CSCM603127 System Programming

Worksheet 7 - Scripting (I) - 03112020

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1. Write a bash script that **read a JSON file** and **beautify it into formatted JSON**. The new beautified JSON is stored as a new file. You also must provide an explanation of how your bash script works!

   Notes:
   - You can use this JSON file as an input example.
   - Use as many resources as you can get.
   - Don't hardcode the path of the unformatted JSON file! Use argument instead.

2. Structure of file system consists of directory and file. Make a bash script that represents your file system structure as a tree. Here is the example of the structure:

   You also must provide an explanation of how your bash script works!

3. Create a bash script that can change your terminal as displayed in the following picture:

[Sunday, 25-10-2020||09:15PM WIB][LAPTOP-LSEI1JVG of fadhli:~]$ _

Make sure that this script changes your terminal permanently (meaning that if the terminal is restarted, it would still look the same). You also must provide an explanation of how your bash script works!

4. Suppose that we have this bash script

```
while read LINE
do
  echo $LINE
done < `tail -f /var/log/messages`
```

Unfortunately, the above code block hangs and does nothing useful. Fix this so it does work. You also must provide an explanation of how your bash script works! (**Hint:** rather than redirecting the stdin of the loop, try a pipe.)

5. Create a bash script to create a **.ssh** folder for every user that has a HOME directory if it does not exist. Otherwise, print the full path of that user .ssh folder using format "{USER} .ssh folder in {PATH_TO_FOLDER}" where:

    ● {USER}: Replace it with name of the user
    ● {PATH_TO_FOLDER}: Replace it with the path to .ssh folder

    You also must provide an explanation of how your bash script works!

6. Create a bash script that receives a path to a certain folder as a parameter. Change the ownership of every file and folder inside that path to the user that executed this script. You also must provide an explanation of how your bash script works!

7. Create a bash script that can compress each user home folder into .tar.gz file. The result will be stored in /var/backup folder. You also must provide an explanation of how your bash script works!

Answers:

1.

user@sysprog-ova: /

GNU nano 2.9.3   test.json

"just":true,"full":{"fresh":["silver","street",false,"value",true,1753573668,false,"entire","deer",{"pupil":{"matter":{"oxygen":{"thus":true,"shells":true,$

LAPTOP-930TCP7M - PuTTY

GNU nano 2.9.3

```
cat $1 | json_pp > $2
```

user@sysprog-ova: /

```
[Tuesday, 03-11-2020||02:28 AM WIB][sysprog-ova of user:~]$cat formatted.json
{
   "plate" : false,
   "full" : {
      "hard" : 1834251372,
      "fuel" : "ran",
      "size" : "thumb",
      "join" : false,
      "further" : true,
      "scientific" : "applied",
      "suppose" : false,
      "orange" : "magnet",
      "knew" : "musical",
      "bright" : true,
      "advice" : false,
      "route" : true,
      "shirt" : false,
      "down" : true,
      "congress" : 188543438,
      "write" : "mud",
      "house" : 1248093145.6054,
      "saddle" : true,
      "buffalo" : "its",
      "forest" : "thy",
      "fresh" : [
         "silver",
         "street",
         false,
         "value",
         true,
         1753573668,
         false,
         "entire",
         "deer",
         {
            "pupil" : {
               "worker" : 655446573.847648,
               "pink" : "silly",
               "apart" : -1802092733,
               "teacher" : 1563095337,
               "excellent" : true,
               "journey" : false,
               "that" : "pay",
               "gave" : true,
```

Saya disini menggunakan command utility yang ada di linux yaitu json_pp yang dapat mengconvert json menjadi pretty version, disini saya menggunakan 2 parameter variable yaitu $1 dan $2, $1 untuk input nama file json, dan $2 untuk output pretty json dimasukkan kemana.

Jadi saya melakukan cat pada json filenya, dan melakukan pipe untuk menggunakan command json_pp untuk format menjadi pretty dan dimasukkan hasilnya kedalam file output yaitu $2.

2.

```bash
#!/bin/bash

find . -print | sed -e 's/[^-][^\/]*\//--/g' -e 's/^/   /' -e 's/-/|/'
```

```
user@sysprog-ova:~/sysprog$ bash tree_dir.sh
    |-no6
    |-test.txt
    |-.Makefile.swp
    |-tlpi_latihan
    |---tlpi-dist
    |-----sysinfo
    |-------Makefile
    |-------t_uname.c
    |-------procfs_pidmax.c
    |-------procfs_user_exe.c
    |-----tty
    |-------new_intr.c
    |-------no_echo.c
    |-------tty_functions.c
    |-------demo_SIGWINCH.c
    |-------test_tty_functions.c
    |-------Makefile
    |-------ttyname.c
    |-------tty_functions.h
    |-----time
    |-------curr_time.h
    |-------curr_time.c
    |-------calendar_time.c
    |-------Makefile
    |-------process_time.c
    |-------strtime.c
    |-------show_time.c
    |-----getopt
    |-------t_getopt.c
    |-------Makefile
    |-----cap
    |-------show_secbits.c
    |-------t_cap_get_file.c
    |-------view_cap_xattr.c
    |-------cap_functions.c
    |-------check_password_caps.c
    |-------t_cap_set_file.c
    |-------Makefile
    |-------t_cap_get_pid.c
    |-------cap_launcher.c
    |-------demo_file_caps.c
    |-------cap_text.c
```

Saya disini menggunakan command find untuk membantu saya dalam merepresentasikan directory sebagai tree dengan parameter current directory ("."). Kemudian saya tambahkan flag -print untuk melakukan print. Dan saya gunakan piping dengan command "sed". Command sed ialah command yang berfungsi untuk searching, find, replace, insert, dan delete terhadap sebuah text.

Sed yang pertama yaitu mengubah '[^-][^\/]*\/' menjadi '—'

Sed yang kedua yaitu mengubah '^' menjadi '   '

Sed yang ketiga yaitu mengubah '-' menjadi '|'

3.

```
PS1="[\e[36m\D{%A, %d-%m-%Y}\e[m||\e[31m\@ WIB]\e[m[\e[34m\h\e[m \e[33mof \e[32m\u:\e[35m~\e[m]\e[31m$\e[m"
[Tuesday, 03-11-2020||02:56 AM WIB][sysprog-ova of user:~]$
```

Penjelasan:

- \e untuk memulai untuk perubahan warna
- 36m adalah color code
- D{%A, %d-%m-%Y} adalah format penanggalan yaitu dengan flag D dengan format A yaitu nama hari, d yaitu tanggal, m yaitu nomor bulan, dan y yaitu tahun
- @ adalah waktu dalam format 12 hour dengan AM/PM
- h untuk menampilkan hostname
- u untuk menampilkan current username

4.

user@sysprog-ova: /

```
  GNU nano 2.9.3

tail -f /var/log/syslog | while read LINE
do
  echo $LINE
done
```

```
[Tuesday, 03-11-2020||02:36 AM WIB][sysprog-ova of user:~]$bash ws7_4.sh
Nov 3 01:46:29 sysprog-ova kernel: [ 183.336205] ntfs: driver 2.1.32 [Flags: R/O MODULE].
Nov 3 01:46:29 sysprog-ova kernel: [ 183.368279] QNX4 filesystem 0.2.3 registered.
Nov 3 01:46:29 sysprog-ova os-prober: debug: running /usr/lib/os-probes/50mounted-tests on /dev/sda1
Nov 3 01:46:29 sysprog-ova 50mounted-tests: debug: /dev/sda1 type not recognised; skipping
Nov 3 01:46:29 sysprog-ova os-prober: debug: os detected by /usr/lib/os-probes/50mounted-tests
Nov 3 01:46:47 sysprog-ova systemd[1]: Started Daily apt upgrade and clean activities.
Nov 3 01:46:47 sysprog-ova systemd[1]: Startup finished in 5.051s (kernel) + 3min 16.000s (userspace) = 3min 21.052s.
Nov 3 01:58:38 sysprog-ova systemd[1]: Starting Cleanup of Temporary Directories...
Nov 3 01:58:38 sysprog-ova systemd[1]: Started Cleanup of Temporary Directories.
Nov 3 02:17:01 sysprog-ova CRON[9307]: (root) CMD ( cd / && run-parts --report /etc/cron.hourly)
```

6.

LAPTOP-930TCP7M - PuTTY

```
  GNU nano 2.9.3

#!/bin/bash

sudo chown -R $USER $1
```

Saya menggunakan command chown yaitu change owner, namun untuk melakukan chown harus menggunakan sudo, dan flag -R adalah flag untuk rekursif agar melakukan perubahan owner secara rekursif, $USER adalah current username, dan $1 adalah parameter untuk path yang akan diubah ownernya