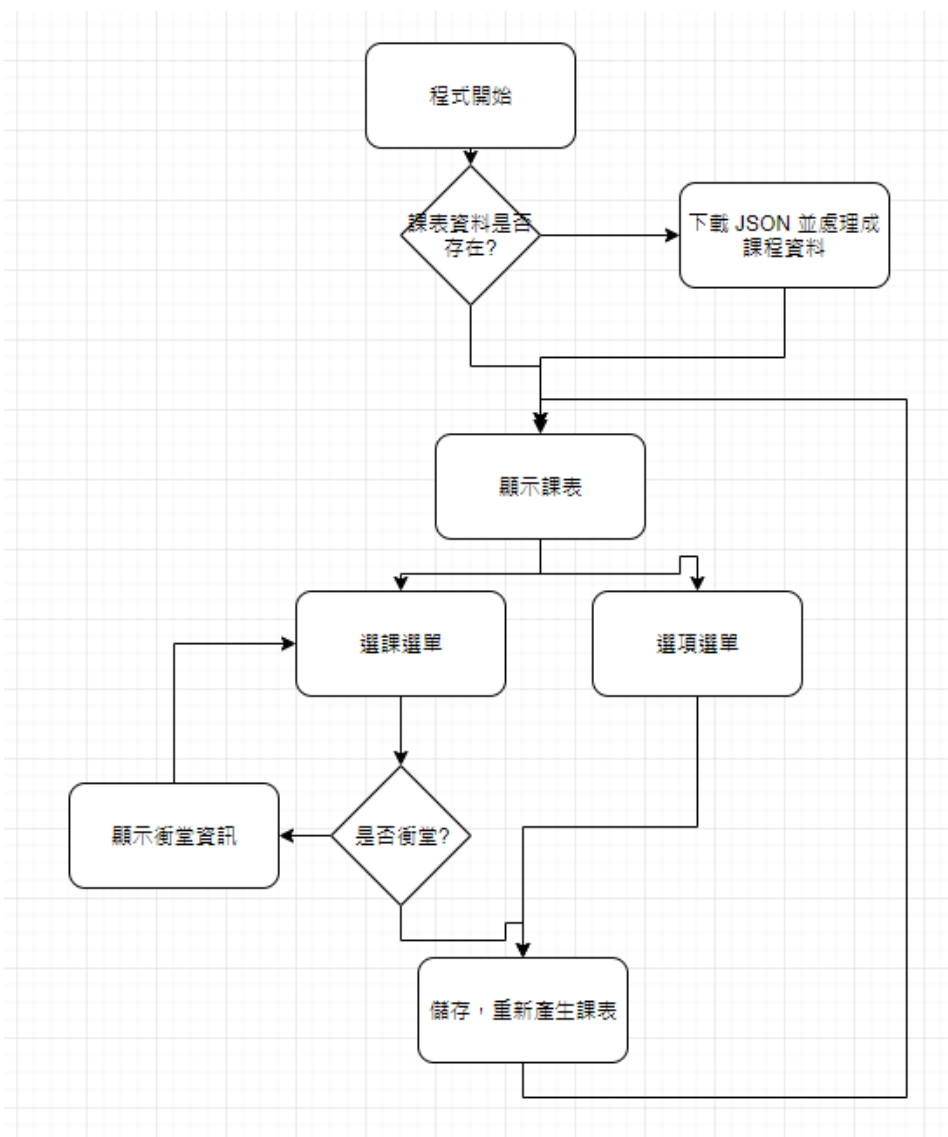
❑ Will download timetable of CS courses, please complete homework base on this timetable, JSON parsing should be done with build-in tools.

❑ If trouble occurs while curling timetable, please generate the timetable manually to complete the rest parts. Scores will not be count for this part (15%).

2-2: CRS – Hint (2/2)

- Use English course name.
- Display all classroom number in every grid if the course uses multiple classrooms.
- No further restricts besides align all fields.

2-2: CRS – Recommend Workflow



2-2: CRS – Bonus

❑ Course for free time

(**Show all current available courses**) ◦ (10%)

❑ Course searching

- Input: part of the course name, Output: **all courses containing the search word in the course name.** (5%)
- **Input: part of the course time, Output: all courses containing the search time. (5%)**
 - **Ex. Input: 4GH, Output: courses of 4GH 、 1B4GH ...etc, but not courses with only 4G or 4H.**

Help!

- ❑ Email to ta@nasa.cs.nctu.edu.tw
- ❑ New E3 <https://e3new.nctu.edu.tw>
- ❑ Office hour: 3GH at EC318

- ❑ Q : Why this assignment ?
A : Fun. 😊