

UNIX / Linux & Shell exercises

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Part 1

Go into the directory (using the <Tab> completion method helps!):

```
cd /skynet1_rech2/cordex/NorthAmerica_0.44deg_ERA40-Int/Samples
```

- 1) What is the **size of this directory** in GB?
- 2) **How many** first level sub-directories are there in this directory?
- 3) **How many** January sub-directories are there in this directory?
- 4) **List the largest** of all the **files inside** the February directories.
- 5) **Create a directory** called
 /skynet1_exec2/\${USER}/Training/CRCM5
 Inside this directory **create a link** called 'NorthAmerica_Samples'
 pointing to the directory mentioned in 1)
- 6) **Save** in a file all your previous commands that you typed in the current window into
 a file called: ~/UNIX_Training/Commands.txt

7) Go into your directory
/skynet1_exec2/\${USER}/Training/CRCM5/NorthAmerica_Samples
Verify where you are with

pwd

And where you really are with
true_path [-n] .

8) Create an alias in your **~/.profile.d/.interactive_profile** for
true_path -n
I called mine 'tp'

9) Check that you got your alias with:
alias tp

10) Log out of skynet1 and back in.
Do you have your 'tp' alias now?

Look for examples in my scripts underneath my directory ~winger/Scripts

11) Find the script (extension '.scr') underneath my directory ~winger/Scripts which
contains a line with: '\${exp}', '-s', and the whole word 'i'

Shell scripting

Script A: Loops, conditions, arithmetics

- 0) Create a directory in your HOME called: UNIX_Training
- 1) In this directory create a script called 'script_A1.scr' with a **while-loop over the years** 1990 to 2100.
- 2) Inside the loop over the years, create a **for-loop over all months** (01-12).
- 3) Use the « **case** » statement to determine the number of days per month. Take leap years into account.
- 4) Print years, months and number of days for the two years 2000 and 2100:
200001 has 31 days
200002 has 28 days
:
210012 has 31 days
- 5) Inside the loop over the months, create a **while-loop over the days**. Make sure that all days have two digits => '01' instead of '1'.
- 6) Print year, month and day for February 2010
20100201
:
20100228

Hint: To check what is happening in your script use
set -x

7) Create a new script called 'script_A2.scr' with points 1) to 3).

8 a) In this new script, **write** the number of days for each month **into a file** called
/skynet1_exec2/\${USER}/Training/Shell/febs.txt

Use the following **format(!)**:

January of 1990 has 31 days

February of 1990 has 28 days

:

December of 2100 has 31 days

b) Look at the output file!

less ...

- jump to the end

- page up / down

9) **Read the file** you just created **in a while-read-loop**.

while read line ; do

:

done < file_name

10) Calculate and print the total number of days for all Februaries
of the years 2000 to 2004 and 2096 to 2100

The answer should be: 283

11) Compare your two scripts 'script_A1.scr' and 'script_A2.scr':

xxdiff script_A1.scr script_A2.scr

Shell scripting

Script B: Variable manipulations

Write a script called '~/UNIX_Training/script_B1.scr' doing the following:

- 1) Go into the directory
 /skynet1_exec2/\${USER}/Training/CRCM5/NorthAmerica_Samples
- 2) Create a **for-loop** over all February dm-files of the sixties (1960-1969) and list the files
 NorthAmerica_0.44deg_ERA40-Int_196002/dm1958010100_00056880p
 :
 NorthAmerica_0.44deg_ERA40-Int_196902/dm1958010100_00293544p

- 3 a) Instead of 2) print just the dm-file name (without the path)
 b) followed by the corresponding pm-file name
 c) followed by the time step (last 8 digits of the dm-file name)
 d) followed by the year and the month

```
dm1958010100_00056880p pm1958010100_00056880p 00056880 1960 02
:
dm1958010100_00293544p pm1958010100_00293544p 00293544 1969 02
```

- 4 a) Replace the '**1958010100**' in the pm-file names by the real date (**196002...196902**)

```
dm1958010100_00056880p pm196002_00056880p
:
dm1958010100_00293544p pm196902_00293544p
```