

Compute System Administration

Homework 2: Shell Script

ZSWU

Requirements

- ❑ 2-1: Filesystem Statistics (20%)
- ❑ 2-2: Course Registration System (60%+20%)
 - 簡易的模擬排課系統 ❤️
 - 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	Th	Fri
A	x.	Service.Lear ning.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 es.	x.

Collision: 46
Introduction to Algorithms and Physics (I)

< OK >

Add Class

10H,4CD SC206 - Calculus (I)
10H,4CD SA214 - Calculus (I)
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
S1JK EC122 - Competitive Programming (II)
6EFG ED302 - Competitive Programming(III)
2EF,5B EC315 - 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,5CD EC115 - Introduction to Cryptography
21JK,5CD EC114,EC220 - Digital Circuit Lab.
2EF,5B EC022 - Introduction to Multimedia Information System
2G,5CD 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%

10H,4CD SA321 - Calculus (I)
2B,5EF EC115 - Digital Systems Design
2A AB101 - Service Learning II
41JK EC115 - Network Planning and Management Practices
2CD,4G EC015 - Introduction to Algorithms

2-2: CRS – Requirements

- ❑ 使用 `curl` 到 `timetable.nctu.edu.tw` 下載課程表，只有在資料不存在時才要執行此步驟。(15%)
- ❑ 選課程式可以在選單列出課程，必須記住上次選取的課程和所有的選項(包含程式重開後)，若使用者選擇取消則不修改。(15%)
- ❑ 判斷衝堂並讓使用者回到選單修改衝堂的課程。(15%)
- ❑ 輸出課表時可以選擇顯示課程名稱或教室、是否顯示星期六日和 `NMXY` 等較不重要的時間。(3%+3%)
- ❑ 輸出整齊的表格(3%)，表格中可以在同一格內換行顯示。(6%)
- ❑ 禁止使用 `Python`、`Ruby` 等其他程式語言和 `sh` 以外的 `Shell`。
。可使用的套件以工作站(`bsd1~4`)為準。

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)

❑ 下載課表的 JSON 檔可以使用以下指令：

❑ `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_crs
name=*&m_teaname=*&m_cos_id=*&m_cos_code=*&m_crstime=*&m_crsoutline=*&m_costype=**'`

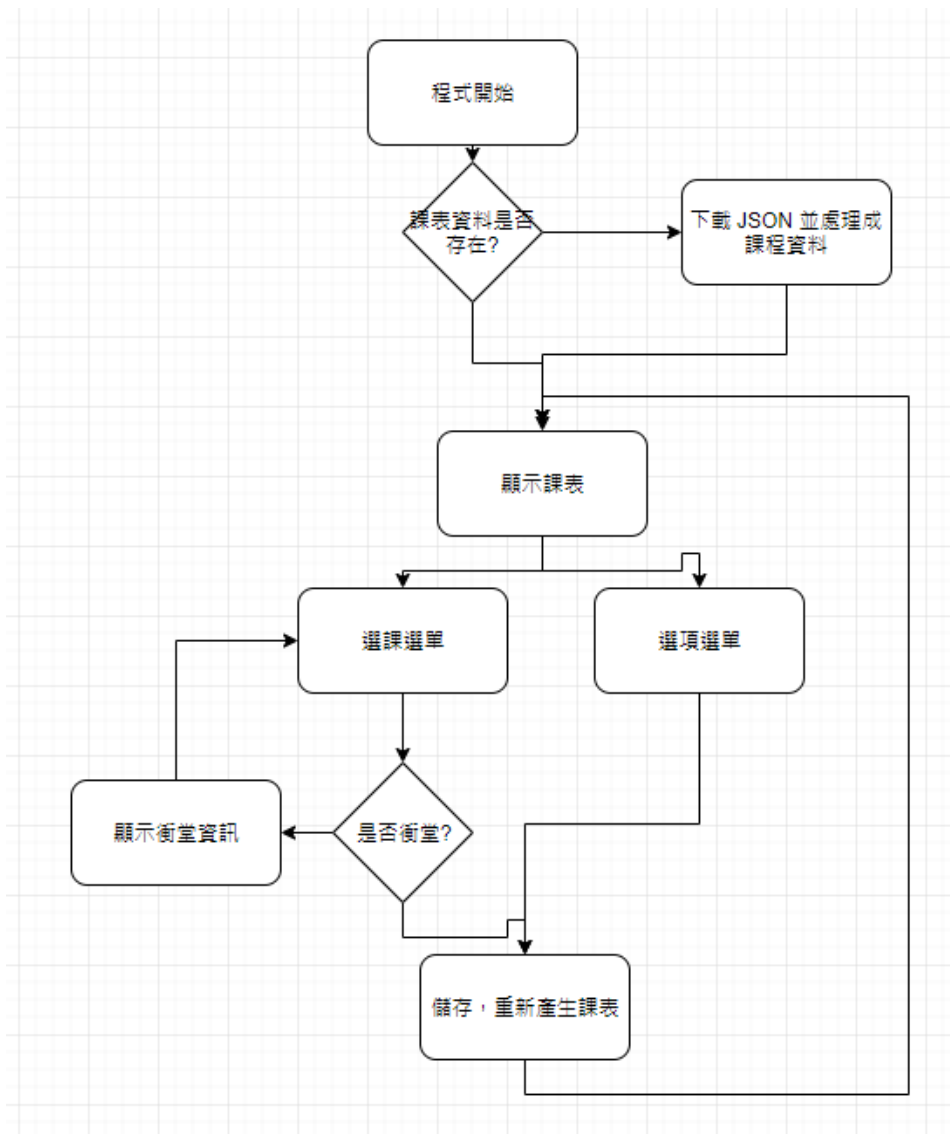
❑ 以上指令會下載資工系的課表，作業請用上面的課表為主，JSON的處理請使用內建的工具想辦法完成。

❑ 若無法完成可以自行手動輸出課表資料完成後面的部份，並扣除此部分的分數。

2-2: CRS – Hint (2/2)

- ☐ 課程名稱請使用英文課程名稱。
- ☐ 若課程使用多間教室，則在所有的課程時間中顯示所有的課程教室。
- ☐ 顯示表格只要能對齊對應的欄位即可。

2-2: CRS – Recommend Workflow



2-2: CRS – Bonus

- ❑ 空堂選課(輸入時間，顯示可選的課程)。(10%)
- ❑ 課程搜尋(輸入課程部分名稱，顯示可選的課程)。(10%)

Help!

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

- ❑ Q：為何出這個作業？
A：覺得好玩😁