Week 1 study diary

I have very little experience on BASH scripting and although i’ve been using terminal, it has been mainly to access files or testing results in programming exercises etc. So here we go.

Exercises:

1. I read the the refresher. Most of the commands are already familiar, but there were some new or forgotten things. e.g. Incremental history searching, which i’ll start using from now on. I copied the nice script on turning text upside down too.

2. I skimmed some man pages and played around with it. Man is somewhat familiar to me already.

3. Command to create directories:

```
$ mkdir -p  LinuxFundamentals2015/Week1
```

4. Alias fo your favorite command line for ls:

```
$ alias la='ls -A'
$ alias o='ls -latr'
```

Alias cman that uses Chromium to read man pages:

```
$ alias cman='man –html=chromium-browser'
```

5. My home folder don’t have a bash_profile-file and i thought it’s unnecessary to make one just for this case, because it would be an empty file. Instead i show .bashrc and bash_aliases contents here and copy those to this weeks home folder.

- .bashrc

```
  # ~/.bashrc: executed by bash(1) for non-login sh
ells.
  # see /usr/share/doc/bash/examples/startup-files
(in the package bash-doc)
  # for examples

  # If not running interactively, don't do anything
  case $- in
  *i*) ;;
    *) return;;
  esac

  # don't put duplicate lines or lines starting wit
h space in the history.
  # See bash(1) for more options
  HISTCONTROL=ignoreboth
```

```
  # append to the history file, don't overwrite it
  shopt -s histappend

  # for setting history length see HISTSIZE and HIS
TFILESIZE in bash(1)
  HISTSIZE=1000
  HISTFILESIZE=2000

  # check the window size after each command and, i
f necessary,
  # update the values of LINES and COLUMNS.
  shopt -s checkwinsize

  # If set, the pattern "**" used in a pathname exp
ansion context will
  # match all files and zero or more directories an
d subdirectories.
  #shopt -s globstar

  # make less more friendly for non-text input file
s, see lesspipe(1)
  [ -x /usr/bin/lesspipe ] && eval "$(SHELL=/bin/sh
 lesspipe)"

  # set variable identifying the chroot you work in
 (used in the prompt below)
  if [ -z "${debian_chroot:-}" ] && [ -r /etc/debia
```

```
n_chroot ]; then
  debian_chroot=$(cat /etc/debian_chroot)
  fi

  # set a fancy prompt (non-color, unless we know w
e "want" color)
  case "$TERM" in
      xterm-color) color_prompt=yes;;
  esac

  # uncomment for a colored prompt, if the terminal
 has the capability; turned
  # off by default to not distract the user: the fo
cus in a terminal window
  # should be on the output of commands, not on the
 prompt
  #force_color_prompt=yes

  if [ -n "$force_color_prompt" ]; then
  if [ -x /usr/bin/tput ] && tput setaf 1 >&/dev/nu
ll; then
  # We have color support; assume it's compliant wi
th Ecma-48
  # (ISO/IEC-6429). (Lack of such support is extrem
ely rare, and such
  # a case would tend to support setf rather than s
etaf.)
  color_prompt=yes
```

```
  else
  color_prompt=
  fi
fi

if [ "$color_prompt" = yes ]; then
  PS1='${debian_chroot:+($debian_chroot)}\[\033[01;
32m\]\u@\h\[\033[00m\]:\[\033[01;34m\]\w\[\033[00m\
]\$ '
else
  PS1='${debian_chroot:+($debian_chroot)}\u@\h:\w\$
 '
fi
unset color_prompt force_color_prompt

# If this is an xterm set the title to user@host:di
r
case "$TERM" in
xterm*|rxvt*)
  PS1="\[\e]0;${debian_chroot:+($debian_chroot)}\u@
\h: \w\a\]$PS1"
  ;;
*)
  ;;

esac

# enable color support of ls and also add handy ali
```

```
ases
if [ -x /usr/bin/dircolors ]; then
  test -r ~/.dircolors && eval "$(dircolors -b ~/.d
ircolors)" || eval
  "$(dircolors -b)"
  alias ls='ls --color=auto'
  #alias dir='dir --color=auto'
  #alias vdir='vdir --color=auto'

  alias grep='grep --color=auto'
  alias fgrep='fgrep --color=auto'
  alias egrep='egrep --color=auto'
fi

  # some more ls aliases
alias ll='ls -alF'
alias la='ls -A'
alias l='ls -CF'
alias o='ls -latr'

# Add an "alert" alias for long running commands.
Use like so:
#   sleep 10; alert
alias alert='notify-send --urgency=low -i "$([ $? =
 0 ] && echo terminal || echo error)" "$(history|ta
il -n1|sed -e '\''s/^\s*[0-9]\+\s*//;s/[;&|]\s*aler
t$//'\'')"'
```

```
# Alias definitions.
# You may want to put all your additions into a sep
arate file like
# ~/.bash_aliases, instead of adding them here dire
ctly.
# See /usr/share/doc/bash-doc/examples in the bash-
doc package.

if [ -f ~/.bash_aliases ]; then
  . ~/.bash_aliases
fi

# enable programmable completion features (you don'
t need to enable
# this, if it's already enabled in /etc/bash.bashrc
 and /etc/profile
# sources /etc/bash.bashrc).
if ! shopt -oq posix; then
if [ -f /usr/share/bash-completion/bash_completion
]; then
  . /usr/share/bash-completion/bash_completion
elif [ -f /etc/bash_completion ]; then
  . /etc/bash_completion
 fi
fi

export PATH=$PATH:~/bin
```

```
# ToDOta varten!
PATH=$PATH:"/home/fuksi/todo.txt_cli-2.10/todo.sh"
export TODOTXT_DEFAULT_ACTION=ls
```

- bash_aliases

```
# ToDO-list alias
alias t='./todo.sh -d /home/fuksi/todo.txt_cli-2.10
/'

# man-sivut selaimella firefox-käytössä, koska chro
me ei anna sivuja.
alias cman='man –html=firefox'
```

6. I used example found on linux.fi where i add profile for a connection to ~/.ssh/config file. Host will define aliases that use each profile.

   E.g.

   ```
   Host lyhytnimi minun.palvelin.example
   HostName minun.palvelin.example
   User kayttajatunnus
   ```

   Because i couldn’t connect to ukko from university’s laptop, i ended up making a profile for connecting shell.cs.helsinki.fi.

From there i did the same thing to connect to ukko. After that i realised i can connect straight from laptop using following lines added to ~/.ssh/config file.

```
Host laitos shell.cs.helsinki.fi
HostName shell.cs.helsinki.fi
User rairanta

Host ukko ukko161.hpc.cs.helsinki.fi
HostName ukko161.hpc.cs.helsinki.fi
user rairanta
ProxyCommand ssh -q laitos nc -q0 ukko161.hpc.cs.he
lsinki.fi 22
```

And then connecting from terminal using:

```
$ ssh ukko
```

Invoking ls -a (ls did not show anything) from ukko, i used aliases from previous task.

```
$ ssh ukko ls -a
```

Output was a bit different from my own host, because i use color codes etc.

The sequence of commands that need to be entered to get a password-prompt-less login to Ukko

```
$ ssh-keygen -t rsa
```

at ukko node,

```
$ ssh-keygen -t rsa
```

in local host

```
$ scp ~/.ssh/id_rsa.pub rairanta@ukko161.hpc.cs.hel
sinki.fi
```

from local host.

```
$ ssh ukko
```

from local host.

Again, i had to export public key from both, my laptop and my shell.cs.helsinki.fi account. This way, ssh works straight from my laptop to ukko. I appended public key from laptop to ukko's authorized_keys using

```
$ cat id_rsa.pub >> .ssh/authorized_keys
```

and now login works as wanted.

7. I moved all the aliases to bash_aliases. Given snippet is already used in mys .bashrc as seen above on task 5.

   Calling ssh to ukko after removing snippet from shell.cs.helsinki.fi host (because my connection to ukko goes via that):

   ```
   fuksi@dhcp-asv-103:~$ ssh ukko ls
   id_rsa.pub
   ```

   Doing same after putting back the snippet:

   ```
   fuksi@dhcp-asv-103:~$ ssh ukko ls
   /home/rairanta/.bash_aliases: line 1: alias: --: in
   valid option
   alias: usage: alias [-p] [name[=value] ... ]
   /home/rairanta/.bash_aliases: line 2: alias: --: in
   valid option
   alias: usage: alias [-p] [name[=value] ... ]
   id_rsa.pub
   ```

8. Creating and copying a file to ukko node, signing in and printing the copied file all in one chained command using safe

copy:

```
fuksi@dhcp-asv-103:~$ hostname > ~/LinuxFundamentals2015/Week1/hostname.txt; scp ~/LinuxFundamentals2015/Week1/hostname.txt rairanta@ukko161.hpc.cs.helsinki.fi:/cs/work/home/rairanta/; ssh ukko cat /cs/work/home/rairanta/hostname.txt;

/home/rairanta/.bash_aliases: line 1: alias: --: invalid option
alias: usage: alias [-p] [name[=value] ... ]
/home/rairanta/.bash_aliases: line 2: alias: --: invalid option
alias: usage: alias [-p] [name[=value] ... ]
hostname.txt                                  100%   13     0.0KB/s   00:00
/home/rairanta/.bash_aliases: line 1: alias: --: invalid option
alias: usage: alias [-p] [name[=value] ... ]
/home/rairanta/.bash_aliases: line 2: alias: --: invalid option
alias: usage: alias [-p] [name[=value] ... ]
dhcp-asv-103
```

From melkinpaasi using just cp the same thing works like this:

```
rairanta@melkinpaasi:~$ hostname > LinuxFundamental
s2016/Week1/hostname.txt; cp LinuxFundamentals2016/
Week1/hostname.txt /cs/work/home/rairanta/hostname.
txt; ssh ukko cat /cs/work/home/rairanta/hostname.t
xt;
Enter passphrase for key '/home/rairanta/.ssh/id_rs
a':
melkinpaasi
```

9. RSYNC. Terminal action with non-existing subdir and then with populated one:

```
rairanta@melkinpaasi:~/LinuxFundamentals2016/Week1$
 rsync -v --archive /cs/home/tkt_cam/public_html/20
15/09/30/ ~/LinuxFundamentals2016/Week1/Wednesday.2
015.09.30 sending incremental file list created dir
ectory /home/rairanta/LinuxFundamentals2016/Week1/W
ednesday.2015.09.0
./201509300000.jpg
201509300100.jpg
201509300200.jpg
201509300300.jpg
201509300400.jpg
201509300500.jpg
201509300600.jpg
201509300700.jpg
201509300800.jpg
```

```
201509300900.jpg
201509301000.jpg
201509301100.jpg
201509301200.jpg
201509301300.jpg
201509301400.jpg
201509301500.jpg
201509301600.jpg
201509301700.jpg
201509301800.jpg
201509301900.jpg
201509302000.jpg
201509302100.jpg
201509302200.jpg
201509302300.jpg

sent 9,890,062 bytes  received 561 bytes  3,956,249
.20 bytes/sec
total size is 9,886,229  speedup is 1.00
```

```
 rairanta@melkinpaasi:~$ rsync -v --archive/cs/home
/tkt_cam/public_html/2015/09/30/~/LinuxFundamentals
2016/Week1/Wednesday.2015.09.30
sending incremental file list

sent 554 bytes  received 88 bytes  1,284.00 bytes/s
ec
```

```
total size is 9,886,229  speedup is 15,399.11
```

10. Time and date. Command and result for date as requested:

```
fuksi@dhcp-asv-103:~$ date +%A.%Y.%m.%d
Wednesday.2016.11.02
```

And the script code

```
#!/bin/bash

echo "rsync --archive /cs/home/tkt_cam/public_html/
`date +%Y/%m/%d/` ~/LinuxFundamentals2016/Week1/`da
te +%A.%Y.%m.%d`"
```

ShellCheck recommends using `$(..)` instead of `` `..` `` and in that case the script code is:

```
#!/bin/bash

echo "rsync --archive /cs/home/tkt_cam/public_html/
$(date +%Y/%m/%d/) ~/LinuxFundamentals2016/Week1/$(
date +%A.%Y.%m.%d)"
```